Review

DOI: 10.5582/bst.2022.01068

# Current state of care for the elderly in China in the context of an aging population

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**SUMMARY** The aim of the current study was to review the current state and characteristics of the elderly population in China in the context of aging, difficulties and challenges faced by older people, and efforts of the current Chinese Government in this area. The process of population aging in China began to accelerate in the late 1970s and has continued to increase at a rate of about 3.2% per year since then. This process took more than 45 years in developed countries, while it took only about 27 years in China, and aging may continue to increase for a long time. China is now moving toward a superannuated society due to declining fertility rates and increasing life expectancy. There is a great need for care due to the high disease burden among older people. However, more than 1 million "families have lost their only child", and this number is increasing annually by about 76,000; moreover, there are a large number of "deficient families [with an injured family member]" in China. These families face greater difficulties due to aging and need to rely on society for more support given the lack of care provided by their children or spouses. The current study has focused on improving the quality of life of older people, helping them achieve healthy aging, and to assist the country in further providing care for the elderly.

***Keywords*** integrated elderly and medical care, care for the elderly, elderly care consultant system, Internet + care for the elderly, community-embedded care for the elderly, population aging

## 1. Introduction

At present, China has the largest elderly population in the world (*1*).According to the results of the seventh national census in 2020, people ages 60 and older accounted for 18.7 % of China's total population, up to 264 million people, while those age 65 and older accounted for 13.5 %, up to 190 million people (*2*). Population aging has become a significant trend in China's social development, and the degree of population aging in China has further intensified. In conjunction with accelerating population aging, the issue of care for the elderly in China has increasingly drawn the high attention of the government and the community.

In terms of the course of one's life, the health status of older adults decreases with age. Among China's huge elderly population, a relatively high proportion of the elderly have chronic diseases or other geriatric conditions, and a considerable portion of the elderly are in poor health. Data from the 2020 China Health Statistics Yearbook (*3*) indicate that in 2019, elderly people over 60 years of age accounted for 40.01% of patients discharged from hospitals. This indicates that the health status of the elderly in China is poor. The massive size of the elderly population and the poor health of the elderly have led to a huge demand for health and elderly care, and the demand is multi-faceted and varied. This has led to a series of problems and great challenges in terms of the development of health and nursing care for the elderly.

China is a vast country, and the problem of unbalanced socio-economic development in different regions is relatively pressing. China is considered a developing country, but its GDP exceeded the 15.87 trillion US dollars mark in 2020 and the country become the world's second largest economy (*4*). Nonetheless, China's per capita income is still low, and China's aging population is more serious and complicated than that of other developed countries and regions in the world. Vigorous development of care for healthy elderly is a

complex systemic project that requires the joint efforts of the entire society to create a social environment conducive to the healthy aging of the elderly, to improve the quality of life of the elderly population, and to help the elderly enjoy long and healthy lives. The aims of the current work were to analyze the problems and challenges faced by China's care for the elderly in the context of aging and to summarize the Chinese Government's current efforts to provide care for the elderly.

## 2. Status and characteristics of the aging population in China

### 2.1. A large and rapidly growing aging population

The process of population aging in China began to accelerate in the late 1970s and has continued to increase at a rate of about 3.2% per year since then (*5*). This process took more than 45 years in developed countries, while it took only about 27 years in China, and aging may continue to increase for a long time (*6*). China is now moving toward a superannuated population due to declining fertility rates and increasing life expectancy. According to the National Bureau of Statistics (*7*), the natural population growth rate in China dropped from 25.9% to 1.45% between 2013 and 2020, while the number of people over the age of 65 increased by 58 million, accounting for a 6.8% increase. The dependency ratio of the elderly population increased from 13.1% to 19.7%. By 2020, the number of people ages 65 and older in China reached 191 million, accounting for 13.5% of the population. The extent of aging has reached 18.7%, resulting in a moderately aging population (Table 1) (*8*). According to the Report of Forecasts of Trends in Population Aging in China (*9*), from 2021 to 2050, China will enter a phase of accelerated aging. In addition, the proportion of the elderly population age 65 and older will reach 18.44% in 2030, 26.22% in 2040, and 29.80% in 2050. From 2051 to 2100, China is expected to have stable and increased aging. In 2051, the size of the elderly population in China will reach a peak of 437 million, and its size will stabilize at 300-400 million. Around 2030, the dependency ratio of the elderly population in China is expected to reach about 25%, and around 2045, it will exceed the ratio in developed countries. Moreover, it will be higher than the world average for a long time, and the aging population will be a heavy burden on society.

