

# The Current Status and Development of Rehabilitation Landscape Design in Outdoor Spaces of Comprehensive Hospitals in China

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## ABSTRACT

This paper systematically investigates the development trends and research focuses on rehabilitation landscape design in Chinese hospital settings over the past three decades. Firstly, through an analysis of publication volume and time, the different stages of hospital landscape design development are elaborated, emphasising trends correlated with national policies and epidemic factors. Secondly, employing keyword clustering and time-tagged visualisation techniques, the research hotspots of comprehensive hospital rehabilitation landscape design, such as rehabilitation landscape design, comprehensive hospitals, and horticultural therapy, are highlighted. Furthermore, an extensive selection and analysis of relevant articles and books are conducted, summarising the developmental characteristics of rehabilitation landscape design in terms of functionality, therapeutic qualities, humanisation, sustainability, and cultural inheritance and innovation. Lastly, the paper calls for future research to focus on the correlation between patient experience and treatment outcomes, interdisciplinary collaboration and integrative design approaches, sustainability, and eco-friendly design, as well as the application of digital technology in landscape design, to drive continuous innovation and advancement in the field of hospital rehabilitation landscape design.

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## 1. Introduction

In the rapid urbanisation process in China, issues such as the ageing population, social pressures, and poor physical health have become increasingly prominent, prompting profound reflections on health-related topics and driving the rapid development of the

health industry. In this context, integrated healthcare and landscape-based health models have become the focus of attention. In 2018, the first blue book on the development of the health industry in China ("China Health Industry Development Report" (2017)) pointed out that healthcare is the foundation of health (Mang, 2017). and the Integration of medical and health services is

essential requirement (Frenk *et al.*, 2020). This view raises new demands for medical facilities and triggers deep-seated concerns about the interaction between healthcare and the landscape environment. Against the backdrop of the Chinese government's high attention to the development of the health industry, the landscape design of hospital outdoor spaces has been increasingly emphasised, and the creation of therapeutic environments has become vital in the design process. By organically integrating medical and landscape elements, hospital outdoor spaces' design not only improves patients' services but also contributes to the overall well-being of the public.

This study combines a literature review and field research to systematically review existing literature on the landscape design of comprehensive hospital rehabilitation spaces in China and conduct an in-depth analysis of its design strategies. By integrating theoretical and practical research, this study aims to propose user-centred design strategies to further promote the application and development of rehabilitation landscape design in the current socio-political-economic environment.

## 2. Methodology

### 2.1 Literature Review

This approach will involve a comprehensive literature review to gather and analyse relevant literature on healing gardens' design, application, and effects. We will systematically review relevant academic papers, research reports, professional journal articles, and related books to understand the historical development, design principles, functional characteristics, and influencing factors of healing gardens. Additionally, we will employ a comparative analysis approach to compare the changes in the development of gardens in comprehensive hospitals in China. This extensive method aims to provide a solid theoretical foundation and practical reference for outdoor rehabilitation landscape design's current and future development in top-tier comprehensive hospitals in China.

#### 2.1.1 Basic Definition and Characteristics of Therapeutic Gardens

#### Therapeutic gardens

The concept of therapeutic gardens is continuously evolving, primarily aiming to facilitate healing through green vegetation. The term "therapeutic garden" consists of two words: "therapeutic" and "garden." According to the Oxford Dictionary, the verb "heal" means "to make (a wound, injury, or person) healthy again." At the same time, "garden" refers to "an area of ground, usually near a house, where flowers, grass, and shrubs are growing (Adevi & Mårtensson, 2013)." Scholars' interpretations of the term "therapeutic garden" have led to many definitions. Scholars such as Roger Ulrich, Clare Cooper Marcus, Patrick Francis Mooney, Joanne Westphal, Zhang Wenying, and Wu Yingying have provided explanations of this concept (Clare Cooper & Barnes, 1999) (Westphal, 2003) (Wenying *et al.*, 2009), as shown in Table 1. From these definitions, these concepts are closely related to concepts in health research and pathogenesis. Almost all definitions revolve around three core aspects:

- 1) Alleviating stress and restoring mental health
- 2) Enhancing immune system function and promoting physical health
- 3) It is facilitating social interaction and obtaining social support

#### Characteristics of Therapeutic Gardens

- 1) Alleviating stress and restoring psychological well-being:

In terms of stress reduction and psychological well-being restoration, therapeutic gardens utilise natural elements such as greenery, flowers, and water as the foundation of their therapeutic effects. Aesthetic natural environments can unconsciously capture people's attention, thereby promoting relaxation. Additionally, the tranquil atmosphere in these gardens fosters interaction among users, promoting a relaxed psychological state through social engagement and a sense of community. (Clare Cooper & Barnes, 1999).

