

# The Application of Rehabilitation Garden Design in Elderly Care Communities in China Against of the Background of Aging

Wenhua Sun \*, Wenxuan Yang

School of the Art, University Sains Malaysia, Penang, 11800, Malaysia

\* Corresponding author: Wenhua Sun (Email: sun19980301@126.com)

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**Abstract:** The research purpose of this article is to explore the role of rehabilitation landscape design in elderly residential areas under the background of aging in China and the home care model. The main method of this study is to investigate and integrate information through literature research methods on papers and official reports of relevant research objects, so as to obtain relevant information between home-based elderly care services and rehabilitation garden design. Analyze the data information obtained. The research results show that in the context of aging population, the design of rehabilitation gardens plays an important role in the physical and mental health of elderly people in home-based elderly care communities. Elderly people with different health conditions have different needs for space. The Functional requirement of the elderly to the community environment are diverse, and the design needs to meet the elderly's recreational activities, humanized public places, mental and psychological needs and some basic medical conditions. The significance of this research achievement is that it provides necessary reference and suggestions for the design of home-based care for the aged community rehabilitation garden. The application of rehabilitation garden design in home-based care for the aged community can promote the physical and mental health of the elderly in the context of aging, provide a comfortable and healthy environment for the elderly, and also alleviate the problem of medical resource allocation and shortage in China to a certain extent.

**Keywords:** Rehabilitation Garden; Aging; Home-based Elderly Care; Community.

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## 1. Introduction

According to China's seventh population census, the population aged 65 and above exceeded 190 million, accounting for 13.50% of the total population [1]. This means that the country's population is in an aging society. The 20th 10th Report advocates for the implementation of a national strategy to actively respond to population aging. China is implementing the "9073" elderly care model, which is based on 90% of the elderly living at home [2]. The safety of living space is a prerequisite for home based elderly care. By 2035, the number of elderly people aged 60 and above will exceed 400 million, and the demand for aging will make the issue of home-based elderly care a hot topic in society [2]. How to improve and enhance the home care environment in China and build a comprehensive elderly care service system is an urgent problem to be solved. In addition, in the context of aging, the chances of elderly people suffering from chronic diseases increase, mental health problems increase, and medical resources are insufficient [3].

In addition, the contradiction between the overall shortage of medical supply and demand growth is still prominent [2], which means that China is facing the practical problem of current medical resource shortage. The physical and mental health of elderly people living mainly at home in this community requires more attention. The China Health Commission also pointed out that the elderly population who choose to care at home is a relatively unprofessional group of elderly basic services [1], which is why the country proposes to develop family community comprehensive medical and health services. Throughout history, people have always relied on nature as a powerful source of treatment and recovery [5]. Eckerling proposed that a rehabilitation garden

has the function of reducing stress, restoring inner peace, and slowing down illness, gradually restoring one's health through contact [6]. Therefore, in summary, planning and designing outdoor landscapes for elderly care communities that are conducive to physical and mental health treatment, based on rehabilitation gardens, landscapes, etc., is receiving increasing attention. At present, the construction of aging-friendly environments in China is still in its infancy, and there are two major problems with ageing-friendly retrofitting of the physical environment: firstly, there is a lack of authoritative, unified and perfect ageing-friendly retrofitting standards; secondly, the ageing-friendly retrofitting work that has been carried out is incomplete and superficial [2]. Therefore, the application of health-friendly landscape planning and design in ageing-in-place communities is a key area of research.

So, the purpose of this study is to explore the role of rehabilitation garden design in home-based elderly care communities in the context of aging.

