

# Renovation and upgrading of pension design based on China's national conditions

Rong Lin\*

Faculty of Humanities and Arts, Macao University of Science and Technology, Macao, 999078, China

\* Corresponding Author Email: 2220000953@student.must.edu.mo

**Abstract.** As China's aging population gradually grows and people's needs for life enjoyment increase, the planning and design of China's elderly care sector need to keep pace with the times. This paper reviews the problems of China's pension model and different pension institutions, and summarizes the possible improvement methods for these existing problems. First of all, the paper finds that among the several existing pension models in China, the elderly are gradually changing from home-based pensions to institutional pensions, and then the paper conducts an in-depth discussion on the operation methods and existing problems of different elderly institutions, such as nursing homes, elderly schools, elderly communities, etc. In addition, the more significant problems of Chinese elderly care institutions are backward equipment and facilities, inadequate management and operation, and insufficient attention to building design. In response to these problems, China should strengthen the research on the psychological needs of the elderly, improve their surrounding environment, and meet certain needs of the elderly through different design methods. Overall, the abnormal age structure in China determines that the society must strengthen the construction of the elderly care field. Only by thoroughly researching and understanding the characteristics, differences, and problems of China's elderly care field can we be able to deal with the problems that are to come at this stage and in the future.

**Keywords:** Aging in China; pension agency; age-friendly design; elder care.

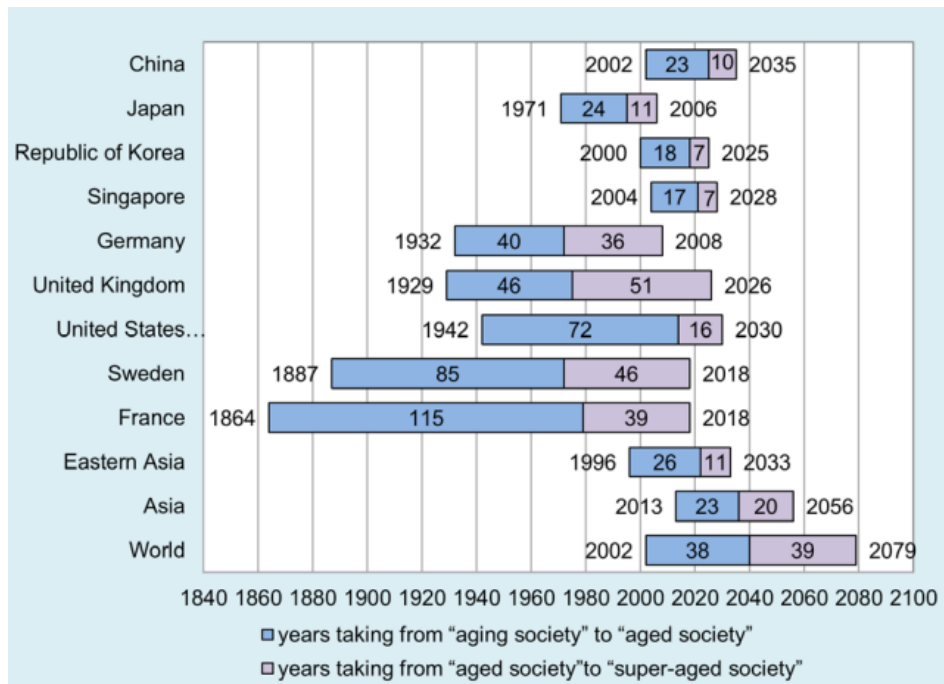
## 1. Introduction

According to the National Census, the elderly people in China occupy a large part of society and the aging trend in China also continues to rise. Moreover, in the Seventh National Census, the elderly population reached 264.02 million, which also caused many economic issues [1]. It can be seen from Fig. 1 that China has entered the "aged society" from the "aging society" faster than other European countries in the table, and is predicted that it will enter a "super-aged society" in 2024 [2]. In addition, Table 1 summarizes the changes in the proportion of China's age population in the past seven decades, and predicts the changes in the age structure in the next three decades. The proportion of young people in China is gradually decreasing, from 36.28% reduced to 18.99% between 1953 and 2020, and will continue to decrease in the future. The proportion of the elderly population has increased from 4.41% to 12.04% between that times, and is predicted to continue to rise thereafter. In fact, judging from the fact that the 15-64-year-old population is also increasing year by year, it is inevitable that more people will become the elderly in 30 years [3]. Therefore, the purpose of this paper is to deepen people's understanding of current situation of pension system and the potential problems of pension agency in China, to better improve the living environment of the elderly. Under the current situation of aging in Chinese society, the problem of old-age care for the elderly has become a key livelihood issue in China. Only by better solving this problem can people's living standards be improved.