### 2.2. Rapid aging of the population in China

The population ages 60-69 is called the younger elderly population, that ages 70-79 is called the moderately elderly population, and that ages 80 years and older is called the older elderly population (*10*). With improvements in living standards and medical technology, average life expectancy is increasing. The average life expectancy was 69.03 years in 1990, 71.73 years in 2000, and 75.01 years in 2010; average life expectancy is expected to reach nearly 80 years in 2050 (*11*). As the average life expectancy increases, the age structure of the elderly population will expand at the top, the elderly at the top of the structure will age, and advanced aging of the population will become more evident. The number of older elderly in China was about 7.766 million in 1990 and 20.989 million in 2010, accounting for about 11.8% of the total elderly population. By 2020, the number of senior citizens reached 35 million, accounting for about 14.0% of the total elderly population (Figure 1A) (*8*). The elderly population ages 80 and older is forecast to be 54.48 million in 2030 and 133 million in 2050, accounting for 26.2% of the world's elderly population (*12*). The growth rate of the older elderly population is much higher than the growth rate of the elderly population overall. A large number of older people will more likely live with illnesses and be bedridden. In addition, most of them cannot take care of themselves and need care and attention, requiring a large amount of medical resources per capita.

### 2.3. Aging trends are reversed in urban and rural areas

China's urbanization is accelerating, with a large number of the young and middle-aged rural labor force migrating to cities. Aging of the rural population is more severe and faster than that of the urban population, and aging is one of the serious problems facing rural

**Table 1. Population size, dependence, and natural population growth rate of older***

| Year | Population size (billion) | Proportion (%) | Elderly dependency ratio (%) | Natural population growth rate (%) |
|---|---|---|---|---|
| 2013 | 1.32 | 9.7 | 13.1 | 5.9 |
| 2014 | 1.39 | 10.1 | 13.7 | 6.71 |
| 2015 | 1.45 | 10.5 | 14.3 | 4.93 |
| 2016 | 1.50 | 10.8 | 15.0 | 6.53 |
| 2017 | 1.59 | 11.4 | 15.9 | 5.58 |
| 2018 | 1.67 | 11.9 | 16.8 | 3.78 |
| 2019 | 1.77 | 12.6 | 17.8 | 3.32 |
| 2020 | 1.91 | 13.5 | 19.7 | 1.45 |

*People ages 65 and older in China (2013-2020) (Data source: *Ref*. (*8*)).

areas (*13*). According to data from the third to sixth national censuses, the rural population over the age of 65 accounted for 5% of the total rural population in 1982, 0.09 percentage points higher than the national average. In 1990, the rural population ages 65 and older accounted for 5.74% of the total rural population, 0.17 percentage points higher than the national average. In 2000, the rural population ages 65 and older accounted for 7.5% of the total rural population, 0.54 percentage points higher than the national average. In 2010, the rural population ages 65 and older accounted for 10.06% of the total rural population, 1.14 percentage points higher than the national average (*14*). Statistics indicate that in 2008, aging in urban areas was 0.13% lower than that in rural areas, and population aging in rural areas reached about 9.79% (*15*). Aging trends are reversed in urban and rural areas, but according to regulations governing China's population development by 2040 those trends will change, and the urban population will be older than the rural population (*9*). The phenomenon of a growing disparity between aging of the urban and rural population is a rarity in the world.

## 3. Challenges due to current issues with care for the elderly

### 3.1. The problem of older people living alone and insufficient funds for them

Due to the longstanding "one-child" policy and population migration to big cities, the problem of older people living alone in China has gradually become more pressing (*16*). According to the China Development Research Foundation, the number of older people living alone in China will exceed 30 million in 2025, and it will reach 53.1 million by 2050 (Figure 1B) (*17*). In addition, "families who have lost their only child" in China cannot be ignored. Currently, there are more than 1 million "families who have lost their only child", and that number is increasing annually by about 76,000; in addition there are also a large number of "deficient families [with an injured family member]" in China (*18*). Due to the lack of care provided by their children or spouses, these families face greater difficulties in aging and need to rely on society to get more support during aging.

The process of population aging is relatively faster than economic and social development. Consequently, China is facing the problem of aging. As its population ages, China's GDP per capita is significantly lower than that of the US, Japan, or South Korea (Figure 2). The US had a moderately aging population in 2014, Japan did so in 1995, and South Korea did so in 2018. At those times, the US had a GDP per capita of $51,000, Japan had a GDP per capita of $43,000, and South Korea had a GDP per capita of $33,000 (19). However, China's current GDP per capita is only $12,500 (*20*), which is still

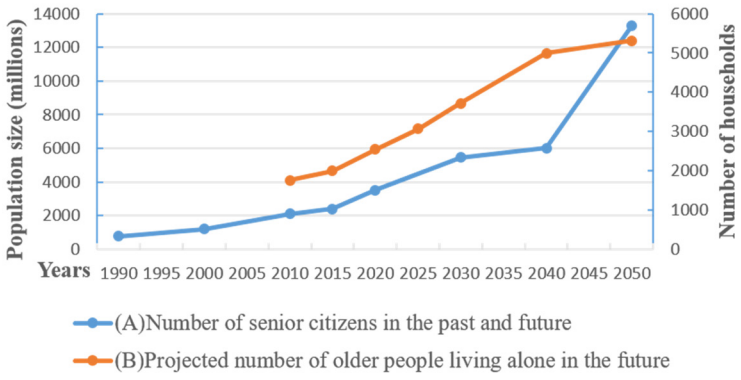


**Figure 1.·(A) Number of senior citizens in the past and future.** Data source: China. Development Research Foundation. **(B) Projected number of older people living alone in the future.** Data source: China. Development Research Foundation. (Number of households). Data source: National Bureau of Statistics historical census data; projections calculated from the following sources: National Bureau of Statistics of the People's Republic of China. China 2000 Population Census Information [M]. Beijing: China Statistical Publishing 2002.

