



Research on the Intelligent Pension Model Based on Big Data Algorithm

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Abstract. In recent years, the aging situation is becoming more and more serious, and traditional family pension model cannot adapt to today's society. As an innovative development idea of the elderly care model, the intelligent elderly care model can more accurately grasp the needs of the elderly group by connecting individuals with the network through Internet of Things (IoT), information sensing equipment, and the protocols for information exchange and communication. The superposition of technological change and governance transformation has catalyzed the platformization and smart elderly care, showing multi-dimensional driving logic characteristics such as market-driven, social-driven, and government-driven. This paper focused on the plight of the intelligent elderly care model under the Internet background, and found that there were still three problems: the increased risk of personal information leakage, the lack of professional talent teams, and the lack of humanization of intelligent elderly care products. In this regard, with the help of big data correlation calculation logic, smart elderly care platform data can form a knowledge-based elderly care service digital map, which provides a digital governance basis for the overall governance of smart elderly care services. At the same time, unified standards and services are also required in the construction of elderly care industry standards and service digitalization. Specification, and build a "connection" between the elderly group and smart elderly care products, which can provide strong support for the better and longer development of smart elderly care model.

Keywords: "Internet+" · smart pension · artificial intelligence

1 Introduction

As of December 2019, China's population aged 60 or older exceeded 190 million, accounting for about 18.1% of the total population. According to the United Nations "Population Aging and Its Socio-economic Consequences" in 1956, a country or region has entered an ageing society if 7% of its population is over 65 years old [1]. Influenced by traditional culture, most of the elderly tend to enjoy the family-type pension, but the traditional pension model can no longer meet the gradually diversified pension needs. *Guiding Opinions of the State Council on Vigorously Advancing the "Internet Plus" Action* indicates that the "Internet Plus" development mode has been given attention by

the government. Big data technology is an effective way to ensure the integration of modern health management, elderly care and medical care. Using telemedicine and video cloud technology, through the research of advanced health management documents, combined with the intelligent data of personal health management. According to video data and health records, provide senior citizens with personal health data management, chronic disease management and other high-quality life service use, health consultation and first aid, so that they can obtain high-quality professional medical care services with relatively low investment. And realize the new concept of “health management, health care, medical support”. Therefore, it is of great practical significance to use information technology to promote the development of intelligent elderly care model.

2 Literature Review

The concept of smart elderly care came from the United Kingdom, and specifically refers to the provision of intelligent services for the elderly at home through the Internet of things such as the government, medical institutions, and communities [2]. Bai Mei believes that smart elderly care services can meet the diverse and multi-level needs of the elderly and improve the efficiency of social security with the blessing of Internet technology [3]. The intelligent health care services supported by “Internet + healthy elderly care” will help to match the supply and demand of healthy elderly care and meet the mental health needs of the elderly [4].

Some scholars mentioned that, although smart elderly care services provide security and management services for the elderly through the establishment of an information system and improve the level of socialization of the elderly, there are still many problems in the service model itself [5]. When Wu Kangyan conducted an investigation on the quality of smart elderly care services, he found that the current elderly care facilities are not perfect, the elderly have insufficient awareness of “smart elderly care”, and lack of professional talents [6]. In view of the problems in the smart elderly care model, Liao Chuhui advocated the establishment of a global collaborative smart elderly care service dynamic simulation system platform to eliminate the current elderly care dilemma [7]. Chen Zhengshuo suggested strengthening the matching degree between supply and demand [8]. Xi Heng believes that portable vital signs detectors and emergency callers are the key technologies for modern smart elderly care and the integration of elderly care resources [9]. Wang Hongyu and others proposed to establish an elderly care service system, integrates nursing, medical care, and its realization based on the establishment of a multi-choice elderly care platform, the elderly and children, including helping the elderly, filial piety, and self-help [10].

3 Current Situation and Dilemma Analysis

3.1 Current Situation

The smart old-age care model under the Internet background mainly relies on cutting-edge scientific and technological achievements, through the intelligent collection of individual data, and the background processing and analysis of cloud databases to achieve

precise and humanized service provision. The realization of smart elderly care services includes three main steps: individual services, cloud information processing and business services [9]. It means the information collected from the individual by the smart device is encoded and processed by the network cloud platform and then transmitted to the service provider, and the service provider provides “precise” care services. The three nodes are interlinked, reflecting the portability, efficiency and precision of elderly care services that combine the Internet and the elderly care model.