In 2004, a book published by the World Health Organization (WHO) predicted that China's growing elderly population, increased public awareness of the quality-of-life issues, and competition for medical services would significantly increase the country's demand for long-term care [4]. Many papers and related books have conducted in-depth research on the status quo of aging in China, which also found many problems in the Chinese elderly care system and pension institutions. However, most of them did not specifically analyze the status quo of different elderly-related institutions in China. Few studies have been done to systematically propose design methods and facilities that can

be improved. To better improve the living environment of the elderly, what is most needed is an understanding of multiple parts of this field.

Overall, by improving the literacy of relevant staff and medical staff in the field, improving elderly institutions and other related facilities, and introducing hospice care to change traditional perceptions, the growing needs of these older adults can begin to be met [5]. Therefore, this paper more systematically summarizes the problems and situations of different institutions, subdivides the design of the environmental space of the pension institutions, and proposes possible improvement methods.



**Fig. 1** Year and time from "aging society" to "aged society" and "super-aged society" in China and other countries/regions [2].

**Table 1.** Demographic Pattern and Population Aging in China: Past, Present, and Future (1953–2050) [3].

| Year      | % of Population Aged |             |           |
|-----------|----------------------|-------------|-----------|
|           | 0-14 Years           | 15-64 Years | 65+ Years |
| 1953      | 36.28                | 59.31       | 4.41      |
| 1964      | 40.63                | 55.75       | 3.56      |
| 1982      | 33.59                | 61.50       | 4.91      |
| 1990      | 27.69                | 66.74       | 5.57      |
| 2000      | 22.89                | 70.15       | 6.96      |
| Projected |                      |             |           |
| 2010      | 18.49                | 72.28       | 8.59      |
| 2020      | 18.99                | 69.00       | 12.04     |
| 2030      | 16.11                | 67.42       | 16.23     |
| 2050      | 15.38                | 62.96       | 23.07     |

## 2. Status Quo of Elderly Care System in China

### 2.1. Different pension models in China

The main centralized pension models in China are divided into three categories: home-based pensions, institutional pensions, and community-based pensions. Fig. 2 shows the process, changes, and existing flaws of China's pension model [6]. Home-based care has been a commonly used mode of care since ancient times. China has a traditional concept of supporting the elderly, so the elderly at

home usually lives with their children and are supported by their children. Institutional old-age care is a popular pension model with social development and people's increasing needs for enjoying life. The elderly is placed in systematic pension institutions to be managed and taken care of by the professional staff, which is the focus of this article. Due to the rapid development of China, the updating of the pension model has not been completely in line with social progress, and China's elderly care institutions still need to be improved. Community-based pension is a model in which the elderly is concentrated in the community for aged care. It is characterized by convenient communication and comprehensive facilities. Most of the residents are elderly people who can take care of themselves. In recent years, community-based elderly care has gradually been combined with institutional elderly care. Many institutions are committed to building a systematic new type of elderly care community, integrating professional equipment and management into the community to better serve the elderly.

