

The Research Process and Development Trends of Therapeutic Landscape Based on Bibliometric Analysis

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Received: 3 June 2025; Accepted: 28 June 2025; Published: 30 July 2025

Abstract:

Horticultural therapy, as a unique mind-body treatment method, has been widely applied in the fields of medical healing and health care. This study aims to explore and analyze the application and effects of horticultural therapy in China and abroad since the 21st century, and to identify the differences and commonalities in the practice of horticultural therapy between the two regions. By using the Citespace visualization software, we collected horticultural therapy application cases from the past two decades both domestically and internationally, and compared them according to dimensions such as treatment objectives, methods, and effectiveness evaluation. The results show that there are certain differences in the application of horticultural therapy between China and other countries, but both have proven that horticultural therapy has a positive effect on improving patients' health. This study is expected to provide references for future landscape design research in China.

Keywords:

Horticultural Therapy, Knowledge Graph, Comparative Study

1. Introduction

With the continuous acceleration of urbanization, people are facing increasing stress. How to mitigate the negative impacts of urbanization on people is a practical challenge. In the rapidly changing and highly developed 21st century, new challenges and pressures have emerged, and thus, more attention should be paid to psychological and physiological health needs.

Horticultural therapy, also known as horticultural treatment, is an auxiliary therapeutic method that involves touching and using horticultural materials to connect with nature, thereby alleviating stress and restoring mental health. It has been found to significantly relieve stress and enhance social adaptability. Research has shown that horticultural therapy can promote the healthy development of mind and body and play an auxiliary role in the rehabilitation of patients. Although existing literature has made great contributions to the theoretical and methodological research on horticultural therapy, there are still some shortcomings, such as a lack of comparative analysis of

differences and more scientific and systematic analysis. Therefore, the rational use of Citespace tools to scientifically analyze the literature on horticultural therapy in China and abroad will promote research in this field.

2. Research Methods and Data Sources

2.1. Research Methods

Citespace software was used to conduct a visual analysis of the literature on horticultural therapy and to identify research hotspots through keyword co-occurrence analysis. Based on this, hotspot word prominence analysis was used to analyze the hot words that have been of long-term and high concern in the research on horticultural therapy in China and abroad. By comparing the results, differences in research directions and methods between China and other countries were identified, in order to seek new directions for the development of horticultural therapy in China.

2.2 Data Sources

In the process of sorting out domestic and international literature, the "Web of Science" database was chosen to retrieve foreign literature. The English expressions related to "horticultural therapy" such as "horticultural therapy" and "horticultural activity" were used as search terms to retrieve journal papers on horticultural therapy published between 2000 and 2024, resulting in a total of 450 papers. The China National Knowledge Infrastructure (CNKI) Academic Journal Network Publishing Database was used to retrieve Chinese literature, with search terms "subject term = horticultural therapy or horticultural therapy or horticultural activity," yielding a total of 494 journal papers related to horticultural therapy published between 2000 and 2024.

3. Knowledge Graph Analysis of Horticultural Therapy Research in China and Abroad

3.1. Research Paper Statistics

Using Citespace software to conduct a visual analysis of the 450 foreign papers, the publication volume of foreign papers on horticultural therapy since the 21st century was derived (Figure 1).

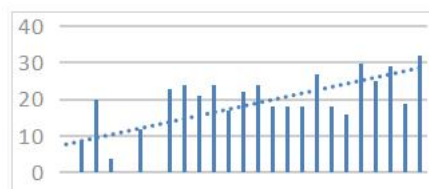


Figure 1. Statistics of papers on "horticultural therapy" and "horticultural activity" in the WOS Core Collection from 2000 to 2024.

From Figure 1, it can be seen that the publication volume of foreign researchers on horticultural therapy fluctuated greatly between 2000 and 2006, but it is still evident that foreign researchers began to explore and study horticultural therapy. In 2007, foreign scholars made new breakthroughs in the study of horticultural therapy, and thereafter maintained a relatively stable development.

Using Citespace software to conduct a visual analysis of the 494 domestic papers, the domestic publication volume was derived (Figure 2).

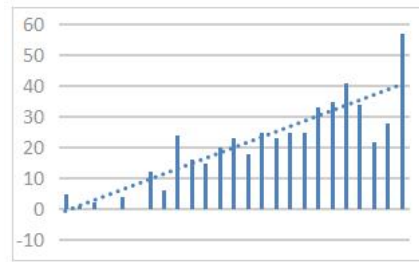


Figure 2. Statistics of papers on “horticultural therapy,” “horticultural therapy,” and “horticultural activity” in the CNKI China Academic Journals from 2000 to 2024

From Figure 2, it can be seen that between 2000 and 2007, Chinese researchers conducted fewer studies on horticultural therapy, with a relatively flat development trend in publication volume. However, after 2018, the number of publications began to rise, and in 2020, there was a new breakthrough, indicating that researchers have become increasingly concerned with horticultural therapy.