1) **Status of individual service development**

At present, some mainstream individual intelligent elderly care service products on the market include smart homes, wearable wireless devices and individual emergency call devices [10]. Nanchang Cixiaozhu Service Center provides SOS emergency call, wearable 24-h heart rate monitoring equipment and GPS real-time positioning device for the elderly in need in the service center [11]. The Smart Home Elderly Care Center in Wangzhuang Community, Xinwu District, Wuxi City provides a complete set of “Ankangtong” equipment for all the elderly, including lighting, one-touch call, SOS active alarm, sleep quality detection and exercise detection [12]. At the end of 2017, the Shanghai Changning District Government included smart elderly care in the top-level information design of the “Thirteenth Five-Year Plan” and invested 6 million yuan to build a smart elderly care big data platform to provide active care and convenient services to the elderly. Hourly emergency assistance and other services have also established a whole-process supervision system for home and community elderly care services, which has realized the visualization, data and reporting of the service process [13].

2) **Development status of cloud information processing**

Cloud information processing first needs to collect information through individual smart devices, then identify and process the information through big data algorithms, analyze the actual needs of users, and then coordinate the efficient allocation of resources from all parties. This step is also the “precision” of elderly care services. The decisive link [13]. Recently, Neusoft Institute of Information has designed a type of smart wearable device monitoring platform, including smart wearable device terminals and medical information processing servers. Wearable devices can be used to obtain data such as body temperature, blood pressure, blood oxygen, blood glucose, and ECG. The data results are communicated through wireless transmission technology. At the same time, Bluetooth, wireless WiFi and ZigBee are used to switch to each other to ensure data collection and analysis. True reliability [14].

3) **Current status of business service development**

Compared with foreign countries, the provision of domestic elderly care services pays more attention to the “precision” of services. To build a “precise” smart elderly care service system, it is necessary to highlight the public welfare of the current elderly care services, but also to actively participate and take the initiative to continuously improve the quality of social elderly care services. Therefore, the Geriatric Psychiatric Department of Jiaying Kangci Hospital actively communicated with the superior administrative department and obtained government support and assistance. At the same time, it strengthened horizontal contact with the social care institutions

of Tongxiang City, Zhejiang, and continuously improved the smart elderly care system to ensure the healthy and stable development of elderly care institutions. A few days ago, Wuxi Meihu Community planned to combine the two parts of elderly care and medical care with modern Internet technology in the construction of the community, and establish a medical clinic that realizes the sharing of family, community, and health center information resources through Internet technology. The elderly in the community can Carry out information consultation on the Internet and make an appointment for online consultation to realize precision medical services [11].

3.2 Dilemma Analysis

1) Increased risk of information leakage

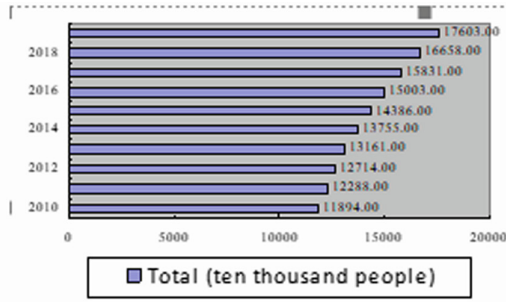
Artificial intelligence and big data technology need to be based on users' personal information, but the industry still lacks standardized institutional constraints and system supervision, and more and more user information is collected and abused. At the same time, the elderly are less aware of information security protection, and privacy leaks are more serious. The application and popularization of big data and artificial intelligence have brought huge opportunities to the traditional elderly care service industry, but also brought many hidden dangers to security. Computer network information security is not only related to users' personal information security and personal economic security, but also closely related to the overall development of the Internet. Generally speaking, in the process of installing the corresponding computer system, due to the system's own problems or environmental influences, the computer system often has certain loopholes and problems.

2) Lack of professional talents and teams

As shown in Table 1, as of the end of 2019, the population of my country over 65 years old was approximately 176.03 million, accounting for 11.9% of the total population. The demand of elderly services is expanding and in short supply. The reason lies in two points. One is the insufficient training of professional nursing staff, the overall quality of the talent team is not high, the service motivation is insufficient, the understanding of the smart elderly care model is low, and the elderly cannot provide high-quality and diversified services; the second is the salary level of nursing staff in the industry is relatively low, and they only rely on nursing work to obtain income. The pressure of life is relatively high, which leads to an increase in the mobility of industry personnel [15] (Figs. 1 and 2).

