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Super Smart City Community Home Care Service

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Abstract: *China's cities have entered the digital era, and the replacement of pension models in mega cities is surging. The original institutional pension has been difficult to adapt to the diversified needs, and the progress of science and technology has provided technical support for the elderly to meet the diversified needs more closely. This paper analyzes the reality of the transformation and further extension of the elderly care model from institutional elderly care to home care. On this basis, in the face of the smart and super large development of the city, it explores the embryonic form of the smart elderly care model, analyzes the current difficulties in building a smart city community home based elderly care and gives corresponding suggestions and measures.*

Keywords: *pension, intelligent type, city, technology*

1. Introduction

China is in a demographic situation where the aging degree is gradually increasing and the labor force population curve is showing a downward trend. According to the results of national public data, by the end of 2021, we will have 267 million elderly people aged 60 and above, accounting for 19% of the total population. If this continues, within five years, we will have about 300 million elderly people, accounting for 33.3% of the total population. It is estimated that the number of elderly people will reach the peak around 2050, and China will become the country with the largest elderly population in the world.

2. The pension problem in super smart cities is increasingly prominent

In the latest city rating released by the National Bureau of Statistics in 2021, the proportion of people over 60 years old in China's seven mega cities with a population of more than 10 million is 23.38% in Shanghai, 19.63% in Beijing, 21.87% in Chongqing, 21.66% in Tianjin, 17.98% in Chengdu, 11.41% in Guangzhou and 5.33% in Shenzhen. It can be seen that with the pace of urban development, the aging problem of population in super large cities is becoming increasingly significant.

With the gradual change of population structure, how to provide for the elderly has become a topic of constant concern in society. In order to solve the irreversible situation of population aging, the elderly care service industry supported by the science and technology of the times should develop rapidly; for example, the new home based elderly care and the combination of gradually scaled medical institutions are emerging. Many pension policies and measures have also been introduced in various regions, but they still cannot meet the needs of the society. The real demand and expectation of people for old-age care do not match with the existing forms of old-age care in the current society, which makes the effective utilization of current resources related to old-age care low.

3. Innovation of home-based elderly care service model driven by high-tech in the era

3.1 Elderly care model

The current statistics show that 90% of the elderly care people live at home, 9% rely on communities, and 3% are provided by specialized social institutions [1-2] .These are our current three major pension models. The home-based elderly care model, which takes not leaving the family as the fulcrum, is characterized by the fact that people's emotional and psychological attachment to home is not separated, enabling the elderly not to leave their own place of belonging, relying on community and

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social professional services for the elderly, mainly helping to solve the difficulties in life, to partially meet the needs of the elderly at home for socialized elderly care services.

This home based elderly care model is currently the first choice and the current mainstream model for the energetic elderly who have just retired to 75 years old and can take care of themselves. [1]Community elderly care usually provides daily care, housekeeping services, spiritual comfort and other services to the elderly who are between self-care and unable to take care of themselves, rather than personalized accompanying services.

Aged care in institutions is mainly assisted by nursing staff of elderly care institutions to take care of the daily life of semi self and non self elderly.

From the form of old-age care, it also extends into sub models, such as the old-age care model of combining medical care with nursing care, the old-age care model based on housing, the old-age care model based on living, and the old-age care model based on family beds.

3.2 DEA analysis in elderly care institutions shows inefficiency

A quantitative value of efficiency can be obtained by using linear DEA analysis. The overall efficiency of community elderly care services in China is not high, and there are different degrees of input redundancy and output insufficiency. The government should reasonably plan community elderly care resources, adjust investment and scale, and improve community elderly care services [3].

With the policy support of local governments, the input level is relatively high, but the efficiency value is the lowest, which indicates that the resources occupied by the community elderly care service subjects are seriously wasted, and the ability to obtain output is poor under the state of high input, which further indicates that the efficiency of community elderly care services does not depend on the level of economic development and the amount of community elderly care resources input, and simply expanding the scale of community elderly care input is not feasible, optimization of resource allocation and improvement of technical efficiency should be paid more attention to.

In the face of the options of the length and quality of life span of the elderly, people pay more attention to the needs of high-quality life in their later years [4]. Therefore, the rise of the smart elderly care model is bound to become inevitable.

3.3 Further derivation and optimization of home-based elderly care model

As there is no separation between the mind and daily habits of the elderly, home-based elderly care has further derived the community embedded elderly care [5-6]. It uses the entire community where it lives as the operating platform, integrates nearby resources according to functional attributes, distributes as needed, reduces waste, and operates through PPP projects to provide a professional, personalized and convenient elderly care service mode for the nearby elderly, so that the aging community can have the ability to continue to care, let the elderly live in a familiar environment, accompanied by family members, and live in comfort.