**Table 1.** Perspectives of relevant scholars on therapeutic gardens

Scholars	Year	Viewpoints
Roger Ulrich	1984	healing gardens should have enough greenery, flowers and water to be therapeutic for most users.
Clare Cooper	1995	'healing' in a healing park is not synonymous with 'therapy', but it reduces stress, improves a patient's ability to self-heal, creates a powerful physical
Patrick Francis Mooney	1994	healing gardens benefit the mental and emotional health of their users through interaction with the natural environment.
Joanne Westphal	2003	Gardens provide a favourable environment for patients to address physical, mental and spiritual aspects or any combination thereof, contributing to the recovery of health.
Zhang Wenying, Wu Yingying	2009	The healing Garden consists of natural and cultural landscapes and aims to help users maximise their functional recovery by building on nature as an important medical resource in the landscape environment.

(source: Compiled by the author, 2024)

## 2)Enhancing Immune System Function and Promoting Physical Health:

Regarding enhancing immune system function and promoting physical health, therapeutic gardens emphasise creating movement and physical activity opportunities, providing individuals with appropriate spaces for moderate exercise (Naderi & Shin, 2008). Engaging in suitable physical activities can enhance the immune system's capacity, promoting overall physical health.

## 3)Facilitating Social Interaction and Accessing Social Support:

To facilitate social interaction and access to social support, therapeutic gardens typically create spaces conducive to dialogue and gatherings(Nieberler-Walker *et al.*, 2023). These environments stimulate communication among patients and between patients and family members, enabling patients to access social support and promoting their recovery and healing.

## 4)Therapeutic Gardens as Purposefully Designed Outdoor Spaces:

Therapeutic gardens, as purposefully designed outdoor spaces, play a significant role in stress reduction, enhancing psychological well-being, and promoting physical health. These gardens combine green plants, flowers, and water features to create a tranquil natural environment that attracts people's unconscious attention, facilitating relaxation and inner tranquillity. Furthermore, the peaceful and harmonious environment provides interaction and social engagement opportunities, further promoting the therapeutic process through communication and social support (Adevi & Mårtensson, 2013).

### 2.1.2 Practice Research

#### Relevant Construction Policies and Standards in China:

China's hospital construction standards have undergone a series of evolutions to adapt to the evolving medical environment and social needs. The "Comprehensive Hospital Construction Standard" released in 2008 emphasised the adverse effects of the trend towards hospital verticalisation and raised issues brought about by expanding hospital scale, such as environmental degradation and traffic pressure (China, 2008). In 2018, the National Health Commission revised the standard, highlighting the importance of hospital planning and layout and adding provisions regarding greening, rehabilitation activity areas, and healthcare staff fitness facilities((Paraskevopoulou & Kamperi, 2018).

With the upcoming implementation of the new "Comprehensive Hospital Construction Standard" (Building Standard 110-2021) (China, 2021), China's emphasis on hospital rehabilitation activity areas is further highlighted. This signifies a shift in China's government attention from solely therapeutic functions in hospital spatial design to a more comprehensive approach to rehabilitative landscape design. Introducing the new standard will help optimise the hospital's spatial layout, improve the treatment and working environment for patients and healthcare staff, and promote improvements in the surrounding traffic conditions. Therefore, China's hospital construction policy emphasises rehabilitative landscape design and the health of patients and healthcare staff.

#### Relevant Associations and Practices:

In 2005, Connie Fan initiated the Hong Kong Horticultural Therapy Centre to promote horticultural therapy through professional training, therapy programs, and landscape design. In 2008, the centre was renamed the Hong Kong Association of Therapeutic Horticulture (HKATH), dedicated to advancing the professional development of horticultural therapy. Subsequently, events such as the Hong Kong Horticultural Therapy and Health Garden Symposium and the International Symposium on Horticultural Therapy and Health Landscapes were held, providing industry experts and scholars a platform to exchange and share insights(Wenli, 2012) .

#### Seminars and International Exchanges:

In recent years, China has hosted several international symposiums and summits related to horticultural therapy and health landscapes. The "First Beijing-Hong Kong Symposium on Horticultural Therapy and Health Gardens" was held in 2012, and the First International Symposium on Horticultural Therapy and Therapeutic Landscapes was jointly held in 2015. These events have become essential platforms for academic and practical exchanges in the industry, promoting the continuous development of horticultural therapy research in China (Li, 2015).

#### Professional Certification and Registration:

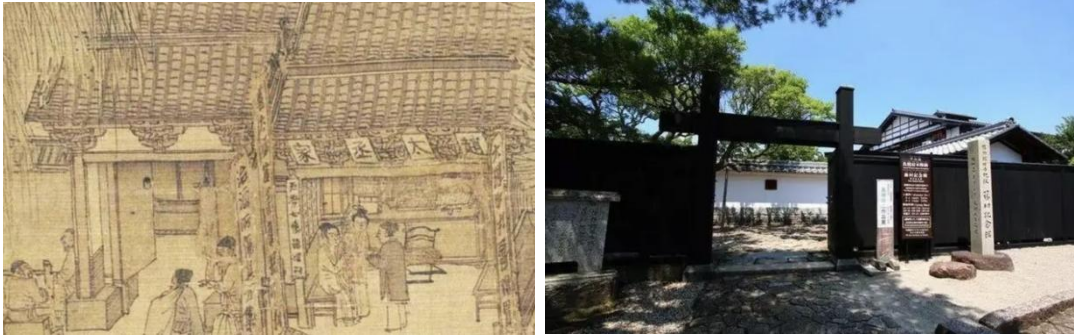
In 2018, the Hong Kong Horticultural Therapy Society began issuing professional registration certificates, recognising the qualifications of horticultural therapists and technicians. This initiative helps to improve the professional standards and service quality of the horticultural therapy industry, promoting its standardisation and regularisation.