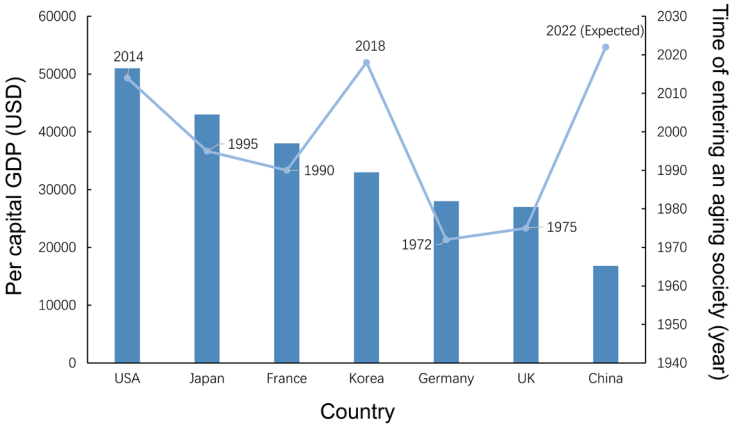


**Figure 2. China has a phenomenon of "getting old before getting rich"** (USD). Entering an aging population GDP per capita (USD, constant prices). Data source: World Bank, *https://data.wordbank.org.cn*

**Table 2. Concomitant chronic diseases among the elderly of different ages in 2010***

| Age (years) | Number of patients with chronic disease | 1 chronic disease No. (%) | 2 chronic illnesses No. (%) | ≥ 3 chronic diseases No. (%) |
|---|---|---|---|---|
| 60 - 64 | 5,160 | 3,833 (74.28) | 1,172 (22.71) | 155 (3.01) |
| 65 - 69 | 3,698 | 2,636 (71.28) | 923 (24.96) | 139 (3.76) |
| 70 - 74 | 2,867 | 1,988 (69.34) | 759 (26.47) | 120 (4.19) |
| 75 - 79 | 1,655 | 1,183 (71.48) | 399 (24.11) | 73 (4.41) |
| ≥ 80 | 936 | 659 (70.40) | 222 (23.72) | 55 (5.88) |

* Data source: *Ref*. (*29*).

lagging behind that of the US, Japan, and South Korea in the same period, and the problem of "getting old before getting rich" is more serious in China. The shortage of elderly care facilities has always been a major challenge. Elderly care facilities developed significantly under the "12th Five-Year Plan" and "13th Five-Year Plan," (*21*). However, the unbalanced and insufficient configuration of elderly care facilities is still a bottleneck that restricts the development of quality facilities, especially in large- and medium-sized cities and old communities (*22*).

In terms of pension funding, nearly half of China's older people rely on pensions as their main source of livelihood, resulting in an increase in their financial independence. According to Peng *et al*. (*23*), 80.1% of children in China provide intergenerational transfers (including commutation of various types) to their elderly parents. At the national level, the top three main sources of livelihood for older adults with the highest percentages were their own pensions (46.2%), financial support from their children (21.7%), and income from their own labor or work (16.1%) (*24*). Compared to the results of the sixth census in 2010, the proportion of the elderly population in China relying on pension as their main source of income has increased from 24.1% to 46.2%, an increase of about 22 percentage points. Moreover, according to the China Longitudinal Aging Social Survey, 91.25% of the urban elderly population received pensions in 2014, and pensions were the main source of livelihood for 71.93%; although 70.79% of rural older people received pensions, only 17.22% relied on pensions as their main source of livelihood (*24*). However, pension contributions have decreased in amounts and size due to the decline in the working population and a series of corporate tax cuts and fee reductions introduced by the Chinese Government. That said, the population aging combined with increasing life expectancy has led to an increase in the number and frequency of pension payouts. The imbalance between supply and demand has led to a widening gap in the basic government pension in China (*25*).

### 3.2. A heavy disease burden and greater need for care among older people

The National Assessment Report on Aging and Health in China states that about 33% of the total disease burden in China is attributable to health problems in the elderly population (*26*). The disease burden among older people in China is higher than that in other low-income countries due to the increased per capita burden of chronic diseases.