3.4 The Internet of Things+, 5G scenarios, Blockchain and other technologies of the era will certainly promote the intelligent evolution of elderly care

As the digitalization and informatization of the city are further accelerated, the support of science and technology for elderly care is gradually becoming a landscape of super large smart cities. Super chips, the Internet of Things and nanotechnology have enabled the elderly to complete telemedicine project testing at home. The big data algorithm has successfully helped to build a "retirement brain", 5G and the Internet of Things+, making the non delayed transmission of a large number of health information and digital pictures a reality. Blockchain enables the elderly to store, share and protect their medical and daily behaviors more securely. The system services and interactive platforms established by 5G, cloud computing, Internet of Things and other technologies are used to connect the data collected by the elderly care terminal with public service resources and social service resources, and accurately meet the personalized elderly care needs such as life care, safety care, health management, family care, leisure and entertainment.

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4. Home based elderly care service model of super smart city community

With the modernization and digital development of the city and the trend of super large scale, the happiness index of the whole people is increasing, and the expectation for the quality of life of the elderly is gradually increasing. From the perspective of diversified welfare promotion, the community home-based elderly care model should be vigorously developed to provide multi-level and high-quality health elderly care services for home-based elderly.[4]

With new technology as the core and the real needs of the elderly as the driving force, we will build a super large intelligent platform of "1+N+X" embedded elderly care service complex integrating civil affairs, property management, home, medicine, community social networking, time banking (volunteer+mutual aid), and home improvement. With one intelligent platform as the sharing carrier, we will provide N services and targeted life care, health management, medical rehabilitation, love purchase Water and electricity maintenance, culture and entertainment and other all-round, multi-level, professional and precise elderly care service projects entered X families, effectively solving the practical problems of difficult and expensive elderly care.

It not only effectively solves the elderly's attachment to long-term residence, but also effectively solves the pension problems such as no supervision, difficult to continue, and single service, so as to enable the elderly at home to continue to enjoy professional and comprehensive pension services under supervision.

In line with the current urban smart construction, the community home-based elderly care model should also have an intelligent elderly care system database that integrates family elderly care, institutional elderly care and community service providers providing daytime care, and intelligently manage the health data, related person information, emergency contacts and other personal information of the elderly in a variety of scientific and technological scenarios. When the elderly need to go to the hospital to see a doctor, they can retrieve the elderly medical records, medical records, health status and other information at any time to facilitate medical treatment.

This is a smart elderly care system integrated with data information scene technology. The system realizes data interconnection and synchronization between different departments and roles. It is very convenient for the elderly at home to realize timely and effective information exchange with their relatives, medical services and nursing staff service institutions. This kind of intelligent closed-loop tube for elderly care can effectively monitor the physical condition of the elderly, comprehensively consider various personalized information of the elderly, and timely respond to the needs of the elderly in life, health, entertainment and other aspects.

Through online and offline, we have comprehensively created a 15 minute elderly care service ecosystem of institutions+communities+homes. Deepen the reform of the elderly care service structure from the supply side, and enhance the sense of elderly care experience with technology empowerment. With the application of high-tech in the era, we will improve the quality of elderly care services, boost the elderly care service industry, and achieve the service purpose of improving the quality of life of the elderly and improving their satisfaction and happiness.

5. Existing difficulties

The current situation of China's existing elderly care service market is uneven, there is no unified service standard system, and the elderly have low awareness and coverage of intelligent elderly care, and it is difficult to operate intelligent equipment; the number of intelligent elderly care service personnel is insufficient, the level of specialization is not high, and the property service ability needs to be improved.

5.1 Foam technology crowd out core technology resources

Of course, the establishment and improvement of smart elderly care platform depends on the R&D, application and promotion of key core technologies such as technology enabled equipment, timely information communication, high-precision sensors, chips, etc. These technologies are the key to the sustainable development of smart health care for the elderly. Due to the late start and slow development of independent research on core technologies such as chip technology in China; compared with the high degree of dependence abroad, the limited technology has greatly hampered the high-end development of intelligent health care. The existing technical bottleneck requires that resources be

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invested in key technology links. However, the current situation is that resources derive many unsuitable applications before flow direction detection, transmission and treatment of these key links. This situation of foam technology crowding out core technology needs to be improved.

5.2 At present, the penetration rate of smart elderly care in China is low, and the distribution of elderly care service resources is uneven

In China, it also follows the rule that the economic development level of each region matches the development level of the smart elderly care industry, showing a large regional difference. At present, the government led elderly care model is the main force for the development of the elderly care industry in China. However, only relying on the strong investment of the government to promote the smart elderly care service industry, it is obviously a large-scale project to quickly and widely implement the smart elderly care layout, so as to meet the urgent need for high-quality life in old age.