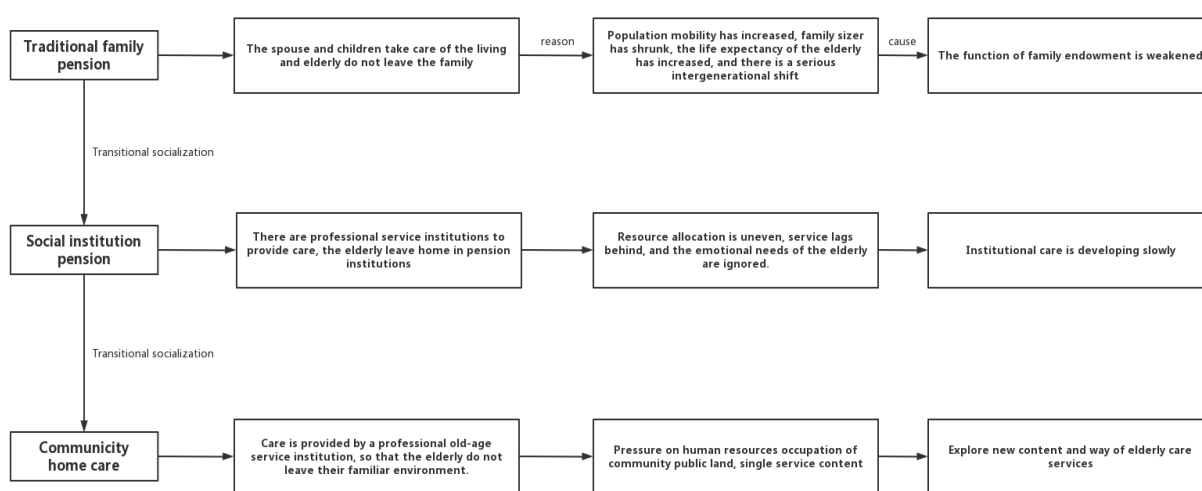


Fig. 2 The reform of elderly care services from social embeddedness [6].

## 2.2. Operation of different elderly care institutions in China

### 2.2.1 Social welfare system

A Chinese old saying goes: "Raising children to prevent old age", but as China's population age ratio is distorted, the "inverted pyramid" family structure and the number of "empty nest" families continue to increase, so socialized elderly care have become the general trend. So, the pension institutions need to be improved to ensure the living standard of Chinese families. Nursing homes and elderly apartments are the two main types of social welfare systems. These social welfare systems are equipped with catering, cleaning, entertainment, and medical care service systems. There are three types of nursing homes and elderly apartments in China, which can be operated by government agencies, non-government agencies or private investors [7]. In detail, nursing homes are a more common way for people to choose to care for the elderly in modern society. All of these types of nursing homes have professional staff to help the elderly with their daily activities. However, due to many factors such as shortage of funds and insufficient investment, public nursing homes operated by government organizations have lower hardware facilities, service quality, and management levels compared to private nursing homes, so people are more willing to choose private institutions instead of public nursing homes, and this phenomenon also leads to a waste of government resources. The living environment of private nursing homes is relatively high-grade. Some of them have independent single rooms with independent bathrooms and toilets. But in the meanwhile, these families also have to bear high costs.

Another social welfare system is the elderly apartment which is an apartment-style residence for the elderly, it cannot only reflect the elderly at home but also enjoys various services provided by society, as well as it belongs to the category of institutional elderly care. And now, elderly apartments

are gradually being integrated with senior communities. The traditional community for the elderly takes the existing families of the elderly and the elderly apartments as the living place for the elderly, led by the government, and the community builds a platform for elderly care services. It has systematic management and diverse activities, which has become the first choice of most elderly people who can take care of themselves. Moreover, the elderly community has the advantages of low cost and high efficiency, that can reduce the waste of public resources and funds, and it is more affordable than other institutions, so it can reduce the burden of ordinary family pensions. Compared with nursing homes, it has the characteristics of less investment, lower cost, lower fee, wider service, and quicker effect. And for Chinese families, consumption in aged is an important issue. On one hand, because of the filial piety concept in China, many young people will spend a lot of money on the elderly, and with the introduction of the one-child policy, Chinese families are under increasing pressure to provide for the Aged. And on the other hand, a survey done by Qiang Ren and Donald J. Treiman found that elderly people who lived with their grown children or other relatives are harder to achieve happiness and life satisfaction, and are more depressed [8]. Therefore, to consider the above two issues, it is already a general trend in elderly apartments and elderly communities, and it is bound to be more popular in the future. In order to comply with this development trend, it is important to develop the design of the elderly community, especially improving community medical care facilities and age-friendly design.

