

Research on the Construction and Operation Mechanism of Intelligent Elderly Care System in Tianjin

Yuxin Yang^{1,*}, Xinran Yu²

¹ Tianjin University of Technology

² Tianjin University of Technology

*Corresponding author. Email: 471574079@qq.com

ABSTRACT

The development of smart elderly care industry is not only an important innovation to deal with the aging of population, but also brings far-reaching value to the development of economic society. This paper focuses on Tianjin smart pension system, analyzes the current situation of Tianjin smart pension system through literature research and field research, studies the construction and operation mechanism of Tianjin smart pension system, and actively allocates resources of the government, enterprises, communities and other parties. Rely on management organization and coordination mechanism, the perfection of the mechanism of resource data platform, the incentive of science and technology enterprise introduction mechanism, incentive pension service personnel mechanism, such as operating mechanism, build resource integration, organization and coordination of Tianjin new pattern of the wisdom of the endowment, forming a "government - enterprise - community" integrated model of wisdom endowment, provide new ideas for the build of Tianjin wisdom endowment industry upgrading.

Keywords: *Intelligent Pension, System Construction, Operating Mechanism.*

1. INTRODUCTION

The aging of population is an unavoidable problem in the current social development of Our country. The active response to aging has risen to the level of national strategy. In recent years, with the development of economic level, the aging structure of Tianjin has gradually increased, and Tianjin is the third oldest city in China after Shanghai and Beijing. In the face of the challenges brought by rapid aging, the pension problem has attracted the attention of the society, and the smart pension has entered people's vision.

To build the Tianjin smart pension system and design a scientific and effective operation mechanism of the Tianjin smart pension system, the purpose is to realize the sustainable development of the pension service in Tianjin, solve the pension pressure brought by the aging of the population in Tianjin, effectively promote the upgrading of the smart pension industry, and promote the co-construction and sharing of the smart pension service. Strive to form a new pattern of intelligent elderly care service with resource integration and organization coordination in Tianjin.

The establishment and improvement of relevant laws and policies on intelligent elderly care service can provide theoretical support for the construction of intelligent elderly care system in Tianjin, and has certain theoretical significance. At the same time, Tianjin as an important economic development center, the construction of pension system can implement pension system more perfect wisdom, wisdom endowment elements more gathered, is to build a new pattern of resource integration, organization and coordination of Tianjin endowment of important basis, is helpful to get more resources in the area of optimal allocation, promote area endowment service innovation and complementary wisdom, Promoting the sustainable development of Tianjin elderly care service is of great importance to the development of Tianjin elderly care service, which has certain practical significance.

2. ANALYSIS ON THE CURRENT SITUATION OF INTELLIGENT ELDERLY CARE IN TIANJIN

2.1. Analysis On The Current Situation Of Intelligent Elderly Care In Tianjin

In recent years, the academic circle has generated great interest in the concept of "smart pension", and scholars have proposed many issues including smart pension service supply chain, smart pension industry and so on. Smart pension system can solve the pension problems caused by China's aging, which is considered as a new way to provide pension services, and has gradually attracted the attention of scholars.

Yang Dongyong et al. based on cloud technology, architecture of a mobile robot network control system is designed, which is composed of a remote monitoring platform, a cloud platform, and a mobile robot. A novel communication message format is designed to realize the communication between the mobile robot and the remote monitoring operator^[1]. Li Bing et al. the study found that at the overall network level, Shanghai's policy network for the integration of medical care and elderly care has shown a trend from "closed loop" to "opening up". At the level of individual networks, the core subject status of Shanghai's medical and elderly care integration policy network has shown a trend from "fuzzy" to "prominent"^[2]. Xue yingli et al. integrates the electronic supply chain with the supply of elderly care services, and explores the construction of the electronic supply chain for elderly care services, in order to improve the current problems in the supply chain of elderly care services^[3].

2.2. Analysis On The Current Situation Of Intelligent Elderly Care In Tianjin

According to the "Tianjin 2020 Seventh National Population Census Main Data Bulletin (No. 1)" released by the Tianjin Bureau of Statistics, among the permanent population, the population aged 60 and above is 3,002,700, accounting for 21.66%, among which the population aged 65 and above is 2,045,700, accounting for 14.75%. After Shanghai and Beijing, Tianjin has the third largest elderly population in China. The increasing proportion of the elderly and the number of elderly people pose a great challenge to the social and economic development.

Tianjin Government Work Report in 2021 on the key tasks of the city's economic and social development during the 14th Five Year Plan period, it was mentioned that we should continue to optimize the supply of elderly care services and promote the pilot reform of smart home-based elderly care services. Since the introduction of the Opinions On The Development And Implementation Of Smart Health And Elderly Care Industry In Tianjin

(2018-2020), Tianjin has controlled the smart elderly care service platform in Tianjin as a whole and promoted it simultaneously at the municipal and district levels. The municipal level manages the elderly care institutions, community elderly care facilities and elderly information data, mainly playing the role of management and supervision; Each administrative district forms a district level call platform or service center, which is responsible for the service supply of the elderly in the district. Gradually realize the connection between enterprises and communities, policies and markets, services and needs. Through interviews and surveys, Tianjin has 1,591 canteens for the elderly, 1,157 day care centers (stations), 367 institutions for the elderly and 76,000 beds for the elderly, making certain achievements in the elderly service industry.