In summary, the research status of horticultural therapy in China presents a trend of diversification and positive development. Through establishing associations, organising academic exchange activities, and promoting professional certification, a solid foundation and guarantee have been laid for the further development of this field.

#### Current situation of hospital landscape planning and design construction in China:

The development history of traditional Chinese medicine (TCM) is ancient, with a relatively sound medical system established as early as the Zhou Dynasty. The earliest known hospital building was the "Beitianfang" (see Figure 1). By the Song Dynasty, people began recognising the relationship between comfortable environments and human health. During this period, courtyard-style architectural forms combining halls and corridors emerged.

In the past thirty years, the outdoor space rehabilitation landscape design of comprehensive hospitals in China has undergone significant development and transformation. New landscape planning and design trends emphasise a people-oriented and environmentally friendly approach.



**Figure 1.** Ancient Chinese Grieffield Place and its sites. Source: [https://www.worldhistory.org/Chinese\\_Art/](https://www.worldhistory.org/Chinese_Art/) (Cartwright, 2017)

Compared to ancient hospital buildings, modern hospitals emphasise enhancing the comfort of patients, medical staff, and visitors, considering ecological environment construction, intelligent technological applications, diverse landscape forms, and green energy conservation.

Firstly, many newly constructed hospitals focus more on humanistic care in landscape planning and design, prioritising the needs of patients, medical staff, and visitors to create a comfortable and pleasant medical environment. In terms of ecological environment construction, hospitals utilise methods such as greening and water feature settings to create a natural environment, enhancing the overall comfort and healing properties of the hospital environment. Additionally, integrating landscape elements and functions, such as green corridors and courtyard gardens, provides patients with enjoyable rest areas while meeting the functional requirements of the hospital (Zahra & Ebadi, 2023).

Secondly, intelligent and technological applications also play an important role in hospital landscape planning and design. New hospitals introduce advanced technologies such as intelligent lighting systems and irrigation systems to enhance the comfort and sustainability of the hospital landscape.

Moreover, hospitals showcase diverse forms in landscape design, with traditional courtyard gardens complementing modern green roofs and vertical greening. Regarding green energy conservation, hospitals prioritise using energy-saving and environmentally friendly materials to reduce energy consumption and contribute to sustainable development (Sheikh & van Ameijde, 2022).

In summary, the outdoor space rehabilitation landscape of comprehensive hospitals in China is moving towards a more humane, environmentally friendly, and sustainable direction,

reflecting high attention to patient health and environmental protection.

### 2.1.3 Theoretical Basis

#### Relevant Literature and Publications

China boasts a rich and profound cultural heritage of over 5000 years, encompassing culture, technology, traditional Chinese medical theories, and clinical experiences related to therapeutic landscapes and horticultural therapy (Li & Huang, 2022). This lays the foundation for the development of therapeutic landscapes in China. However, compared to developed countries abroad, China introduced the concept of therapeutic landscapes relatively late. Many domestic scholars have recently researched the relationship between human living environments and health. With the exacerbation of health and environmental contradictions, attention has shifted to new models that integrate medical development with landscape design.

This has led to the publication of papers and books related to therapeutic landscapes (Figure 2). From 2005 to 2022, the literature on rehabilitation landscape design in China highlights the development process from fundamental theories and practical guidelines to complex integrated approaches. Earlier studies established the therapeutic potential of horticulture and landscape therapy. In contrast, later studies, such as those by Meng Jin *et al.*, focused on applying these principles in a hospital setting. Recent research emphasises detailed planning and comprehensive theory that reflects a holistic approach to designing therapeutic environments to meet different patients' needs, thus facilitating therapeutic landscape integration with modern medical facilities. Providing a solid theoretical basis for the emergence and development of therapeutic landscapes in China (Yiwei, 2019).