While meeting the physical needs of the elderly, their psychological problems should also be taken into account. Especially for the nursing home, which is very different from home care may cause greater psychological stress to the elderly. To adapt the elderly to live in a nursing home, families and institutions should follow closely the quality of sleep and meals, interpersonal interactions, and mood changes in nursing homes. As group-living buildings, these institutes can greatly increase communication between the elderly, but in China, there is a problem that because of the traditional concept, many elderly people are shy to speak with others and hard to adapt to a new environment [9]. To solve this problem, staffs need to receive relevant training to provide effective psychological counseling to the elderly, and the institutes also need to carry out relevant activities to help the elderly better integrate into the new environment.

### **2.2.2 Aged Education Institutions**

As a developing country, China has caught up with other countries in just a few decades, and more and more elderly people tend to join in the aged education to improve their study ability and enjoy their time. The education program for the elderly includes different courses such as communication activities, study skills, physical exercise, and so on. It is one of the important sources of happiness for the elderly. Now, many regions in China have newly built institutions for the elderly to promote learning and exchanges among the elderly. However, China's senior education still needs to progress. Most of the aged prefer to study in the residential or senior citizen centers which are near their house, so they can have better communication with their neighbors and they do not need to worry about traffic problems. Moreover, although Chinese aged education programs have many special classes, such as calligraphy, traditional Chinese painting, and many other traditional skills, the institutions also need to pay more attention to the instrumental activities which can greatly help the elderly to integrate into society [10]. Besides, a characteristic of China's education is the uneven distribution of regional resources, and senior education is no exception, so the government and institutions still need to take measures to use limited resources better.

### **2.2.3 Hospice**

Hospice is a medical-related discipline which has been valued and developed recently. It is mainly aimed at the pain and many problems in the dying process of dying patients, focusing on care, providing patients with a comfortable medical environment different from the hospital, warm interpersonal relationships and maintaining their dignity, and helping patients complete the final journey of life. Besides that, palliative care in hospice is now very common, and this treatment can improve and control the patient's symptoms to a certain extent [11]. In China, many severely ill

elderlies prefer to back home instead of hospitals, so the hospice which has a better environment and excellent psychological counselors can be an optimum option. However, although hospices have received some attention abroad, they are still lacking in China. In order to improve the elderly care sector in China, it is necessary to provide multi-faceted care for the elderly and their families, so government and hospitals need to pay more attention to the hospice field in the future.

### **3. Suggestions for Improvements to Chinese Aged Care Institutions**

#### **3.1. Existing Problems in China's aged care institutions**

WHO believes that in age-friendly communities and institutions, policies, services and operating systems related to living resources and the social environment enable older persons to lead safer, healthier lives and be more socially connected [12]. However, elderly care institutions in China are severely uneven due to their vast territory and uneven distribution of resources. For example, there are many problems related to settings for different functional areas, perfect spaces design, suitable facilities and services, qualified management and nursing staff [13]. And these problems do not only exist in the elderly care community. The design of elderly care institutions has not kept pace with the progress in the past few decades, and the treatment of indoor space and outdoor environment has not been adequate, which had also resulted in a lot of waste of resources. Especially in public elderly institutions. Because of the shortage of funds, the living enjoyment of the elderly is neglected, and only basic functions have been achieved, but the psychological needs of the elderly at this stage have not been met at all. Overall, the main problems that Chinese elderly care institutions need to solve are still the optimization of the environment and facilities, the efficient design of the functional layout, and the improvement of service levels.