According to statistics, nearly 80% of older people in urban and rural areas of China suffered from chronic diseases in 2015, and 48.8% of them had two or more chronic diseases at the same time (comorbidities) (*27*). The rate of comorbidities among elderly inpatients was even higher at 91.36%, with 4.68 diseases per capita (*28*). According to a 2010 large-scale survey (*29*), the risk of comorbidity increases with age (Table 2), with the proportion of elderly residents age 80 and older suffering from 3 or more chronic diseases (5.88%) being 1.95 times higher than that of elderly residents ages 60-64 (3.01%). In 2012, nearly 80% of deaths in the Chinese population ages 60 and older were attributable to chronic noncommunicable diseases such as hypertension and diabetes, and the disability rate in the population ages 60 and older was 3.6 times higher than that in the total population (*30*). Concomitant chronic diseases and multiple illness lead to an increase in the number of disabled and semi-disabled older people. The projections (*31*) indicate (Figure 3) that the number of disabled and semi-disabled older people in China reached 76.11 million in 2020 and will increase to 120 million in 2050. There are more than twice as many semi-disabled older people as disabled older people, but the number of disabled older people is increasing faster than the number of semi-disabled older people. Moreover, predictions indicate that there will be 64.63 million semi-disabled older people and 1148 disabled older people in 2030. By 2050, the number of semi-disabled older people ages 80 and older in China will reach about 100 million, with an average annual growth rate of about 3%, and the number of disabled older people will reach 20.72 million, with an average annual growth rate of 3.7%, resulting in a more serious burden of disease and care (*32,33*).

The proportion of older people who need home medical care and professional caregivers continues to increase because of their limited mobility, reduced ability to take care of themselves, and inability to receive timely medical assistance due to multiple diseases. A survey indicated that older people have a greater need for community medical care (16.30%); the greatest needs are

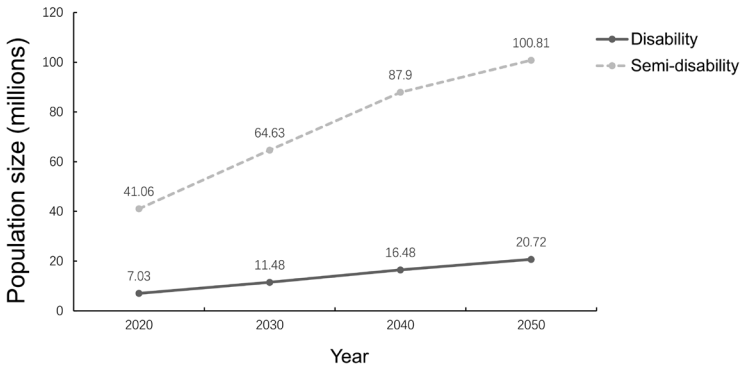


**Figure 3. Scale of disabled and semi-disabled older people in China from 2020 to 2050.** Data source: Social Development Research Department, Development Research Center of the State Council.

for at-home nursing (19.80%) and rehabilitation (14.90%) (*34*). A survey on the care needs and satisfaction of older people ages 80 and older indicated that 69.1% of the elderly needed care, 46.7% needed spiritual comfort, 42.3% needed life care, and 31.2% needed home medical care (*35*). In addition, there is a massive need for at-home nursing care among older people who are disabled and have limited mobility. A survey in Chaoyang District, Beijing, revealed that 88% of chronically ill older adults in the community needed home care, but the actual home care available was far from able to meet that need (*36*). After 2030, the ratio of the elderly population in China will approach the current level in developed countries. Even if it reaches the 75$^{th}$ percentile of nurses per 1,000 population in current developed countries, the number of nurses in China will still need to reach about 10,206,500 in 2030, which is a huge gap in nursing resources compared to the number of nurses at the end of 2019 (4.45 million) (*37*). According to a study by Wang *et al.* (*38*), the number of community nurses per 1,000 population in various provinces in China is 0.02-0.45, which is much lower than the current status quo of 2.94 nurses per 1,000 population. In addition, the proportion of community nurses to community health technicians in each province is 31-48%, which differs significantly from the 50% of nurses proposed by the China Health and Welfare Commission (*39*). Furthermore, the number of caregivers in elderly care facilities is also lacking. According to a recent survey conducted in Tianjin, the ratio of elderly to caregivers in elderly care facilities is 1:0.16 (*40*), which is far from the standard of 1:0.8 proposed by the Chinese Health and Welfare Commission (*41*).

### 3.3. Challenges of the model of care for the elderly

#### 3.3.1. Reduction in traditional family care for older people

In terms of the choice of where to retire, more than 90% of the elderly expect to retire at home. According to the data, 68.4% of older people plan to retire to their own home while or 25.8% plan to retire to their children's home, accounting for 94.16% in total (*42*). In a survey of 6,997 older people, 89.1% chose home-based care and 8.2% chose institutional care, indicating that a vast majority of older people expect to receive home-based care, and home-based care was the most common form of care chosen by these people in China (*43*). Family members are the primary caregivers of older people. The aforementioned survey indicated that older people mainly relied on their children's families to care for them. About 10% of people still take care of their elderly parents. Moreover, 94% of these primary caregivers are family members, including spouses, sons, daughters, and daughters-in-law. Of them, 9.93% still had to care for their elderly parents (*34*).