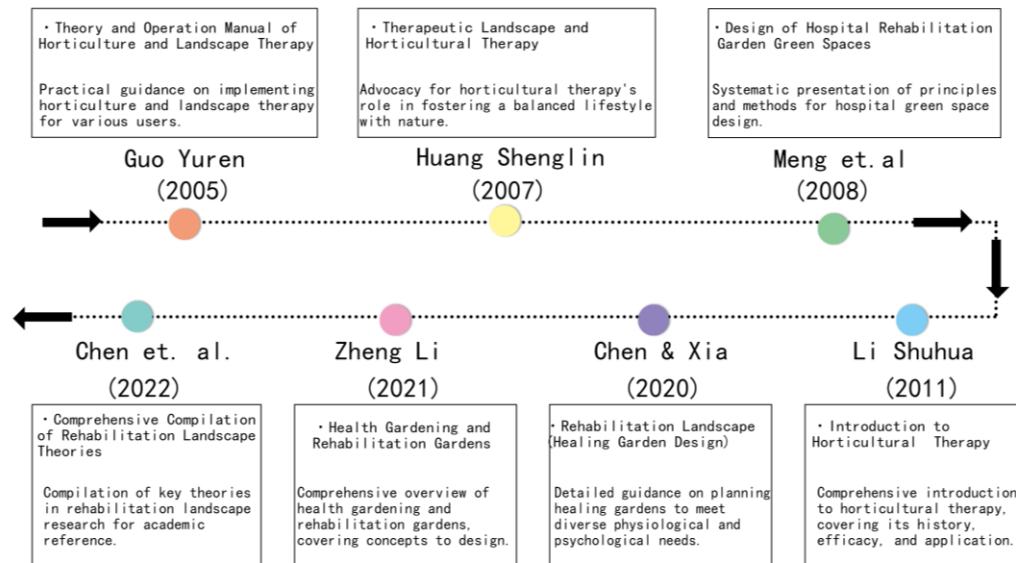


Figure 2. Collation of related books (source: Author,2024)

Various aspects of rehabilitation landscapes and horticultural therapy are explored based on relevant books' in-depth research and practical experience. Through detailed analysis of critical points and practical experiences in healing garden design, these works of literature offer essential guidance for planning and constructing rehabilitation landscapes. Furthermore, they advocate for enhanced interdisciplinary collaboration and research to better meet the rehabilitation needs of diverse populations. The potential of horticultural therapy in promoting physical and mental well-being is emphasised, along with the possibility of its application in broader environments and populations. Future research can further deepen understanding of rehabilitation landscapes and horticultural therapy, explore innovative design concepts and practical approaches, and enhance societal attention to rehabilitation and health, improving people's quality of life.

#### Analysis of the volume and timing of publications:

According to the analysis of publication volume and time, over the past 30 years, there have been a total of 267 articles published on hospital landscapes in China. These publications can be categorised into several stages based on publication volume and time. The period from 1994 to 2007 can be considered the embryonic stage, while 2008 to 2013 marked the rise of hospital landscape research.

The notable increase in publications during this period can be attributed, in part, to the initiation of the "Healthy China 2020" strategic health policy by the Chinese Ministry of Health in 2012, indicating a correlation between the growth trend of publications and national guidelines. The period from 2014 to 2021 shows a fluctuating upward trend, possibly influenced by factors such as the COVID-19 pandemic.

The pandemic has impacted academic research globally, with many educational institutions closing or restricting laboratory and field research activities, leading to delays or suspensions of some research projects and consequently reducing the output of relevant articles. Resource constraints, including limitations in funding, workforce, and equipment, may have also contributed to the decline in publication volume, as some research institutions or scholars faced challenges in conducting landscape rehabilitation research. However, there has been a gradual upward trend in publications from 2022 to 2024. The China National Knowledge Infrastructure (CNKI) is an authoritative platform for academic research and scientific decision-making in China, providing comprehensive and authoritative literature resources. This study primarily relies on the China National Full-text Database for data collection and analysis.



Furthermore, by analysing the time-label view of the selected 17 articles using VOSviewer software, we can further identify the evolving research trends over the years (Figure 5). In the figure, the brightness of the nodes represents the publication year, with brighter nodes indicating more recent publication dates. This visual representation aids in observing the temporal dynamics of rehabilitation landscape research and the emergence of the latest research findings.

Literature retrieval becomes challenging when many scholars rely on common keywords and buzzwords (Levy & Ellis, 2006). To address these challenges, this study adopted forward and backward search strategies. Webster and Watson initially proposed forward and backward search techniques (Webster &

Watson, 2002). Forward search involves tracking the references cited in the selected studies, while backward search requires examining all sources cited in each study (Levy & Ellis, 2006). The forward search process utilised the CNKI search engine. After employing both forward and backward methods, 50 articles were identified.