At present, there are still some limitations of family pension. Children are busy working and most of the elderly live alone. Based on this, the demand for pension intelligent wearable devices that can be monitored remotely and in real time is gradually expanding. Next, Tianjin will continue to enrich the supply of intelligent health and elderly care service products, and develop health management intelligent wearable devices, portable health monitoring devices, self-service health detection devices, intelligent elderly care monitoring devices, home intelligent service robots, etc. for different application environments such as individuals, families, communities and institutions.

Based on the survey of the pilot areas of smart pension service, it is found that Hexi District of Tianjin relies on the smart pension service platform, integrates multi-department resources, gives full play to the role of big data and intelligent scientific and technological means, pays attention to humanistic care, meets the elderly care service needs of the elderly in the region, and makes smart, efficient and convenient home-based elderly care services a reality.

Binhai New Area adopts the mode of combining medical care with nursing care, cooperates with pension projects, and has made many attempts in the aspect of smart and healthy pension, establishing the mode of "Binhai Blue Card" and "Tiantong nanny-style" combining medical care with nursing care. Aiming at the "combination of medical care and nursing", Binhai New Area combines the life care and other elderly care services with the medical care and other functions of hospitals, so as to form a pension pattern with medical health as the basis, life care as the guarantee and spiritual care as the core, providing new pension services for the elderly.

Nankai District has built a smart elderly care cloud platform system for the elderly care center. The system takes the elderly files as the core. Open the mobile phone and log in to the "elderly care service intelligent terminal" to see the age, gender, medical history, allergy history

and other basic information of the elderly on the cloud platform. Through the cloud platform, the function of one-click call for nursing and medical staff can be realized, and the integration of check-in and consumption in the pension center can be realized. At the same time, the system integrates all the information of 29 nursing homes and day care centers in Nankai District, and dynamically records the availability of beds.

3. CONSTRUCTION OF INTELLIGENT ELDERLY CARE SYSTEM IN TIANJIN

From the perspective of system construction subjects, the intelligent elderly care system is composed of many subjects participating in elderly care services, including government departments, communities, enterprises, etc. there is a certain degree of connection and interaction between these subjects, and these subjects are also constantly affecting the development of the intelligent elderly care system. In the context of smart elderly care, all enterprises, organizations and institutions related to elderly care services are effectively integrated into the smart elderly care system.

3.1. Government Sector

Tianjin municipal government departments should take advantage of their close ties with all parties to effectively connect communities and enterprises, so as to provide guarantee for the implementation of smart elderly care. The government should make different implementation goals according to the needs of pension services in different stages, and actively coordinate and allocate resources of all parties to improve resource utilization through pension system planning^[4]. According to the development of elderly care services and the needs of various subjects, the government should give policy support to enterprises and communities related to smart elderly care, encourage and guide enterprises and communities to enter the smart elderly care industry and develop scientific and technological products and services suitable for the elderly from the aspects of tax relief and financial subsidies.

3.2. Enterprise

Enterprises can provide a variety of pension products and services for different pension needs, and make continuous progress in the degree of wisdom. Enterprises can use a variety of modern technologies to create a more healthy, comfortable, safe and convenient environment for the elderly. Enterprises use Internet of things technology to collect, gather and analyze the physical condition, pension needs and security monitoring of the elderly, and make intelligent response to the pension service needs of the elderly.

3.3. Community

Community is rooted in the community life of the elderly, forms a close interconnection mechanism with the elderly, and plays a unique role in the allocation of resources. The community elderly care service center can give full play to the synergy of the platform, based on the community, family as the core, pooling community resources, community and related organizations to provide elderly care services^[5], further deepen the degree of interconnection, and provide comprehensive and diversified elderly care services to the elderly. The community can use its own internal public service facilities to improve the quality of intelligent elderly care services, and can effectively solve the problems of no care for the elderly when their children go to work, more nursing homes and fewer nursing workers.

4. OPERATION MECHANISM OF INTELLIGENT ELDERLY CARE SYSTEM IN TIANJIN

To ensure the smooth implementation of Tianjin smart elderly care system, we should also establish a series of operation mechanisms. These operation mechanisms contribute to the better development of Tianjin smart elderly care system.

4.1. Management Organization And Coordination Mechanism

The construction of intelligent elderly care system in Tianjin is inseparable from the support and coordination of the government. Establish and improve the government management organization coordination mechanism to promote the government to be more coordinated in target planning, resource allocation, policy supply and so on.

The government provides an institutional environment for the sustainable and efficient development of intelligent elderly care services through policy regulation and supporting elderly care service enterprises. Scientific and efficient management organization and coordination mechanism can better support the development of regional intelligent elderly care service capacity, make government management more effective, innovate the elderly care policy, and escort the establishment of intelligent elderly care system in Tianjin.