However, the changing family structure and current economic and social developments have posed serious challenges to this model. Due to the continued decline in the fertility rate, families in China are tending to be smaller, have a core structure, function weakly, exhibit discrete relationships, and involve high risks, leading to issues with care for the elderly. With the continued population trends, the risk of a family having an only child is 4-2-1 and the structure is fragile (*44*). The number of deficient families, including those whose only child has died or been injured, and elderly empty-nest families separated by intergenerational living has increased, greatly challenging the ability of families to withstand pension risks (*45*). Many adult families with only one child lack support and emotional comfort from their offspring; in addition, home care is seriously lacking. A survey indicated (*46*) that 49.03% of children can be with their parents three times a month or even less, while only 29.13% can be with their parents six times a month or more, due to work and other reasons. Therefore, relying solely on the family itself to address the long-term care of older people is almost impossible. The elderly need long-term care due to chronic illness, comorbidities, disabilities, and other health problems, requiring caregivers to have professional medical knowledge and standard nursing skills. Long-term care includes formal and long-term care ranging from diet and daily care to emergency care or rehabilitation (*47*). A survey on long-term care for the elderly in Shanghai in 2010 found that (*48*) 30.3% of families cited a lack of professional nursing knowledge as the biggest difficulty in caring for the elderly with long-term disabilities,

**Table 3. Distribution of places for older people in China from 2012 to 2018***

| Year | Number of retirement spaces (million) | Growth rate (%) | Number of spaces for the elderly per 1,000 older people (million) | Growth rate (%) |
|---|---|---|---|---|
| 2012 | 416.5 | 12.80 | 21.5 | 7.50 |
| 2013 | 493.7 | 18.54 | 24.4 | 11.49 |
| 2014 | 577.8 | 17.03 | 27.2 | 11.48 |
| 2015 | 672.7 | 16.42 | 30.3 | 11.40 |
| 2016 | 730.2 | 8.55 | 31.6 | 4.29 |
| 2017 | 744.8 | 2.00 | 30.9 | -2.22 |
| 2018 | 746.4 | 2.15 | 29.9 | -3.24 |

* Data source: *Ref*. (*51*).

precluding family caregivers from maintaining their normal living conditions and also rendering them powerless. Physical and mental fatigue, which imposes a heavy psychological burden on caregivers, is also detrimental to the care of patients (*49*).

3.3.2. Insufficient material and human resources for social services and limited acceptance among the elderly

At present, the home-based model of community care for the elderly is strongly advocated. The infrastructure in some regions is relatively weak due to large regional differences in economics, and the home-based system of community care for the elderly is relatively perfect in developed Beijing, Shanghai, Nanjing, and other places. For inland cities such as Xi'an and Jinan, community home care started late based on the number of places per 1,000 older people. For example, in Hangzhou, Nanjing, Changchun, and Wuhan, the number of places per 1,000 for the elderly has reached more than 30. The number of places for 1,000 older people in Taiyuan is only 5.8. In Lhasa, Harbin, Jinan, and other places, the actual number of older people far exceeds the registered elderly population, and hence there are only about 7 places for every 1,000 older people (*50*). The overall supply of places in elderly care facilities is insufficient, and the occupancy rate is not high. From 2012 to 2018, the number of places for older people in China has increased rapidly while the number of places for older people per 1,000 people initially increased and then decreased (Table 3) (*51*). According to international standards, 50 places are needed per 1,000 older people. Estimates reveal that there are 8 million places for the elderly population in China, but currently, only 2.662 million places are available, representing a gap of 5.4 million places (*52*). The proportion of the elderly population in care facilities is low and declining, dropping from 1.26% in 2012 to 0.72% in 2017. Even older individuals in care facilities in Beijing account for only 1.18% of permanent older residents, and only 16.6% of disabled older people requiring care are in care facilities (*53*). Another survey of 22 pension facilities in China indicated that the highest occupancy rate is 93.57%; the lowest is 58.82%, and the rate is mostly around 60-70% (54).