Subsequently, full-text screening was conducted based on inclusion and exclusion criteria, excluding 33 articles. Ultimately, 17 articles remained, aligning more closely with the objectives and research questions of the systematic literature review, covering the analysis of design characteristics and outcomes of hospital rehabilitation gardens (see Table 2):

**Table 2.** Literature analysis of rehabilitation landscape design

NO	Title	Author	Time	Methodology	Theme	Objective	Conclusion
1	Natural Healing: The Kernel and Design Strategies for Healing Gardens (Deshun <i>et al.</i> , 2023)	Deshun Zhang	2023	Quantitative and qualitative	Healing garden design aspects, spatial layout, traffic flow, planting arrangements, and water features integration	Examine therapeutic garden evolution, design principles, global cases; suggest modern strategies for China	Designers enhance emotional support and mitigate hospital space negatives in rehab gardens.
2	Landscape Design Study of Rehabilitation Gardens in Healthcare Facilities (Yuequn, 2023)	Yuequn You	2023	Qualitative	Healing garden design benefits in healthcare; natural elements, sensory experiences, therapeutic environments	Explore therapeutic garden concepts, design principles; benefits for patients, staff	Prioritize human-centric care in rehab garden design; multidisciplinary expertise needed.
3	Landscape renovation design of Lindsay County Hospital based on the concept of rehabilitation garden (Wenqing & Lei, 2023)	Wenqing Yan, Wang Lei	2023	Qualitative	Hospital landscape renovation with therapeutic garden concept	Design Lindsay County Hospital landscape based on healing gardens	Renovated landscapes blend therapy with aesthetics, enhancing greenery.
4	Rehabilitation garden design under horticultural therapy (Yang <i>et al.</i> , 2022)	Xiyue Yang, Junfeng Xu, Shuli Yang, Jing Li	2022	Quantitative and qualitative	Rehabilitation hospital design emphasizing natural resources, safe environments, traditional health practices	Explore Comfort Hospital design principles within an ecological framework	Prioritize natural elements, safety, patient-nature interaction in rehab hospitals.
5	New ideas for hospital design -- Creating a Rehabilitation	Haiyan Yu, Xing Pu	2016	Practical Research	Design and construction of healthcare facilities	Explore challenges and principles of integrated	Integrate healthcare with nature, promote patient recovery



NO	Title	Author	Time	Methodology	Theme	Objective	Conclusion
	Garden Hospital (Haiyan & Xing, 2016)				integrating natural environments	healthcare facility design	and well-being.
6	Evidence of Evidence and Pathways to Recovery -- An Evidence-Based Design Exploration of Healing Gardens in CCRC Communities (Chengyuan & Hao, 2022)	Chengyuan Zhang, Hao Long	2022	Evidence-based design	Healing garden design role in CCRC communities' recovery; evidence-based process	Develop evidence-based design model; link landscape performance with medical goals	Link landscape to COVID-19 rehab, with quantifiable indices.
7	Rehabilitation Garden Design for Cognitive Care Facilities in the United States Case Study (Li & Huang, 2022)	Julia Li 、 Qiuyun Huang	2022	Practical Studies	Dementia therapeutic garden development and effective design features	Assess US dementia gardens; extract effective design features	Informative for China's dementia gardens design.
8	Hospital Outdoor Landscape Design Based on the Concept of Rehabilitation Garden (Bin, 2022)	Li Bin Chen	2022	Qualitative and quantitative	Rehabilitation garden correlation with human well-being, nature integration	Explore rehab garden principles; inform landscape design	Natural environments promote patient healing; foreign cases inform hospital design.
9	A Study on the Design of Hospital Attached Green Space under the Perspective of Rehabilitation Garden --Taking Guangzhou General Hospital as an Example (Yuting, 2021)	Yuting Li	2021	Qualitative and quantitative	Green space construction and healing role in attached hospital green spaces	Improve therapeutic effect through green space design	Inform rehab garden strategy for Guangzhou hospitals.
10	Survey and Evaluation of Changsha City Hospital Outdoor Space Plantscape Based on the Concept of Rehabilitation Garden (Jiaqi, 2021)	Jiaqi Wang	2021	AHP and POE methods	Outdoor hospital plant landscapes analysis for optimization insights	Analyze hospital plant landscapes for optimization	Study assesses plant composition for rehab gardens.
11	Research on the Design of Rehabilitation Garden in Maternal and Child Health Hospital --Wuhan	Haiyang Hong	2021	Qualitative and quantitative	Maternal and child hospital rehab garden design focusing on user needs	Design maternal and child hospital rehab gardens	Apply design concepts to create healing environments.