The extent to which local governments invest in the development of smart elderly care depends on the total economic volume of the region, which will lead to serious differentiation of the smart elderly care industry with prominent regional differences. At the same time, the development of smart elderly care industry has obvious demand traction; the number, structural proportion and local financial income of the elderly are important influencing factors. The study found that the more developed the economy is, the more serious the population aging problem.

According to the regional data of China's current population situation, the eastern region has a high and developed economic aggregate, and the aging degree of the eastern region is relatively high; however, the central region with low economic aggregate also shows a high degree of aging population. In other regions with low financial income, the degree of aging is lower than that in the central region.

It can be seen that the fiscal, economic level and population aging degree between regions are factors that must be considered in the overall coordinated development of the smart elderly care industry. Due to the insufficient development of technical level and the defect of the pro elderly perspective of the design concept, the satisfaction rate of the elderly using the current technology enabled pension exclusive products is low, which also reveals that there is a great expansion space for the aging suitability and operation friendliness of the products. The convenience, practicality and economy of use are reduced, leading to the low satisfaction of the elderly, the decline of the purchase intention of the elderly and their children, and the low popularity of the products.

5.3 The role of market and government is vague

At present, the "9073" elderly care pattern in the society has also created a multi-level mutual aid elderly care service system with home based elderly care as the main body, [2]relying on community and institutional elderly care as the supplement. However, there is still a lack in the construction of the technology enabled elderly care system, which is generally reflected in the insufficient overall planning, standards and supervision of the local administrative departments for the construction and development of smart and healthy elderly care. All grassroots functional departments have not clearly and accurately positioned elderly care services and given appropriate guidance, and lack of effective measures to promote them; the functions of the completed community elderly care service management center and elderly care post station are almost the same. The elderly care services provided are relatively chaotic, and the service system needs to be further improved, which is difficult to provide a strong guarantee for the sustainable development of the industry.

5.4 The smart elderly care industry lacks professional talents

The essential difference between the technology enabled smart pension and the traditional pension industry lies in the need for the application of advanced science and technology. A large amount of funds will be invested in the experiment and research and development of the technology enabled elderly care model. The industry cost is huge, the capital recovery cycle of the investment subject is long, and the operating income is unstable. The technology enabled elderly care industry integrates information, hardware, medical care, services, finance, education and other fields; In addition, there is a lack of talents in the entire elderly care industry to achieve technological empowerment, and there are few interdisciplinary talents. The development of the industry is slow.

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6. Suggestions

6.1 Develop core independent key technologies

Increase the investment in scientific research and education and training of core technologies, gradually optimize and improve the core technologies necessary for smart and healthy elderly care, effectively solve the pain points of the actual needs of elderly care, combine advanced information technology with the physical and mental health characteristics, hobbies and daily life habits of the elderly, and strive to achieve major breakthroughs in high-precision sensors, 5G communications, intelligent wearable chips, intelligent interaction and other key technologies, promote the research and development of intelligent healthy elderly care products, actively deploy mechanical exoskeleton, genetic engineering technology, elderly care robots and other intelligent AI technologies, and accelerate the transformation of innovative achievements into the development reality of the elderly care industry and the promotion and application of technologies.

6.2 Establish an intelligent platform for elderly care services coordinated by the government

The intelligent platform for comprehensive elderly care services established in urban areas under the leadership of the government is a technology enabled timely response center for elderly care services. It is a smart sharing system for elderly care information that integrates various functions on the basis of existing health, elderly care and other related information platforms, and has a unified and standardized realization of timely interaction. It actively promotes information sharing and rational utilization between various intelligent elderly care institutions and service providers, a smart elderly care network covering medical treatment, nursing services, psychological counseling, goods supply, cultural entertainment and other aspects will be formed.

The government should increase the investment in elderly care hardware facilities to solve the current problem of elderly care socialization, guarantee the operation by improving follow-up management measures, promote the operation mode of elderly care service PPP projects, improve the effective input of resources and input output efficiency, attract more people to join the community home smart elderly care industry, and diversify the industrial composition.

People pay attention to and strive to improve the quality of the elderly's old age life, which is not only the embodiment of the progress of the times, but also the basis of the secondary demographic dividend. The current situation is that the domestic government has allocated a large number of elderly care service resources to drive the development of the elderly care service industry, but the existing elderly care resources are largely idle due to resource mismatch.

It is suggested that the government should formulate unified standards for the elderly care industry and improve the community home-based elderly care service system, so as to accelerate the construction of the community home-based elderly care intelligent service system; The government and all elderly care institutions actively use 5G, Internet of Things, artificial intelligence and other technologies to promote the construction of intelligent elderly care information system, accelerate the integration of medical care and elderly care, focus on the core health needs of the elderly, create a new model of online+offline integration of medical care and elderly care, cultivate composite elderly care service talents, and establish a professional elderly care service team.