By comparing the publication volumes of horticultural therapy-related papers in China and abroad, it can be seen that foreign research on horticultural therapy started earlier and developed more stably compared to China. Although China started later, its recent development has been rapid and shows a positive trend.

3.2 Knowledge Graph Analysis

The knowledge graph integrates various data and is an important research tool in the context of big data. Using Citespace to analyze the literature on horticultural therapy, a visual knowledge graph of keywords related to foreign horticultural therapy can be obtained (Figure 3).

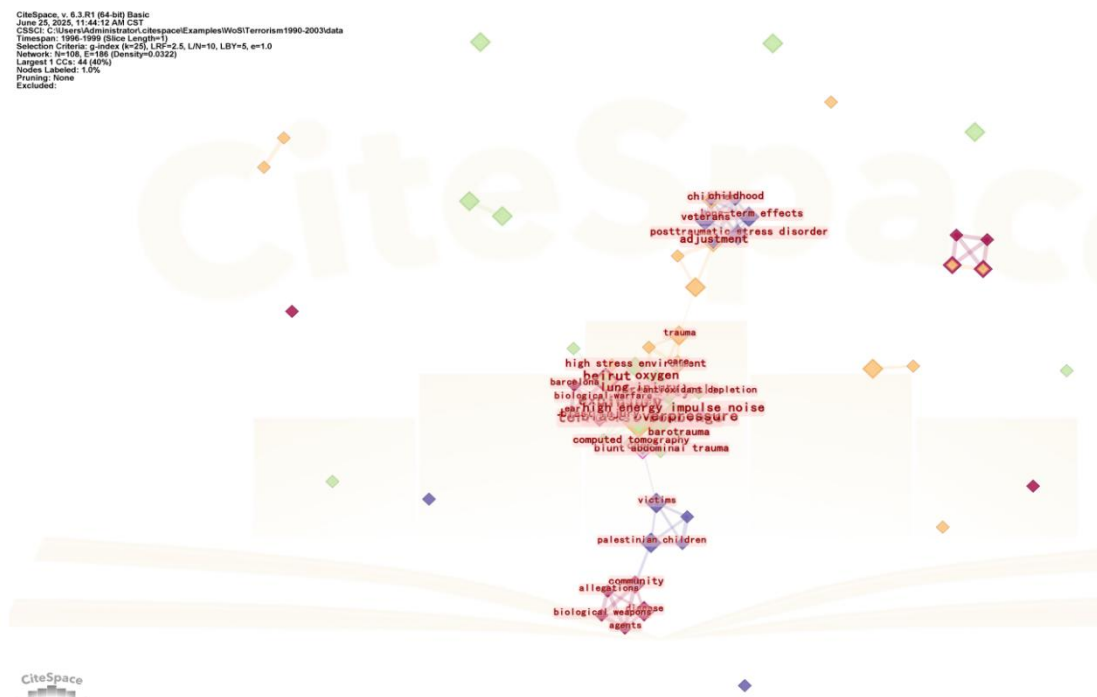


Figure 3. Visual knowledge graph of keywords of papers on “horticultural therapy” and “horticultural activity” in the WOS Core Collection from 2000 to 2024.

Table 1. High-frequency and high-centrality words of papers on “horticultural therapy” and “horticultural activity” in the WOS Core Collection from 2000 to 2024.

No. “horticultural therapy” and “horticultural cativity” as themes are included in the WOS core collection from 2000 to 2024	Frequency	Centrality	Keywords
1	103	0.51	horticultural therapy
2	34	0.15	health
3	21	0.12	benefits
4	20	0.04	mental health
5	19	0.07	depression
6	19	0.15	physical activity
7	17	0.1	program
8	17	0.11	stress
9	16	0.04	older adults
10	14	0.08	human issues in horticulture

Using Citespace to further analyze the keywords of domestic horticultural therapy-related literature, a visual knowledge graph of keywords related to domestic horticultural therapy and related literature can be obtained (Figure 4).