For older people with poor health, such as incapacitating chronic diseases and comorbidities, two difficulties still exist when they want to obtain institutional care. Most of the current nursing care facilities have separated medical and nursing care, or they offer a low level of medical care, so they fail to meet the basic medical needs of older people; as a result, health care and long-term care of the elderly are severely limited (*55*). Zhao *et al*. (*56*) examined private facilities for the elderly in Qingdao. They found that the current level of medical care was low, and problems with nurses included limited quality, a low salary, and a high turnover rate. Tang *et al*. (*57*) examined all of the social institutions registered with the Civil Affairs Bureau in 13 districts and counties of Nanjing and they analyzed the staffing of facilities for the elderly. Results indicated that facilities for the elderly in Nanjing were relatively poor, with fewer than 30% meeting standards. Most were not staffed with doctors and nurses (64.8% had no doctors, 76.7% had no nurses, 18.5% had no caregiver, and 16.3% of them had no staff). Wang *et al*. (*58*) examined 15 facilities for the elderly in Fuzhou, mainly analyzing the distribution and scale of facilities for the elderly and medical and health care. They found that most facilities for the elderly had a clinic with more than 20 common medicines and simple medical instruments. Combining a literature review and field studies, Chen *et al*. (*59*) selected 17 facilities for the elderly in Hangzhou from which to collect basic information on facilities for the elderly and nursing staff to examine the current state of care for the elderly in facilities. Results indicated that facilities for the elderly in Hangzhou had problems such as a shortage of nursing staff and staff with a low level of education.

In a survey of 6,997 older people, 89.1% chose home care and 8.2% chose institutional care. These figures were similar to the Beijing plan of 90-6-4 care for the elderly (90% of the elderly cared for at home, 6% cared for in the community, and 4% cared for in nursing homes) (*43*). The 90-7-3 plan of care for the elderly proposed by Shanghai (90% of the elderly cared for at home, 7% cared for in the community, and 3% cared for in nursing homes) and the and the 90-

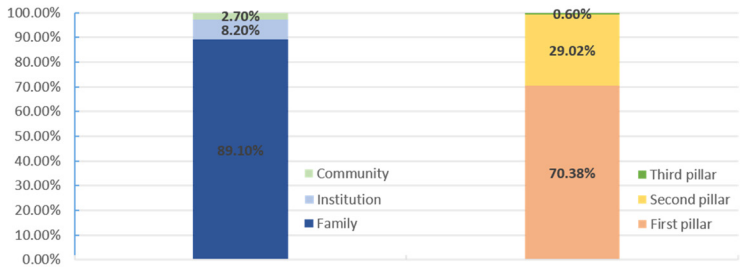


**Figure 4.·(A) Comparison of the acceptability of older people in the social pension model.** Data source: Analysis of older people's willingness to retire and factors influencing that decision in Shandong Province by Hongjuan Liu [D]; Shandong University, 2019.·**(B) Structure of China's pension funds with three pillars in 2021.** Data source: National Bureau of Statistics public data.

6-4 plan of care for the elderly proposed by Beijing differ (*60*). According to a survey of older individuals in facilities, 77% think they are basically healthy and 40% live in the facility without being cared for. For older individuals who cannot live alone but who do not need full-time care, care in a facility is a huge waste of resources (*61*). In addition, the economy is also an important factor affecting older people's transition to elderly care facilities. A survey of 1,664 older people indicated that 10.52% had no financial resources, 15.87% had no pension, 44.11% had no pension money, and 60.94% had medical needs (*62*).

## 4. Examination of care for the elderly in the context of aging

The growing number of the elderly population and the lag of care for the elderly has led to increasingly pressing problems related to care for the elderly in China. Hence, the system and model of care for the elderly suitable for national conditions of China need to be urgently explored to rationally allocate pension resources and improve the quality of care for the elderly.

### 4.1. Development of a multi-tiered pension system

China has developed a three-pillar system of social security for the elderly. The first pillar refers to the national basic pension, the second pillar refers to the supplementary pension from an employer (including an enterprise annuity or occupational annuity), and the third pillar refers to a personal commercial pension (*63*). The first of those three pillars is most prominent (*64*). The gap continues to increase every year as the second and third pillars of the pension system remain limited (Figure 4) and slowly increasing. According to predictions in a relevant report (*65*), China is expected to have a pension deficit of $ 1.27-1.59 trillion over the next 5-10 years, and this will increase further over time. However, the report also points out that the development of the third pillar of the pension system has the weighty task of making up the pension deficit and facilitating the development of the capital market. At present, the third pillar of the pension system is in its early stages of development in China, but it has great potential. In 2018, five ministries and commissions, including the Ministry of Finance, announced the implementation of tax-deferred pension insurance pilot programs in Shanghai, Fujian Province, and Suzhou Industrial Park (*66*). By the end of 2020, the China Banking Regulatory Commission had approved 23 insurance companies to operate tax-deferred pension insurance in 5 batches, with a total of 66 products on the market and a cumulative premium income of $67.62 million; the number of insured totaled 48,800. In the market of social security for the elderly, the balance of social security funds for the elderly reached $ 0.16 trillion yuan at the end of 2019 (*67*). Income from premiums for commercial pension annuity insurance in 2020 totaled $11.30 billion (data from the China State Council Information Office and the Insurance Association of China) and more than $ 92.06 billion in insurance liability reserves had been accumulated; this amount is expected to reach $ 0.95 trillion by 2025 (*68*). Market expansion can be expected in the future. Target retirement funds have steadily increased, growing by $ 10.2 billion as of the end of the first quarter of 2021 (*69*).