4.2. Improve The Resource Data Platform Mechanism

Strengthen the information construction, improve the large database and establish an information sharing platform, so that the existing scientific and technological innovation enterprises and communities can share the

data and information of the elderly. Special data collection, statistics and analysis departments should be established to make it more convenient for enterprises and communities to view the data and facilitate enterprises and communities to provide better intelligent elderly care services according to the data.

4.3. Incentive Technology Enterprises To Introduce Mechanism

To realize the development of intelligent elderly care services in Tianjin, it is fundamentally inseparable from scientific and technological innovation enterprises. We should strengthen support and support for enterprises and encourage enterprises to develop smart elderly care projects. For enterprises developing smart pension projects, there should be a certain preference in policies, such as formulating corresponding tax relief policies to reduce their own risks and ensure the enthusiasm of enterprises to develop pension service projects.

4.4. Incentive Mechanism For Elderly Care Service Talents

We should formulate a scientific, reasonable and effective incentive mechanism for talents, which can mobilize the initiative of elderly care service talents to participate in elderly care service to a great extent.

The talent team of elderly care service industry is the key to promote the construction of intelligent elderly care system. Tianjin should promote employment, develop elderly care service related majors and establish an elderly care service talent training system. For elderly care service talents, the government should give employment security, occupational protection, awards and subsidies and other policies and measures to give full play to the creativity of elderly care service talents.

Through the implementation of various operating mechanisms, it is conducive to the coordinated development of various elderly care service subjects in Beijing, Tianjin and Hebei, and finally realize the better development of intelligent elderly care system.

5. CONCLUSIONS

5.1. Conclusions

This paper focuses on Tianjin smart pension system, analyzes the current situation of Tianjin smart pension system through literature research and field research, studies the construction and operation mechanism of Tianjin smart pension system, and puts forward targeted countermeasures and suggestions.

Through positive configuration parties such as government, enterprise, community resources, rely on management organization and coordination mechanism,

the perfection of the mechanism of resource data platform, the incentive technology companies introducing mechanism, incentive pension service personnel mechanism, such as running mechanism, resource integration, organization and coordination of building Tianjin wisdom endowment new pattern, so as to form a "government - enterprise - community" integrated model of wisdom endowment, It provides new ideas for the upgrading and construction of Tianjin intelligent elderly care industry.

5.2. Recommendations

Through the research on the intelligent elderly care system in Tianjin, we find that there are still some deficiencies, such as insufficient government support and low acceptance of the elderly. In view of the deficiencies in the intelligent elderly care system in Tianjin, the following countermeasures and suggestions are put forward:

Give Play To The Leading Role Of The Government. Strengthen the government's support for enterprises and communities, create a good policy environment for the development of intelligent elderly care services, clarify the responsibilities of various elderly care service subjects, and further guide the establishment of a perfect intelligent elderly care model.

Strengthen Publicity And Promotion. Most of the elderly have a sense of exclusion from smart elderly care products. In this regard, all social parties should strengthen publicity and promotion, carry out information technology household publicity and guidance according to the cognitive characteristics of the elderly, and create an environmental atmosphere of smart elderly care model in a variety of ways.

ACKNOWLEDGMENTS

This work has been supported by undergraduate innovation and entrepreneurship training program (NO.201910060055)

REFERENCES

- [1] Dongyong Yang, Bin Xu, and Dongyuan Gu. 2020. A Network Control System of Mobile Robot for Elderly Care. In Proceedings of the 2nd International Conference on Artificial Intelligence and Advanced Manufacture (AIAM2020). Association for Computing Machinery, New York, NY, USA, pp. 392 - 397. DOI:<https://doi.org/10.1145/3421766.3421892>
- [2] Li Bing, Yang Dongqiong, and Sun Weijia. 2020. Research on the Network Evolution of Shanghai's Medical and Elderly Care Integration Policy. In Proceedings of the 2020 3rd International

- Conference on E-Business, Information Management and Computer Science (EBIMCS 2020). Association for Computing Machinery, New York, NY, USA, pp. 87 - 92. DOI:<https://doi.org/10.1145/3453187.3453318>
- [3] XueYing Li and Yun Zhou. 2021. Construction of Elderly Service Electronic Supply Chain. In The 2021 12th International Conference on E-business, Management and Economics (ICEME 2021). Association for Computing Machinery, New York, NY, USA, pp. 139 - 143. DOI:<https://doi.org/10.1145/3481127.3481152>
- [4] Fengjuan Liu, Weiwen Wang, Yan Zhou, and Fang Huang. 2020. Research on the Impact of Education Level for the Elderly over 60 Years Old on the Elderly Care Mode and the Corresponding Industry. In 2020 3rd International Conference on Education Technology Management (ICETM 2020). Association for Computing Machinery, New York, NY, USA, pp. 155 - 161. DOI:<https://doi.org/10.1145/3446590.3446615>
- [5] Rong Ma. 2021. Research on the Social Support System of Urban Community Services for Home Care of Elderly from the Perspective of Active Aging. In 2021 2nd Asia-Pacific Conference on Image Processing, Electronics and Computers (IPEC2021). Association for Computing Machinery, New York, NY, USA, pp. 85 - 87. DOI:<https://doi.org/10.1145/3452446.3452468>