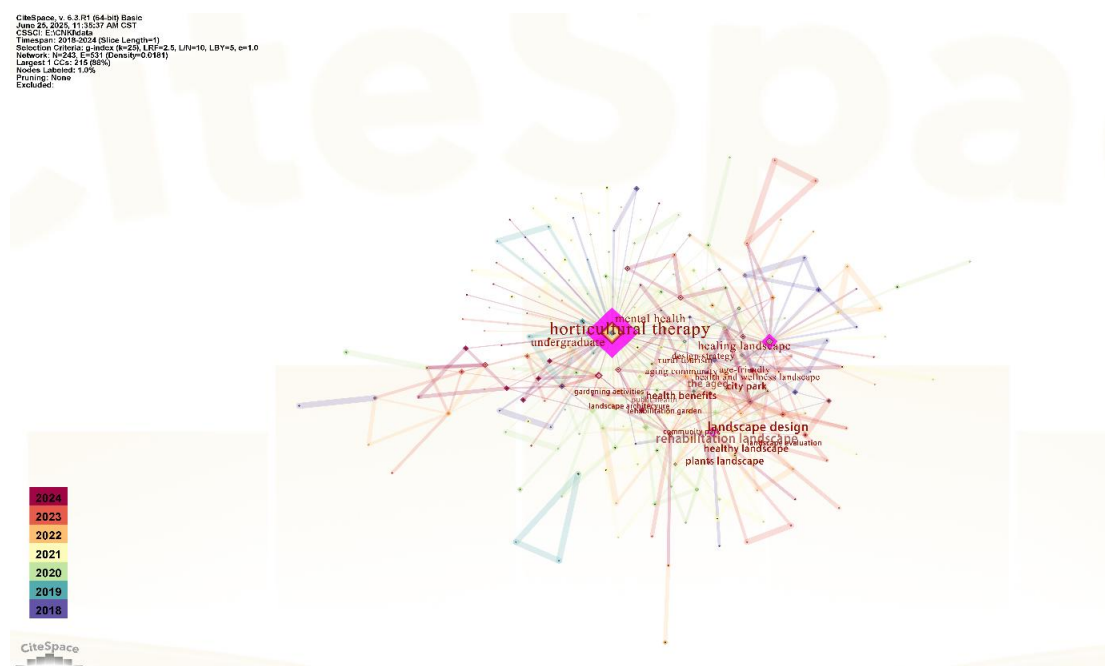


Figure 4. Visual knowledge graph of keywords of papers on “horticultural therapy,” “horticultural therapy,” and “horticultural activity” in the CNKI China Academic Journals from 2000 to 2024.

By further statistically analyzing the keyword data of domestic horticultural therapy-related literature obtained from Citespace, a series of high-frequency and high-centrality words were obtained (Table 2).

Table 2. High-frequency and high-centrality words of papers on “horticultural therapy”, “horticultural therapy”, and “horticultural activity” in the CNKI China Academic Journals from 2000 to 2024.

No. “horticultural therapy” and “horticultural cativity” as themes are included in the WOS core collection from 2000 to 2024	Frequency	Centrality	Keywords
1	375	1.23	horticultural therapy
2	46	0.09	rehabilitation landscape
3	39	0.05	landscape design
4	34	0.07	landscape architecture
5	31	0.11	horticultural treatment
6	27	0.06	rehabilitation garden
7	25	0.03	college students
8	24	0.04	mental health
9	17	0.01	application
10	16	0.01	plant landscape

From Figure 4 and Table 2, it can be seen that the high-frequency words in domestic horticultural therapy research include “horticultural therapy,” “rehabilitation landscape,” “horticultural treatment”, and “mental health,” indicating that domestic scholars’ research on horticultural therapy is gradually deepening and also reflects the attention to mental health issues and the development trend of interdisciplinary research.

Through the analysis of the keywords and knowledge graphs of horticultural therapy-related literature in China and abroad, the following four characteristics can be identified.

3.2.1. Multi-dimensional Health Promotion

Through the review of literature and data analysis, it has been found that foreign research and practice on multi-dimensional health promotion through horticultural therapy have been extensive. For example, Park SA's 2014 study on muscle activation during gardening tasks effectively improved physical health conditions [1]. In a 2008 study, the physical activity levels of elderly gardeners were examined to determine whether gardening activities could meet the recommended levels of physical activity, proving that regular gardening activities could enhance the physical and mental health of elderly gardeners [2]. These studies indicate that foreign research on horticultural therapy focuses on both physiological and psychological aspects.

Keywords such as “rehabilitation landscape,” “rehabilitation garden,” “mental health,” and “health” in domestic research also indicate that horticultural therapy in China pays attention to the promotion of physical and mental health. For example, Ban Ruiyi’s 2001 study on 19 chronic schizophrenic patients showed that horticultural

therapy was effective in their rehabilitation when used as an adjunct to drug therapy [3]. In 2024, Hu Huanping et al. conducted a comparative analysis of 60 elderly patients with hypertension and found that horticultural therapy significantly alleviated their blood pressure [4]. These studies demonstrate that China places great emphasis on public health issues and has begun to use horticultural therapy for intervention and treatment.