### 1.1. Problem Statement

Under the impact of China's aging population, the elderly is now facing increasing chronic diseases, mental health problems and insufficient medical resources [1]. In addition, the China Health Commission also pointed out that 90% of the elderly choose the home-based elderly care model, and such elderly people do not have relatively professional basic elderly care services. Therefore, the relevant national parties proposed to develop home-based community medical care services, and continue to explore the path of medical care. Relevant literature points out that integrating horticultural therapy into landscape planning is one of the means of medical, nursing and rehabilitation treatment, and also a type

of rehabilitation landscape [7]. However, the rehabilitation landscape design is more practically applied in medical institutions and elderly care institutions, so especially in the current severe aging situation, the rehabilitation garden design that has certain curative effects and alleviates physical and mental health problems should also be applied in the home-based elderly care community. However, in 2023, the report of the Institute of Aging of Fudan University on the development trend of Chinese style elderly care clearly pointed out that the construction foundation of the aging environment for home-based elderly care is poor, and the physical environment transformation lacks standards and depth [2]. At present, the construction of aging friendly environment in China is still in the initial stage. There are two major problems in the aging friendly transformation of physical environment: one is the lack of authoritative, unified and perfect aging friendly transformation standards; Second, the aging modification work that has been carried out is incomplete and superficial [2]. Therefore, to sum up, how to design and apply the rehabilitation garden based on the physical and mental health of the elderly in the current aging environment construction, and how to combine it with the home-based elderly care service in China, is the problem we should study at present. Strengthen community service capacity and provide security for home-based care for the aged [1].

### 1.2. Significance of Study

The significance of this research is that under the background of aging, this research provides necessary reference and suggestions for the design of community rehabilitation garden for home-based care for the aged.

In addition, according to relevant research, through the integration of comprehensive literature, reports and other materials, it is learned that the principle of rehabilitation landscape design for aging not only promotes the physical and mental health of the elderly in the context of aging, but also alleviates the problem of the allocation and shortage of medical resources in China to a certain extent. Understand the importance of rehabilitation garden design in home-based elderly care community. In particular, the current deep aging in China has led to health problems of the elderly and national resource problems. The combination of home-based care for the aged mode and rehabilitation garden design can alleviate these problems. And it also actively responded to the country's proposed road of combining home care with medical care. Systematically provide the elderly with a healthy physical and mental environment.

### 1.3. Limitation of Study

In terms of research, it is mainly to investigate and study the demand and feedback of Chinese home-based elderly care community people on their living environment and services through external resource information of secondary data such as literature and reports. In addition, collect some relevant information including the design principles of rehabilitation garden design and the role of rehabilitation garden design in home-based elderly care community provided by literature.

The limitation of this research method is the collection of secondary data. The advantage of using secondary data is that the data can be obtained quickly, but some data may be incomplete or inaccurate. For example, the financial statements of some companies may have some moisture, which will affect the accuracy of the research results. The

effect evaluation and quantitative research on the design of aging rehabilitation garden are relatively few, and it is difficult to comprehensively evaluate the advantages and disadvantages of the design scheme. Secondly, there are differences in the needs and preferences of different elderly people. How to carry out personalized design and service according to individual differences is also a problem to be solved. Finally, the design of an aging rehabilitation garden needs to comprehensively consider various factors, such as safety, comfort, accessibility, etc. Therefore, multidisciplinary cooperation and integration are necessary [8].

## 2. Literature Review

### 2.1. Rehabilitation Garden

The literature on early related research topics shows that in 1806, Spanish hospitals emphasized the benefits of agricultural and horticultural activities for mental patients [9]. It shows that natural plants have a positive impact on patients. In the early stage, Ailingke proposed that "garden design with healing power can make people feel happier". eckerling shows that the primary factor of the rehabilitation garden is the emotional state and feelings that the rehabilitation garden brings to people in space [6]. Therefore, the design goal of the rehabilitation garden is to make people feel safe, feel more comfortable and relieve pressure. After that, the rehabilitation landscape was also widely used in medical institutions to help treat patients. Later, relevant literature pointed out that the rehabilitation garden did not have the effect of curing diseases, and its main functions were: first, to relieve the pressure of patients with diseases and maintain a stable balance of body and mind; Second, help patients speed up self-recovery; Third, give play to the role of medical assistance; The fourth is to provide an environment for medical staff to rest and relieve pressure; The fifth is to provide a space for quiet communication and interaction between patients and visitors [10]. After that, the rehabilitation landscape began to be used in parks and communities, not only providing an environment for relaxation and recovery of body and mind, but also a space for communication.