#### **3.2. Age-friendly space design**

The age-friendly design includes age-friendly detail design, barrier-free environment design, aging space design, the introduction of the emergency system, and many other aspects. Generally, old people suffer more from uncomfortable environments than young people [14]. In order to make the living of the elderly safer, elderly care institutions should start with the transformation of space. At this stage, there are roughly four main design spaces for elderly institutions: service space, public space, viewing space, and medical space. Firstly, service spaces are commonly used in the daily living of the elderly, including the living room, bathroom, and other interior spaces, and this kind of activity area needs to be centralized because a too scattered service space will reduce the activity efficiency of the elderly. And then, the public space provides the elderly with communication and leisure, and entertainment. This type of space is required both indoors and outdoors, such as indoor canteens, libraries, entertainment rooms, and outdoor squares. The improvement in the aesthetics of these spaces can satisfy the psychological needs of the elderly. But at the same time, these spaces also need to be treated with modular privacy. For example, many elderly people in elderly care institutions have certain needs for their children to visit and interact with friends. At this time, it is necessary to set up a private space in the institution to ensure the privacy of the elderly. Thirdly, the viewing space generally includes indoor lounges and outdoor parks and gardens. By focusing on aesthetics in design, the effect of appeasing the elderly and improving happiness is achieved. Such a space has certain requirements for planting plants, home placement, and material use. Finally, the medical space is a space to help the elderly recover and maintain health care. Generally, elderly care institutions would cooperate with surrounding medical institutions to ensure the medical needs of the elderly, so most of these spaces are used for emergency treatment. Besides, some traffic spaces connect different functional areas of the elderly care institution. For the convenience of use, the connection of various functional areas in the elderly care institution should be more direct and efficient, which not only facilitates the memory and actions of the elderly but also facilitates the work of service personnel. In addition to the space suitable for aging, elderly care institutions also need to design commonly used

spaces according to their functions. For example, the teaching space of the elderly university and the outdoor space of the elderly care community needs further design.

### **3.3. Age-friendly environment design**

The generalized aging-friendly environmental design includes interior design and landscape design. The design for the elderly should take into account that most elderly people are weaker than ordinary people in various aspects, so many assisted living designs are adopted, but at the same time, the design suitable for aging cannot be equal to the design for the disabled. Instead, we should pay attention to the independence of a part of the design, to exercise the living ability of the elderly [15]. In addition to helping the elderly live, the age-friendly design should also help the elderly improve their self-care ability to improve the living standard of elderly. Moreover, in aged interior design, in addition to visible furniture and colors, factors such as temperature, humidity, sound, and light also need to be considered. For example, studies have found that lighting is an important environmental attribute that promotes the physical and mental health of the elderly. Since the elderly are more sensitive to environmental changes, the brightness and temperature of light will have a greater impact on the elderly than in the young [16]. Furthermore, many methods can be combined with age-appropriate design to improve the quality of life of the elderly, such as horticultural therapy, animal therapy, and biophilic design. Linking the old-age space with biology and nature produces to create non-rhythmic sensory stimulation for the elderly to improve the visual enjoyment and spiritual enjoyment of the elderly.

### **3.4. Intelligent design**

In today's Chinese society, there are already many fields that use scientific and technological achievements to carry out efficient production activities, and the field of elderly care is no exception. At present, the more commonly used intelligent devices in China are mostly designed for life assistance, including emergency alarm bells, intelligent sensor night lights, positioning, vital signs monitoring, and so on, which have had a positive impact and convenience on various modes of elderly care, especially home-based elderly care. However, many elderly care institutions in China still need progress in intelligent management. In the home care model, due to limited funds, people can choose to intelligent some daily necessities to assist the elderly in their daily lives. In elderly care institutions and communities, people can try to manage the intelligence of the system and the intelligence of commonly used equipment, so as to avoid letting the elderly directly use complex equipment. This can both improve the living experience of the elderly and greatly reduce the pressure on staff, thereby improving the quality of the pension institutions.

## **4. Conclusion**

Due to the rapid development of society and the proposal of the birth policy, the level of aging in China is gradually accelerating. And its pension system and design are facing challenges. This paper summarizes different pension models in China and analyzes different pension institutions. It is found that China's pension system has gradually shifted from home-based pensions to institutional pensions, which also means that the needs of people and the improvement of social living standards, including institutions for the elderly, such as nursing homes, elderly apartments, and elderly schools, are not fully up to date with the times, and many areas still do not have systematic management and complete facilities and equipment. In response to these problems, this paper collects and understands the main problems of the current pension model and pension institutions, and proposes relevant design methods and transformation models that can be applied to new pension institutions. Chinese elderly care institutions should focus on improving the management system and facilities to improve the elderly's quality of life at this stage. However, while society is progressing, the field of elderly care should also be committed to meeting the living needs of the elderly, and conduct research on the

psychological aspects of the value realization of the elderly and self-affirmation that many institutions have not paid enough attention to.

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