The above analysis shows that both in China and abroad, horticultural therapy is regarded as a multi-dimensional health promotion tool, and its research and practice have been widely recognized and valued by scholars in both regions.

3.2.2 Focus on Specific Groups

The high-frequency words “older adults” in foreign research and “elderly people” in domestic research reflect the research focus on the elderly in the field of horticultural therapy. Horticultural therapy is an effective way to improve the physical and mental health of the elderly. Park SA’s 2008 preliminary survey investigated the impact of different intensity gardening tasks on the elderly [5], and in 2011, he precisely tailored gardening activities for the elderly based on their metabolic equivalents to achieve an appropriate level of activity to maintain health [6]. In 2024, Farkas Valeria et al. conducted a comparative study on 23 elderly people with cognitive impairment and found that horticultural therapy had a significant effect in the care of elderly people with cognitive impairment [7]. In China, Wang Lijuan et al. reviewed the principles and therapeutic effects of horticultural therapy on elderly depression in 2024. They found that horticultural therapy could stimulate the nervous system, regulate emotions, improve cognition, optimize interpersonal interactions, and thereby improve physical condition, enhance life quality, and increase psychological pleasure, especially in the treatment of elderly depression [8]. These studies indicate that foreign researchers pay attention to the application of horticultural therapy for this special group of the elderly.

In addition, domestic research on horticultural therapy has also focused on the “college students” group, which may be related to their specific needs and life stages. In 2023, Chen Xuan explored the intervention effect of horticultural therapy on social anxiety disorder in college students and found that it could effectively reduce their social anxiety levels, reduce shyness, and significantly improve their general self-efficacy and self-esteem, providing a new pathway for college students’ mental health activities [9]. In 2024, Tang Limin et al. compared the blood pressure, heart rate, blood oxygen saturation, and SCL-90 scale measurement results of the experimental group and the control group before and after horticultural therapy intervention. The results showed that horticultural therapy could effectively reduce college students’ blood pressure and heart rate, significantly positively impact their physical health, and significantly improve their psychological symptoms, playing an important role in promoting college students’ mental health and being a suitable psychological intervention method for this group[10]. These studies demonstrate that domestic scholars have a high level of attention to this special group of college students in horticultural therapy research.

3.2.3. Emphasis on Integration with Natural Environment

In the analysis of keywords in horticultural therapy-related literature in China and abroad, the frequent appearance of “landscape design” and “landscape architecture” in domestic research indicates a close relationship between horticultural therapy and landscape design, emphasizing the promotion of rehabilitation and health through the

design of beautiful natural environments. In 2020, Li Shuhua explained the concept of horticultural therapy, considering it an auxiliary way to achieve health through plants, which is particularly effective in preventing diseases, rehabilitation treatment, and chronic diseases [11]. In 2005, Li Shuhua et al. explored how to leverage the restorative effects of green spaces on the public's health and well-being, providing the most beneficial designs for a rapidly urbanizing society [12].

3.2.4. Interdisciplinary Nature

Moreover, the domestic keywords of horticultural therapy also include design, treatment, activities, plants, and other aspects, indicating that horticultural therapy, as an interdisciplinary field, has begun to integrate theories and practices from multiple disciplines such as medicine, biology, psychology, and design. The integration with the medical field is the closest. For example, in 2019, Fang Hui et al. conducted a randomized controlled trial on 90 women who had undergone fetal hydatidiform mole abortion, with 45 people in each of the horticultural therapy group and the conventional control group [13]. In other interdisciplinary integrations, Liu Chang et al. in 2020 summarized and conceptually analyzed six perspectives of natural restorative environments, providing theoretical and research foundations for the interdisciplinary development of horticultural therapy [14]. In 2014, Zheng Xiaoyan combined horticultural therapy with traditional Chinese medicine theory, using TCM principles to guide horticultural practice, exploring suitable medicinal herbs for horticultural therapy, and exploring a horticultural therapy with traditional Chinese medicine characteristics [15].

4. Research Conclusions

In terms of application scope, domestic research on horticultural therapy is more focused on rehabilitation landscapes and the elderly population, especially in the construction of nursing homes and elderly communities. While foreign research also covers these areas, it is more mature in diversified treatment settings and specialized treatments for specific groups.