6.3 The role and responsibility of the government in the elderly care service industry

In smart pension, if the proportion of government investment is too high, it will form crowding out effect on the market. Therefore, the government should play a good role in formulating policies to support the development of the elderly care industry. If there are some problems that cannot be solved by the market, what the market does not even want to spend money on should be supported by the government.

6.4 The government plays a top-level design role in the construction of the elderly care service system

Under the guidance of the government, a demonstration project will be built by coordinating and guiding the top-level design of the smart elderly care service system, vigorously promoting the development of the smart healthy elderly care model. Based on the actual situation, we will actively

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explore with various elderly care service subjects, formulate practical extendable policies and systems for the development of smart healthy elderly care, guide the development trend of healthy elderly care enabled by science and technology, and promote the establishment and improvement of smart healthy elderly care product standards; the smart elderly care platform has the same standards, and is connected from top to bottom. Remote health consultation, environmental monitoring, psychological comfort, data processing center and other functions are included in the system to improve the quality and efficiency of elderly care services. At the same time, the government should strengthen supervision, layout in advance, organically link government functions with market functions, and actively respond to population aging.

6.5 Strengthen the awareness of the pro aging concept of digital technology and smart elderly care products

The digital era is inseparable from the Internet everywhere, which has a great impact on those who do not have equipment, can't afford data or WIFI, and are unwilling to use the network. If they are non network users, they will completely face the risk of being marginalized and become "digital abandonment". The vision of the development of science and technology should be to benefit mankind, rather than just selectively sing for the commercial value of profit. By using the existing technology design, we can effectively help the elderly living in various nursing environments to fully experience the independent life of dignity, joy and well-being.

Integrating technology into the elderly care is to maintain the health of the elderly, strengthen their social ties, enrich their life, and adapt to the aging of housing, smart aging technology has considerable application space. The government or the whole society needs to take a series of complex policy response measures to bridge the digital gap by moving towards digital inclusion of the elderly and special groups. In particular, it is urgent to bridge the "access gap" and "use gap" from both the supply side and the demand side. It is necessary to closely combine technology development and elderly demand survey to develop a way to truly make the elderly useful, user-friendly, loving commonly used and continuously used smart elderly care products.

6.6 Improve the popularity of technology enabled health care model

According to the actual needs of the elderly, we will design and develop high-tech products that are wearable, portable, sensitive, intelligent, interactive and easy to use. Produce smart and healthy elderly care products that the elderly really need and think are useful, easy to use, loving to use and affordable.

Carry out corresponding health care concept publicity and product experience and promotion. We will use offline physical stores such as non intervention sensors to solve the problem that the elderly cannot skillfully use the intelligent terminal, eliminate the fear of information, and make the elderly easily use the intelligent health care platform and services.

Rely on science and technology to empower, meet the individualized elderly care, and improve the quality of life of the elderly.

6.7 Cultivate and strengthen the talent team of science and technology enabled elderly care and related majors

Set up specialties or courses related to smart elderly care in higher vocational schools and colleges to cultivate management and technical talents of science and technology enabled elderly care. Through setting up practice training bases with elderly care service subjects, a three-dimensional talent network of science and technology enabled elderly care service industry is built for training medical care, community and other practitioners related to science and technology enabled elderly care industry.

6.8 Establish and improve rules and regulations related to technology enabled elderly care industry

At present, supporting the elderly by relying on advanced science and technology is still in its infancy in China. Government departments should speed up the establishment of industry standards in the technology enabled elderly care industry. For example: Data standard system of data information transaction, medical service institutions, community elderly care service institutions and various elderly care information service platforms. At the same time, the government departments should actively participate in the development process of the elderly care industry, and formulate norms for the

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development of the smart elderly care industry that are appropriate to the current needs of the elderly, so as to form a multi service subject cooperation model between the government and enterprises, social organizations, and guide the healthy and orderly development of the smart elderly care industry. In the face of the situation that the aging population is gradually increasing, it is of positive significance for the healthy development of China's elderly care industry to make full use of the technology enabled elderly care paradigm, establish the service concept of the new era, continue to improve the quality of life for the elderly, reduce the family pressure of middle-aged people and better create wealth for the society.

7. Conclusion

From the perspective of development, it can be seen that the elderly care model in China's mega cities is bound to be integrated with the participation of the country, society, market, families and individuals, and the elderly care service with Chinese characteristics that integrates smart technology and embodies traditional Chinese culture and ethics. For the southwest inland areas of China, we should actively try to innovate multi style city community home-based elderly care model, improve the quality of urban elderly care, and make the city sunset bright in the development process of mega cities.

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