### 4.2. An innovative model of care for the elderly

#### 4.2.1. Integrated elderly and medical care

Integrated elderly and medical care is generally considered to be a health care model that provides life care, health management, and medical care for older people through the integration of medical and elderly care (*70*). The aims are to meet the health care needs of elderly individuals, to improve their health, and to reduce the burden of care for the elderly on family members and society, in addition to improving the allocation of social resources. The 2019 China Health Conference emphasized the promotion of a balanced population and healthy aging, the construction of an elderly care system, the integration of medical care and elderly care systems, and the full-fledged promotion of integrated medical care (*71*).

Li *et al*. (*72*) surveyed Henan Province and found that 55.0% of older individuals needed a combination of medical and elderly care; the greatest need (64.8%) was for follow-up of chronic diseases. The number of people in need of family medical consultations and health care reached 50.6%. Tong *et al*. (*73*) examined a medical facility in Chongqing and found that the model of medical care for the elderly worked well; satisfaction

with the facility among older people was as high as 98%.

In practice, the acceptance of integrated elderly and medical care needs to be further encouraged and promoted in terms of usage and awareness. Wang *et al*. (*74*) surveyed 298 disabled older people in Hangzhou and found that the first 5 services they cited were all related to basic medical care. In addition, more than 50% cited only 4 services, and less than 20% cited 22 services. Results indicated that community support services with a combination of elderly care and medical care were not ideally used by disabled older people in an urban area. A survey of the older people in 12 elderly care facilities in different districts of the City of Xi 'an (*75*) indicated that 68.4% did not know or had never heard of the knowledge and policies related to the combination of elderly care and medical care.

4.2.2. The "Internet+" model of care for the elderly

The Internet+ model of care for the elderly uses Internet technology as a means to integrate artificial intelligence and the Internet with existing home, community, and institutional care for the elderly (*76*). The Internet+ model transforms and upgrades traditional care for the elderly, fully exploring the consumption habits and preferences of the elderly by collecting big data, and the combination of "online and offline" aspects allows vast and varied care and products, facilitating comprehensive care for the elderly. The Internet+ model can involve care for the elderly provided by facilities, communities, and home care centers using "Internet+" technology, or care provided by online personnel using their own network information platforms (*77*). The "Internet+" model of care for the elderly has 4 main elements: an oversight body, a big platform, care providers, and a specialized link The government is the oversight body, civil affairs bureaus create a national platform to provide information on caring for the elderly and enter their basic information, care providers are the companies providing care for the elderly, and a specialized link uses detailed information to improve the accessibility, accuracy, and public approval of care for the elderly (*78*).

"Internet+ medicine" can enhance the innovativeness and continuity of medical care, provide home care to address the problems of older people's limited mobility and bad experiences in hospitals, and also significantly reduce overall medical costs (*79*). Song (*80*) contends that "Internet+" has become one of the most promising "sunrise industries" with the continued development of Internet-based business. In 2010, the National Health Commission of China issued a notice and announced a pilot program to implement "Internet+" medical care (*81*) in six provinces and cities. In recent years, several private providers of "Internet+" care have emerged in China in the form of nursing care platforms covering more than 330 cities. These include the "Internet+" technology platform for older people developed by the Canglang District in Suzhou, China; the comprehensive platform for intelligent care for the elderly in Wuzhen; the Shanghai Vitron Group, a model of home-based care for the elderly incorporating the Internet; Happiness 9; and "Internet+" medical care (*82*). All of these systems are based on increasingly advanced Internet technology and fully focus on the needs of users, namely the elderly, to provide guidance and help with problems and to give the elderly the ability to make more independent choices. "Internet+" reforms and innovation of care for the elderly throughout China and the various new models of care have directly promoted the transformation and upgrading of entities providing care for the elderly and they have highlighted China's new thinking, solutions, and actions to structurally reform the supply side of care for the elderly.

However, the current Internet-based care for the elderly in China is still in its initial stages, and the population in China is rapidly aging. Therefore, the government has proposed a new concept of community-embedded care for the elderly, which encourages the incorporation of the Internet into care for the elderly. However, building of infrastructure construction is lagging somewhat, and personal privacy is at risk due to the use of "big data" (*83*). Moreover, the elderly are less adept at obtaining digital information using mobile terminals, which is also a natural impediment to elderly users in China (*84*). When this platform is being built for the elderly, intelligent terminals and various applications that are suited to the reading habits of and usage by the elderly need to be developed. An infrastructure should be actively built for the elderly, the management of "big data" should be enhanced, intelligent health products should be devised, and online services should be expanded.