In terms of research content, domestic research focuses more on the practical application of horticultural therapy, while there are shortcomings in system construction, talent training, and public promotion. A search of the CNKI China Academic Journals for literature on “horticultural therapy,” “nature education,” or “environmental education” and “talent training” over the past 20 years yielded fewer than five papers, indicating insufficient research on the application of horticultural therapy in environmental education and talent training in China. In contrast, foreign research on horticultural therapy not only focuses on practical application but also emphasizes the study of concept maps in environmental education and talent training.

In terms of evaluation methods, domestic horticultural therapy assessment tends to focus on observing and recording the direct impact of practical activities on participants, such as social interaction and physical health improvement. Foreign evaluation methods may include physiological indicators such as energy expenditure and electroencephalograms to quantify the effects of horticultural therapy. The differences in evaluation methods between China and abroad may stem from different ways of thinking, cultural backgrounds, and practical experience. However, with the continuous dissemination and development of horticultural therapy, there may be

more exchanges and integration in the future to promote the diversification and scientification of horticultural therapy evaluation methods.

5. Research Implications

To promote the application research of horticultural therapy in China, the following suggestions are proposed based on the content of the above article.

5.1. Focus on Talent Training in Horticultural Therapy

In terms of training talents related to horticultural therapy, the state and schools should set clear training objectives, such as learning and mastering horticultural knowledge and possessing professional practical skills, with ample opportunities to participate in actual horticultural projects, such as the production and management of fruit and tree seedlings, so that they can gain practical experience and apply theoretical knowledge to practice. During the learning process, an “integration of work and study” talent training model should be adopted to combine theoretical teaching with practical operations, enabling students to be trained in theory while also gaining practical experience in actual production.

5.2. Strengthen the Integration of Nature Education

China has deficiencies in nature education. How to integrate nature education into horticultural therapy is an important aspect to consider in the development of horticultural therapy in China. During the process of horticultural therapy, participants can be guided by professionals to record the beauty of nature they encounter in gardening activities. By listening to the sounds of nature, participants can relax and experience the charm of nature more deeply. Encouraging participants to explore nature using all five senses can help them gain a more comprehensive understanding of nature and deepen their appreciation of it. These methods can help participants better understand and connect with nature.

5.3. Offer Horticultural Therapy Courses

Since horticultural therapy started late in China, it is important to raise public awareness of horticultural therapy to advance its development. To achieve this, experts with solid professional knowledge and practical experience can be invited to teach horticultural therapy, aiming to cultivate a group of professionals in this field. In addition, efforts should be made to introduce horticultural therapy to the public through public welfare dissemination. For example, regular theoretical lectures can be held in communities, parks, nursing homes, and other places to spread the knowledge of horticultural therapy and make the general public the true beneficiaries of this therapeutic approach.

5.4. Integrate Traditional Culture into Horticultural Therapy

In the comparison between China and other countries, China has unique cultural connotations that can lead to a unique development path for horticultural therapy. In flower cultivation, it is important to fully explore the cultural significance behind traditional Chinese plants and allow participants to experience and practice this cultural heritage through horticultural therapy activities. Moreover, the design concepts of traditional Chinese gardens, which emphasize the idea of “harmony between heaven and humanity” and the pursuit of harmony between humans and

nature, can be utilized. While promoting the integration of traditional Chinese plants and horticultural therapy, it is also crucial to focus on the protection and inheritance of traditional Chinese floral culture. Measures such as establishing germplasm resource banks, strengthening in-situ conservation, and promoting traditional flower cultivation techniques can ensure the inheritance and development of traditional Chinese floral culture. Through the above methods, traditional culture can be effectively integrated into horticultural therapy, making it a unique therapeutic approach with Chinese characteristics.

6. Conclusions

Through the comparative analysis of the application of horticultural therapy at home and abroad in this study, it can be found that there are differences in the research and practice of horticultural therapy between the two, but there are also many commonalities. Foreign countries started the research on horticultural therapy earlier and have more mature development, especially in the diversified treatment places and special treatment for specific groups. Although China started late, it has developed rapidly in recent years and has achieved significant results in the research of rehabilitation landscape and the elderly group. In terms of research content, domestic research focuses more on practical application, while foreign research is more comprehensive in system construction, talent training and public promotion. There are also differences in the evaluation methods between the two countries. Foreign countries tend to use physiological indexes to quantify the effect, while domestic research focuses more on observing the direct impact of practical activities. This provides an important reference for the future development of horticultural therapy in China. In the future, China should focus on the training of relevant talents in horticultural therapy, strengthen the integration of nature education, open horticultural therapy courses, and integrate traditional culture into horticultural therapy to promote the further development of horticultural therapy in China and make it play a greater role in promoting physical and mental health.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

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