NO	Title	Author	Time	Methodology	Theme	Objective	Conclusion
	Economic and Technological Development Zone Maternal and Child Healthcare Hospital as an Example (Haiyang, 2021)						
12	Research on the spatial design of general hospitals under the theory of rehabilitation gardens (Yiwei, 2019)	Yiwei Guo	2019	Qualitative and quantitative	Exterior space design promoting patient and staff well-being	Explore hospital exterior space design for well-being	Integrative design supports patient and staff needs.
13	Research on Landscape Practicality of Rehabilitation Garden -- Take Beijing Wanhua Rehabilitation Hospital Landscape Design as an Example (Xiaozhen, 2018)	Xiaozhen Cao	2018	Qualitative and quantitative	Comprehensive rehabilitation hospital design for patient well-being	Design high-level rehab hospitals for physical and mental health	Rehab garden design integrates interdisciplinary care.
14	Research on Landscape Design Problems of Hospital Rehabilitative Gardens (Xinyu, 2018)	Xinyu Liang	2018	Qualitative	Rehabilitation garden spatial composition, plant color, landscape design	Focus on spatial composition, plant color, rehab garden design	Rehab grid importance in hospital construction; identified design points.
15	Analysis of hospital landscape design under the concept of rehabilitation (Lin & Guo, 2017)	Liu Lin, Yiwei Guo	2017	Qualitative and quantitative	Hospital landscape design incorporating healing gardens	Explore landscape design under rehab framework	Enhance hospital landscape design for patient recovery.
16	An Initial Exploration of Medical Outdoor Landscape Design Strategies under the Concept of Rehabilitation Garden (Ceremonials & Liuzhu, 2017)	Ban Chien Ceremonials, Ren Liuzhu	2017	Qualitative and quantitative	Outdoor medical landscape design promoting physical, mental well-being	Explore outdoor rehab garden design strategies	Rehab gardens enhance patient well-being holistically.
17	Design combined with healthcare --- Modern Rehabilitation Landscape Design	Kang Wei	2010	Qualitative and quantitative	The topic is modern therapeutic landscape design and its	Study explores modern therapeutic landscape design, integrating it	The paper defines, traces, explores, analyzes, and summarizes

NO	Title	Author	Time	Methodology	Theme	Objective	Conclusion
	Study (Wei, 2010)				role as a complementary therapy in healthcare organizations.	with healthcare for comprehensive understanding.	rehabilitation landscape, emphasizing medical integration and future development.

(source :Author,2024)

Through the comprehensive analysis of the above table, we can delve into the development trends and future directions of healing garden design in the healthcare field. The current research topics cover various aspects of healing garden design, including spatial layout, plant configuration, and integration of water features. The research explores the concept of healing gardens, design principles, and their benefits for patients and healthcare professionals. Prioritising personalised care is crucial in healing garden design, interdisciplinary collaboration and integration of professional knowledge. In the future, healing garden design should focus more on personalised care, designing with the needs of patients and healthcare professionals at the forefront. With the increasing emphasis on nature therapy and mental health, healing garden design is expected to become one of the critical directions for improving healthcare environments in the future field (Deshun *et al.*, 2023). Therefore, continuous attention and support for research and practice in healing garden design are needed to promote its further development and application in healthcare.

### 3. Results and Discussion

Over the past three decades, outdoor rehabilitative landscape design in comprehensive hospitals in China has undergone significant development and evolution. Based on data such as hospital landscape planning and design, relevant government policy documents, accreditation and establishment of associations, and research trends in Chinese healing gardens and literature, the following main development directions can be summarised.

#### Functional Design:

Early hospital landscape designs focused on functionality, primarily addressing the needs of various functional areas within the hospital, such as greenery, transportation, and recreation. As time has progressed, functional design remains important but now emphasises enhancing the experiences and comfort of patients and healthcare workers through design. For example, plant configurations should follow the principles of mutual symbiosis and the theory of Yin and Yang, utilising the phenomenon of chemical communication between organisms to design plant landscapes and improve the ecological health standards of green space(Bin, 2022).

#### Healing Design:

There is an increasing emphasis on the healing design of hospital landscapes, with research focusing on how elements such as plants and water features can create environments conducive to patient recovery. Early attention to the therapeutic effects of hospital landscapes on patient recovery and mental health was limited,

with research mainly focusing on functionality and aesthetics. (Chengyuan & Hao, 2022) Now, the healing design of hospital landscapes emphasises creating warm, welcoming, and conducive to patient recovery by creating friendly and reliable environmental spaces.

#### Human-Centric Design:

Early hospital landscape designs prioritised practicality and functionality, with less emphasis on human-centric design concepts. Modern hospital landscape designs focus more on user experiences and needs, emphasising a people-centric approach to create warm and comfortable healthcare environments. For example, redesigning hospital greenery and plant landscapes should adhere to a people-centric approach(Haiyang, 2021), emphasising the special effects of greenery environments on patients and fully considering the psychological emotions of psychiatric patients in landscape design.

#### Sustainable Design:

Early attention to sustainable design in hospital landscapes was relatively low, focusing more on beautification and greening. In later stages, with the popularisation of sustainable development concepts, designs increasingly focus on energy conservation, emission reduction, water resource utilisation, and environmental protection. For example, green hospitals in China should adhere to the path of sustainable development(Yuequn, 2023), promote the interaction and integration of "forests, medicine, and healthcare," and enhance the ecological service functions of green hospitals.

#### Cultural Heritage and Innovation:

Early designs were relatively traditional, with fewer incorporations of Chinese traditional cultural elements. Later designs increasingly emphasise integrating Chinese traditional culture and modern innovative concepts, creating medical landscapes with cultural characteristics and contemporary spirits. This trend has prompted hospital landscape designs to have more cultural connotations and contemporary characteristics, reflecting the value and significance of Chinese traditional culture in healthcare environments.