Smith (2015) pointed out in his research that garden design plays an important role in community rehabilitation [11]. The garden can not only provide an environment for relaxation and recovery of body and mind, but also promote communication and interaction among community residents, thus enhancing community cohesion and rehabilitation effect [12]. However, the application of rehabilitation garden design in space is still lack of landscape related to the characteristics of specific people [12]. And it has been applied to many places. However, the design of the elderly apartment rehabilitation garden in Melbourne, Australia has broken through the above problems, and has been applied to the design of apartments for the needs of specific groups. The design is designed by the Australian garden design company PLANT Design Studio, whose rehabilitation garden is located on the roof of the elderly apartment. This garden adopts many Australian native plants and low maintenance landscape elements, providing a quiet, comfortable and close to nature environment for the elderly. The success of this project is that it integrates Australian local culture and natural elements into the design, providing a unique and meaningful place for the elderly. It has broken through the diversified needs of the design crowd of the rehabilitation garden design.

## 2.2. Rehabilitation Garden of the Living Environment of the Elderly in China

With the deepening of aging, domestic scholars have begun to pay attention to the living environment of the elderly, including the government's planning of the living environment for the elderly, elements of the living environment for the elderly, evaluation of the living environment, and the impact on life satisfaction. Zheng Zhenhua and Peng Xizhe proposed that the government should pay attention to the construction of elderly communities, and make the construction of community leisure environment and interaction space, the community interaction atmosphere cultivation and organization as important tasks for the government [13]. Wu, Fangfang and Chen, Lin points out that the planning of elderly facilities is an important part of urban planning, and different communities should allocate elderly facilities according to local conditions [14]. Some studies point out that environmental indicators suitable for the elderly should include five elements: ecological environment, health environment, physical living environment, spiritual and cultural environment, and safety environment [15]. Some scholars have found through studies on ageing communities that the community public facilities environment is the main factor affecting the living space environment of ageing communities, followed by location conditions, public space environment and road traffic environment [16],

It has also been pointed out in studies that there is a serious quantitative shortage and poor quality of elderly facilities in the currently built settlements, with an outstanding conflict between supply and demand [1]. The state also proposes to create an age-friendly social environment.

Promote the accessibility and ageing-friendly adaptation of public environments. Improve the level of ageing in communities and homes. The renovation of old urban areas should be carried out in an orderly manner, with the completion of pavement levelling, barrier-free renovation of entrances and passages, anti-slip treatment of floors, etc. Handrails should be installed along the walls of staircases, wall-mounted resting chairs should be installed between floors, and safety protection should be provided in case of emergency. The community can build pavilions and leisure chairs where possible. Improve the ageing-appropriate renovation of community health service centres and community integrated service facilities (State Council on the issuance of the "14th Five-Year Plan" national plan for the development of the ageing cause and the elderly service system).

## 3. Methods

This chapter mainly discusses the whole methodology through research methods, sample objects, data collection, data analysis and final summary.

### 3.1. Research Design

This research mainly uses the qualitative research design to obtain the corresponding data and information.

Qualitative research - mainly depends on the analysis of the selected rehabilitation garden related design cases according to the research method to show the design principles that are relied on in the home care community.

The reason for choosing qualitative case analysis is that qualitative research can understand some contents related to

the research topic in more depth. Case studies can provide a more detailed and in-depth understanding of the research content of related topics, and are more representative. Analyze and integrate cases related to rehabilitation garden design, aging, community, etc. with relevant theme keywords.

### 3.2. Population and Sample

The sample objects of the search data are mainly Chinese elderly people aged over 60 who live at home.