4.2.3. Community-embedded care for the elderly

Community-embedded care for the elderly is a form of community care for the elderly. Corresponding functional elderly care facilities are embedded in the community, and corresponding personnel are allocated to provide care to the elderly (*85*). This is a new multi-faceted model of care for the elderly based on the community, integrating the functions and resources of home-based care and institutional care for the elderly (*86*). This model is market-oriented and it operates via competition, actively introducing resources from outside the community and fully examining the resources within the community to provide the elderly with multi-faceted care. This model combines the advantages of traditional family care, community home-based care, and institutional care for the elderly. Scholars have outlined the practical significance of this model, suggesting that this model adapts to requirements at multiple levels and that it varies care for the elderly, it provides solid

support for and a guarantee of family care for the elderly, it integrates community care for the elderly, and it is conducive to standardized and sustainable development (*87*).

In the second half of 2014, Shanghai launched a pilot project of "institutionalized" care for the elderly in the community, with a focus on elderly care homes. By the end of 2017, 127 elderly care homes in Shanghai fully covered the center of the city and the suburbs (*88*). The main approach of the City of Hefei is to embed facilities for the elderly in the community, provide a professional platform for community-based care for the elderly, and further integrate multiple resources such as the family, community, and facilities to create a system of "home + community + medical care + facility" to care for the elderly (*89*). The Chongqing model is to set up a care center in a separate district and to renovate all rented residences, which helps to save construction costs, the Beijing area embeds a community health center inside a care facility and it conclude an agreement with a center to open a "green channel," and Shijiazhuang's model of an "embedded continuing care retirement community" is based on continuing care retirement communities (CCRC) in the US, which are a set of home-based care and support facilities for different age groups and health conditions in a densely distributed community center (*90*).

By incorporating the expertise of facilities for the elderly in community home care, providing professional at-home care and community care for the elderly, and opening up community care centers to provide comprehensive care to the active elderly, community-"embedded" care for the elderly effectively solves the structural problems faced by the traditional model of care, and its unique advantages will allow it become a major trend in the future development of care for the elderly in China.

4.2.4. The elderly care consultant system

The elderly care consultant system is an institutional innovation to refine care for the elderly. Shanghai created the first community elderly care consultant system in May 2018, which was initially promoted in the Xicheng District of Beijing in 2019 to solve the problem of older people who were not informed about policies for the elderly and who had difficulty finding resources (*91,92*). The elderly care consultant system mainly includes two types of basic services and expanded services. Basic services refer to advice on pension policies and resources, while expanded services refers to individual services, including family support and other services. The elderly care consultant system, which has been in effect for more than 2 years, has 4 major roles: to increase awareness of policies related to caring for the elderly, to link to resources from the government, to link to resources from private sources, to link to the community, and to support home care . The elderly care consultant system capitalizes on family involvement in a care for the elderly linked by supply and demand. It can protect the rights and interests of the elderly, coordinate resources in different areas, and create new resources to meet needs (*93*).

Since the introduction of the elderly care consultant system, Shanghai has opened 104 consulting sites and appointed 234 trained pension consultants to serve more than 10,000 people. The on-the-spot response rate remains higher than 94%, which is widely praised by the public and is considered to be a personalized advisor and customized pension service in Shanghai (*94*). The elderly care platform created in Shanghai by the Shanghai Civil Affairs Bureau was officially launched on May 31, 2019 (*95*). The platform covers all sorts of practical information related to care for the elderly, such as official information, the focus of recent policies, a full set of dynamic data, planning reports, instruction guides, and practical projects. The platform aims to use big data and intelligent recommendation technology to enable older people to make independent inquiries in accordance with their own physical condition and financial situation. It provides other information, intelligent guidance with respect to personalized needs, and service suggestions. The aim is to accurately match elderly care facilities and pension services and to customize solutions so that industry can improve the level with which think tanks provide resources and support.

## 5. Conclusion

In summary, the aging of China's population continues to increase, and there is a multi-faceted need for elderly pensions. Moreover, the need for basic pensions, disease prevention, and health care has also increased. In addition, pension services cannot meet the needs of older individuals due to the lagging development of the insurance system for the elderly in China. The Chinese Government has examined a series of models of care for the elderly to adapt to the development of the aging population and to improve the health status and quality of life of older people. These measures have achieved some results but still need to be examined and improved further.

*Funding*: This study was supported by a grant from the Key Technology Research and Development Program of China, "Research on and trial implementation of an intelligence care platform for the active elderly based on the blockchain" (No. 2020YFC2008702), a grant from the Shanghai Clinical Research Center for Rehabilitation Medicine (No. 21MC930200), and a grant from the Project to Promote Appropriate Advanced of the Shanghai Municipal Health Bureau for "The promotion and use of techniques throughout rehabilitation for elderly with diabetic foot" (No. 2019SY007).

*Conflict of Interest*: The authors have no conflicts of interest to disclose.

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Received February 17, 2022; Revised March15, 2022; Re-revised April 8, 2022; Accepted April 12, 2022.

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Released online in J-STAGE as advance publication April 17, 2022.