Over the past 30 years, outdoor rehabilitation landscape design in Chinese general hospitals has been progressively strengthened and improved in terms of functionality, healing, human-centeredness, sustainability, cultural heritage, and innovativeness, reflecting the continuous progress and innovative development of healthcare environment construction (Jiaqi, 2021). This study summarizes these development trends by analyzing bibliometric data and

policy documents, but there are some limitations. First, the bibliometric data may introduce bias, and unpublished or rare research findings may not be adequately reflected; second, the scope of the study focuses mainly on landscape design for general hospitals, and design trends for other types of healthcare facilities may not be covered. However, these limitations do not affect this study's overall insight into hospital landscape design trends, and still provide a valuable reference for subsequent research.

#### 4. Conclusion

Over the past three decades, the outdoor rehabilitation landscape design of Chinese general hospitals has shifted from a single functional design that is practical to meet basic needs to one that has composite functions such as rehabilitation design, human-centred design, sustainable design, and cultural innovation design. This transformation reflects contemporary society's sustainable pursuit of the healthcare environment and the continuous development and improvement of design concepts, which can ultimately better meet the needs of patients and healthcare workers.

However, the current state of research is still characterised by limitations such as a single research method, lack of interdisciplinary cooperation, and insufficient empirical studies. It is hoped that future research can deepen the impact of rehabilitation landscape design on patients and healthcare workers by introducing more quantitative data and interdisciplinary research methods such as sociology, psychology, and ecology. In addition, with the continuous development of digital technology, the application of new technologies such as artificial intelligence and virtual reality will also bring more possibilities for rehabilitative landscape design.

In the future, we need to pay more attention to the needs of patients and healthcare workers, emphasise the combination of research and practice, and promote the continuous innovation and development of rehabilitative landscape design. This will improve the healthcare environment, enhance patient experience, and encourage rehabilitation and health.

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#### References

- Adevi, A. A., & Mårtensson, F. (2013). Stress rehabilitation through garden therapy: The garden as a place in the recovery from stress. *Urban forestry & urban greening*, 12(2), 230-237.
- Bin, C. L. (2022). Hospital Outdoor Landscape Design Based on the Concept of Rehabilitation Garden. *Contemporary Horticulture*, 45(08), 107-109. <https://doi.org/doi:10.14051/j.cnki.xddy.2022.08.028>.
- Cartwright, M. (2017). *Chinese Art*. World History Encyclopedia. [https://www.worldhistory.org/Chinese\\_Art/](https://www.worldhistory.org/Chinese_Art/)
- Ceremonials, B. C., & Liuzhu, R. (2017). An Initial Exploration of Medical Outdoor Landscape Design Strategies under the Concept of Rehabilitation Garden. *Beauty & Times*(07), 47-48.
- Chengyuan, Z., & Hao, L. (2022). Evidence of Evidence and Pathways to Recovery -- An Evidence-Based Design Exploration of Healing Gardens in CCRC Communities. *Journal of Human Settlements in West China*, 37(05), 45-51. <https://doi.org/doi:10.13791/j.cnki.hsfwest.20220507>.
- China, E. b. M. o. H. o. t. P. s. R. o. (2008). *General hospital construction standard 110-2008*. Beijing: China Planning Press.
- China, N. H. C. o. t. P. s. R. o. (2021). *General hospital construction standard 110-2021*. Beijing: China Planning Press.
- Clare Cooper, M., & Barnes, M. (1999). *Healing gardens : therapeutic benefits and design recommendations*. J. Wiley, Cop.
- Deshun, Z., Yingying, C., Fengshu, G. K., Zhen, C. X., Rui, Z. L., & Di, D. (2023). Natural Healing: The Kernel and Design Strategies for Healing Gardens. *Central China architecture*, 41(09), 78-82.
- Frenk, J., Chen, L., Bhutta, Z. A., Cohen, J., Crisp, N., Evans, T., Fineberg, H., Garcia, P., Ke, Y., Kelley, P., Kistnasamy, B., Meleis, A., Naylor, D., Pablos-Mendez, A., Reddy, S., Scrimshaw, S., Sepulveda, J., Serwadda, D., & Zurayk, H. (2020). Health Professionals for a New century: Transforming Education to Strengthen Health Systems in an Interdependent World. *The Lancet*, 376(9756), 1923-1958. [https://doi.org/10.1016/s0140-6736\(10\)61854-5](https://doi.org/10.1016/s0140-6736(10)61854-5)
- Haiyan, Y., & Xing, P. (2016). New ideas for hospital design-Creating a Rehabilitation Garden Hospital. *Architectural skill*(09), 122-126.
- Haiyang, H. (2021). *Research on the design of rehabilitation garden in maternal and child Health Hospital* [Master, HUST (Huazhong University of Science and Technology)].
- Infrastructure, C. N. K. (2024). *Analysis of the volume and timing of publications*. CNKI. Retrieved 11.11 from <https://www.cnki.net/>
- Jiaqi, W. (2021). *Survey and Evaluation of Changsha City Hospital Outdoor Space Plantscape Based on the Concept of Rehabilitation Garden* [Master, Agricultural University Of Hunan].
- Levy, Y., & Ellis, T. J. (2006). A systems approach to conduct an effective literature review in support of information systems research. *Informing Science*, 9.
- Li, J., & Huang, Q. (2022). Rehabilitation Garden Design for Cognitive Care Facilities in the United States Case Study. *Chinese Landscape Architecture*, 38(11), 64-69. <https://doi.org/doi:10.19775/j.cla.2022.11.0064>.
- Li, Y.-N. (2015). The Horticultural Therapy and Rehabilitation Landscape Summit Forum and the first academic and practical Seminar of the Department of Horticultural Therapy was successfully held in Beijing. *Chinese Tradision Gardens* (11), 1.
- Lin, L., & Guo, Y. (2017). Analysis of hospital landscape design under the concept of rehabilitation. *Design*(21), 152-153.
- Mang, H. (2017). *Health Care Blue Book: China Health Care Industry Development Report* (2017). [https://baike.baidu.com/reference/50321534/533aYdO6cr3\\_z3kATK](https://baike.baidu.com/reference/50321534/533aYdO6cr3_z3kATK)