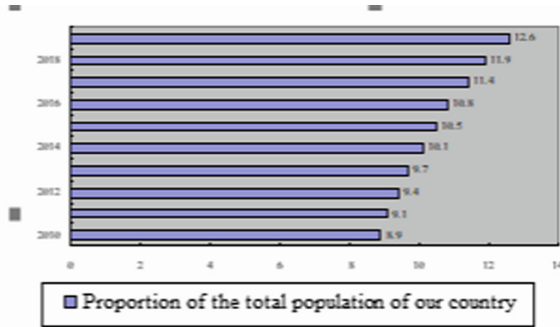
3) The elderly population has low acceptance of smart elderly care products

Although smart elderly care products on the market highlight the intelligence and portability, they ignore the applicability of the elderly. Jia Jinze et al. found that 55.5% of the elderly have not heard of smart elderly care products through any channels in the study on the elderly's perception of smart elderly care products; while the elderly who are very knowledgeable about smart elderly care products only Accounted for 1.7%. Through further analysis of factors that affect the elderly's perception of smart pension products, it is found that the elderly's perception of smart pension products will be affected by personal savings [16]. The elderly are unfamiliar with smart products and take a long time to learn how to use them. The



Data source: 2020 China Statistical Yearbook of the National Bureau of Statistics

Fig. 1. The growth trend of my country’s aging population (65 years and above) from 2010 to 2019



Data source: 2020 China Statistical Yearbook of the National Bureau of Statistics

Fig. 2. 2010–2019 my country’s elderly population (65 years and above) accounted for the proportion of the total population

psychological gap generated during the learning process will also greatly reduce the willingness of the elderly to enjoy smart elderly care.

4 Conclusions and Suggestions

4.1 Realize the Comprehensive Upgrade of Community Elderly Care Service Platform with Digital Map

Entering the digital age, digital data as a new resource has become a key resource for national development strategies. The resource network is a key part of the basic construction and optimization of the community elderly care service platform, and it is more necessary to realize the logical self-consistent data from the operating rules of

the community elderly care service platform. The platform-driven elderly care service model takes digital technology embedding as an important support condition to achieve precise services between supply and demand subjects. It is necessary to clarify the deep relationship between the service chain to the information chain, the digital relationship to the data relationship, and the knowledge map to the data map in community elderly care. We must to construct a platform-driven digital map of community elderly care services. The various data stored in the management information system of the medical and health field includes basic expenditure information of the elderly, laboratory image information, medical clinical information and electronic medical record information. At present, with the rapid development of science and technology, big data and modern information technology are constantly updated and widely used in the field of elderly care, which promotes the development of my country's elderly care industry and promotes the continuous progress of society.

4.2 The Digitization of Standards and Services in the Elderly Care Industry also Requires Unified Standards and Norms

Our country didn't formed industry standards, service specifications, quality monitoring and data interconnection that are commonly recognized and complied with. At present, my country's smart elderly care industry has just started and is still in the exploratory stage. Although relevant government departments have issued some policy documents for smart elderly care, most of these policy documents are guiding opinions, and most of them stay at the home service level [18]. Therefore, this article recommends that relevant government departments should establish and improve industry standardization as soon as possible, promote the interconnection of smart elderly care ports, and create a good environment for the introduction of smart elderly care platforms for elderly care institutions, the purchase of smart elderly care products by the elderly, and the development of smart elderly care industry. Policies in various regions have paid more attention to the content and standards of elderly care services. How to build digitalization, what standard service participants join, how to integrate digital technology with elderly care services, and how to ensure information security and other issues are refined.

4.3 Establish Channels for the "Integration" of Elderly Groups with Smart Elderly Care Products

Optimize smart elderly care products, taking into account the adaptability of the elderly while taking into account smartness and portability. Li Changdi and others suggested to build RFID integrated management platform, video monitoring linkage module, nursing home SOA integrated service platform, and medical cloud computing platform based on the RFID technology of the Internet of Things and the collection, centralized processing and decentralized services of RFID wristband tag information as the main line., SMS service platform, an integrated smart system of five platforms [17]. Optimize the information processing level, streamline the use steps, and enhance the happiness of the elderly in the smart elderly product. Old people have a low level of understanding with smart products. As the younger generation, they are obliged to answer difficult questions about the use of smart elderly care systems for the elderly. At the same time, optimizing

smart products, focusing on considering the particularities of the elderly, and improving the applicability of the elderly to high-tech products.

The rapid development of the Internet provides more possibilities for the innovation and development of the pension model, but there are still many practical problems. There is still a long way to go for the intelligent elderly care model in China. Under the current context of big data, the smart senior care model has a wide range of application prospects, and through the use of Internet of Things technology, it actively promotes the effective docking between senior care needs and quality services.

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