### 3.3. Method of Data Collection

The literature search process is conducted using a combination of relevant keywords to ensure a comprehensive search of available literature. Keywords used include "rehabilitation garden", "elderly", "home-based care", "aging population", "pro nature" "Community environment" and "design", as well as other related terms, such as "therapeutic garden", "example of community rehabilitation garden", "therapeutic effect". The search term is used together with Boolean operators such as "AND" and "OR" to connect the concept set, and respectively narrow or expand the search results (Atkinson, 2018). As Atkinson and Cipriani (Atkinson, 2018) As pointed out, "AND" is used to retrieve articles that contain all the search terms within the concept, while "OR" is used to expand the search and find articles that contain at least one of the search terms (Atkinson, 2018).

The main sources of data collected are: (1) Chinese and English publications, (2) academic articles, books, reports, policy documents and gray literature, (3) publications focusing on the role of the rehabilitation garden in the community, (4) publications of the rehabilitation garden in the context of discussion, and (5) publications discussing policies and guidelines related to the rehabilitation garden.

### 3.4. Case Study

Physical and psychological characteristics of the elderly-Jin wellbeing County.

A new type of community of the future, 'Jin Wellbeing County' has become Thailand's first mixed-use development for the elderly consisting of residential, commercial units and a hospital. The planning focuses on the three antitheses of 'sustainable nature', 'physical well-being' and 'sense of community'. The design is based primarily on a physio-psychological analysis of the case that can be adopted. (Reference Figure 1 Jin Wellbeing Wellness Community)



Figure 1. Jin Wellbeing Wellness Community

Physiological aspects - as 'universal design' is another major priority, all programs are linked to 'full ramp access', sloping up and down, with handrails and no additional steps. These accesses allow elderly and disabled people to move around safely. In case of emergency, ambulances can also pass

easily. There are seats every 30-50 metres along the path so that the elderly can take a break from time to time. The rough surface material is used to reduce the risk of slips and falls and provides sufficient lighting for night use.

Psychological aspects - In order to 'engage', the spatial planning aims to increase 'meeting opportunities' and encourage cross-activity interactions, such as exercise areas and enclaves at gathering points along the stream. However, there are also private seating niches and secluded outdoor tables within the greenery, providing a sense of 'retreat'.

An edible garden allows for the 'creation' of meals and workshops together, thus enabling lifelong learning and providing a space for older people to relax. There is also a waterfall at the front of the JCHS, providing a nurturing forest atmosphere, green lawns and a swimming pool for group exercise where people can spend time or run along the jogging track on the grounds for relaxation and well-being.

Through case analysis, summarize the relevant designs for the need for physical and mental continuity.

1. Physiological needs of the elderly the physiological characteristics of the elderly are as follows:

One is the degeneration of bone and muscle system. According to research, human bones will gradually age from the age of 35. The content of human skeletal muscle starts to decline from the age of 50, which is about 1%~2% per year, until the age of 60, which is about 30%. At the age of 70, many elderly people will experience body atrophy, and their muscles will begin to atrophy. The muscle quality in the human body will decline by up to 1/2, with the most obvious degeneration of lower limb muscles. Due to the decline of the physiological mechanism of the elderly, the possibility of physical damage in the space with complex infrastructure is greatly increased [17].

The second is the decline of perception and memory. The senses of the elderly can no longer adapt well to changes in the outside world, such as changes in temperature, intensity of light, and noise in the surrounding environment, which makes them difficult to adapt to the new environment. At the same time, the brain has accelerated aging and atrophy, the number of brain cells has decreased by up to 50%, the size of the brain has shrunk, and the weight of the brain has decreased, which symbolizes that the elderly is less sensitive to daily affairs, and it is difficult to remember their own orientation and overall spatial structure. (Mi, 2018)

Therefore, the physiological characteristics of the elderly should be taken into consideration when designing.