CMmfT2MH7GM4mp6rfXW7BzzqIPmGapB5nyTcYh89YvsPRoGUXIvt  
dhL4RFx7DnCklY7vAPcO0zR7wqnWi8C3eflQ

Naderi, J. R., & Shin, W.-H. (2008). Humane Design for Hospital Landscapes: A Case Study in Landscape Architecture of a Healing Garden for Nurses. *HERD: Health Environments Research & Design Journal*, 2(1), 82-119. <https://doi.org/10.1177/193758670800200112>

Nieberler-Walker, K., Desha, C., Bosman, C., Roiko, A., & Caldera, S. (2023). Therapeutic Hospital Gardens: Literature Review and Working Definition. *HERD: Health Environments Research & Design Journal*, 16(4), 260-295. <https://doi.org/10.1177/19375867231187154>

Paraskevopoulou, A. T., & Kamperi, E. (2018). Design of hospital healing gardens linked to pre- or post-occupancy research findings. *Frontiers of Architectural Research*, 7(3), 395-414. <https://doi.org/10.1016/j.foar.2018.05.004>

Sheikh, W. T., & van Ameijde, J. (2022). Promoting livability through urban planning: A comprehensive framework based on the “theory of human needs”. *Cities*, 131, 103972. <https://doi.org/10.1016/j.cities.2022.103972>

Webster, J., & Watson, R. T. (2002). Analyzing the past to prepare for the future: Writing a literature review. *MIS quarterly*, xiii-xxiii.

Wei, K. (2010). *Design combined with healthcare—Modern Rehabilitation Landscape Design Study* [Master, Chongqing University].

Wenli, C. (2012). *The industry taps the development potential of horticultural therapy.* sina finance. <https://finance.sina.com.cn/roll/20121025/112113476203.shtml>

Wenqing, Y., & Lei, W. (2023). Landscape renovation design of Lindsay County Hospital based on the concept of rehabilitation garden. *Modern horticulture*, 46(10), 118-120.

Wenying, Z., Yingying, W., & Dawei, X. (2009). Design integrated with medical - medical garden and rehabilitation landscape. *Chinese Tradition Gardens*, 25(8), 7-11.

Westphal, J. M. (2003). A reflection on the role of the landscape architect in American health-care delivery. *Landscape Research*, 28(2), 205-216.

Xiaozhen, C. (2018). Research on Landscape Practicality of Rehabilitation Garden ——Take Beijing Wanhua Rehabilitation Hospital Landscape Design as an Example. *Chinese Horticulture Abstracts*, 34(03), 140-143+178.

Xinyu, L. (2018). *Research on landscape design of rehabilitation garden in hospital* [Master, Northwest Agriculture & Forestry University].

Yang, X., Xu, J., Yang, S., & Li, J. (2022). Rehabilitation garden design under horticultural therapy. *Contemporary Horticulture*, 45(12), 50-52. <https://doi.org/doi:10.14051/j.cnki.xddy.2022.12.006>

Yiwei, G. (2019). Research on the spatial design of general hospitals under the theory of rehabilitation gardens. *The House Collective*(06), 101+181.

Yuequn, Y. (2023). Landscape Design Study of Rehabilitation Gardens in Healthcare Facilities. *artist*(04), 50-52.

Yuting, L. (2021). *A Study on the Design of Hospital Attached Green Space under the Perspective of Rehabilitation Garden Taking Guangzhou General Hospital as an Example* [Master, SCUT(South China University of Technology)].

Zahra, M., & Ebadi, H. (2023). The architecture of green space by medicinal plants in the university and its impact on people's ealth, education and environmental in the Post-Pandemic Time. *IOP Conference Series: Earth and Environmental Science*, 1194(1), 012027-012027. <https://doi.org/10.1088/1755-1315/1194/1/012027>