2. Psychological needs of the elderly

According to Maslow's needs theory, the psychological needs of the elderly can be divided into the following three aspects:

First, social needs. Due to the sense of dependence caused by physical inconvenience, the elderly urgently needs emotional companionship [17]. The elderly living in the countryside is a more complex group, which mainly shows the loneliness of living apart from their children in the countryside, which makes the elderly at a loss in the health care space and confused about the complex facilities and road layout

Second, respect needs. The main ways for the elderly to gain respect include the affirmation of their own ability, family status and social status [18]. The behavior brought about by this phenomenon is mainly reflected in the psychological gap caused by the old people's difficulty in adapting to new things and being out of touch with society.

The design should consider the ability limitations of the old people to reduce their resistance to new space.

Third, self-realization needs. Many retired elderly people will be recognized by the society by enriching their retirement life and realizing self-value [15]. Appropriate self-worth activity design in the health care space can significantly enhance the elderly's sense of self-worth and happiness.

To sum up, there are a lot of potential needs in the daily life of the elderly. Only by actively observing the cognition and use rules of the elderly in space and extracting their internal deep needs can rehabilitation landscape design be better accepted by the elderly.

### 3.5. Qualitative Data Analysis

According to the qualitative case analysis and content analysis method, and the literature survey, the relevant literature review survey shows that the rehabilitation landscape design in the home-based elderly care community has brought many positive effects on the physical and mental health and life of the elderly in the context of China's severe aging. It is mainly to find out the role of rehabilitation garden design in different periods in place application and the problems that can be considered in the design by searching the keywords of related topics.

## 4. Conclusion

### 4.1. Outlook

Population aging is an objective trend in the development of human society, and since China entered an aging society in 1999, the scale of population aging has become larger and larger, and the degree of population ageing has become more and more serious. With the increasing ageing, the problems of senior citizens and empty nesters and elderly people living alone are becoming more and more prominent. 2022, the state has repeatedly issued policies for the elderly and ageing-friendly transformation [1].

So how to face the increasingly serious problem of ageing, as well as some of the health implications for the elderly and the inadequacy of national medical resources. It is no longer possible to apply the traditional home care model together with rehabilitation landscape design to the elderly. The development of the internet society is bound to be a major trend in the future, promoting the technological and intelligent upgrading of elderly products. Strengthen the scientific and technological support of elderly products. Accelerate the in-depth application of information technology and smart hardware such as the Internet, big data, artificial intelligence, fifth-generation mobile communications (5G) in the field of elderly products [2]. Support the research and development of key technologies such as intelligent interaction, intelligent operation and multi-computer collaboration, enhance the intelligence level, practicality and safety of age-friendly products such as rehabilitation aids, health monitoring products, elderly monitoring devices, home service robots and daily aids, and carry out pilot trials in multiple scenarios such as homes, communities and institutions. Combining intelligent, digital models with the traditional home care model is a direction we need to look into again. Even the application of digital rehabilitation garden design in the community for ageing in place is part of what we need to look at in the future. We will then combine digital rehabilitation garden design with digital intelligent elderly care services in our ageing-in-place communities, in line with

the development of technology, and believe that in the future the health problems of the elderly and medical resources will be solved accordingly.

To promote and create an age-friendly social environment.

## 4.2. Conclusion

The analysis of this paper shows that in the context of aging, the application of rehabilitation gardens in home care communities has a positive effect on the physical and mental health of the elderly. To a certain extent, the problem of uneven and insufficient distribution of medical resources has been alleviated. Elderly people with different health conditions have different needs for space. The Functional requirement of the elderly to the community environment are diverse, and the design needs to meet the elderly's recreational activities, humanized public places, mental and psychological needs and some basic medical conditions.

With the serious aging of the population, more and more elderly people will choose the old-age care service mode of home care. Therefore, there are currently many people who have relevant research on the design of rehabilitation gardens in home care communities. But from a practical point of view, for the rehabilitation garden community where the elderly live, there is still a lack of quantitative empirical research to prove the effectiveness of the elderly's own rehabilitation garden design in many aspects. Which sections are to be updated and revised. This is the direction we need to study further in the future.

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