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Theoretical Discussion on Intelligent Health Management Service Design

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Abstract: *Health management is the fundamental guarantee of national health. Sports health detection aims to provide two-way communication between medical experts and patients. With the overall rise of modern information technology, how to build an intelligent health management service system is a new topic. This article discusses the feasibility and necessity of the design of intelligent health management services by using the knowledge of computer-related theoretical disciplines, hoping to provide theoretical support for health management services.*

Keywords: *health management, artificial intelligence, design, platform, service*

1. Introduction

With the comprehensive rise of modern information technology, the intelligent health management service of "all-person, all-around" type can comprehensively enhance the user experience, achieve access to relevant information at any time, ensure the consistency and continuity of health information, effectively improve the quality of health management services, continuously improve people's quality of life, improve the quality of life, and moderately alleviate the pressure caused by the shortage of medical resources, uneven distribution, and high medical costs, so as to break the passive medical pattern and promote the transformation of disease treatment to disease prevention and health management.

Since entering the 21st century, with the continuous development of our social economy, people have paid more and more attention to health management. In July 2019, in order to solve health problems, the Health China Action Promotion Committee formulated the Health China Action (2019-2030), which clearly pointed out that "in order to achieve higher health performance at a lower cost, we must move forward, take effective intervention measures, and strive to extend the health life of the people, so that the people do not get sick, less sick, and improve the quality of life of the people." At present, with the continuous development of China's economy, Industries such as biological health care, hot spring health care, forest vegetation health care and other industries emerged at the historic moment, and some new technologies and applications related to medical care entered the field of health management [1]. Based on the background of social innovation and development in the new era, facing the user experience, and according to the potential needs of users, this paper makes a preliminary research on the design of intelligent health management services by using existing technical techniques and mature process design services, with a view to providing some reference for people to create harmonious relationships and future-oriented lifestyle, and promoting people's healthy life.

2. Literature review

In the 1960s and 1970s, the aging of the United States became more and more serious, the number of people suffering from chronic diseases continued to increase, the growth rate of medical and health demand accelerated, and the medical cost increased a lot every year. In 1972, in the Amendment to the Social Security Law, the United States government regulated health management and implemented some measures in order to control the growth of medical expenses and improve health level. In 1973, the Health Maintenance Act was introduced, and a new type of health service was born. It focuses on health management, intervenes in health risk factors, and provides health consultation and guidance by comprehensively monitoring, analyzing and evaluating the health status of individuals or groups. With the development and progress of society, countries around the world pay more and more attention to the problem of providing services to patients with sub-health and various chronic diseases, and health

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management is receiving more and more attention. It has been more than 20 years since the concept of health management was introduced into China at the end of the 20th century. Health management has shown its unique advantages and great potential in improving the quality of the whole people, controlling medical expenses and improving the cost-input-output benefits [2]. Especially with the advent of the era of artificial intelligence, health management can better understand people's individual, comprehensively and deeply, and efficiently match the supply and demand of health service resources.

In China, in order to provide the people with all-round and full cycle health services, the "implementation of the healthy China strategy" was proposed in the government work report, which greatly promoted the development of China's health management. In particular, with the promulgation of China's Guiding Opinions on Actively Promoting the "Internet plus" Action, intelligent health management has entered the lives of the masses. Intelligent health management aims to improve the quality of group intelligent health management [3]. With the help of key technologies such as health big data analysis and the Internet of Things, it promotes the transformation of health management to continuous monitoring and long-term process management, which has greatly changed the traditional mode of point-based monitoring and short-term flow management. For example, with the help of basic technologies such as biometrics and artificial neural networks, products such as health management wearable equipment, home intelligent health monitoring and detection equipment, personal consultation and navigation, and medication consultation assistant were born, which made information processing more intelligent and realized the organic integration of artificial intelligence and various fields; In order to improve the quality of life of the elderly, virtual assistants or other intelligent devices are used to analyze the health status of the elderly and assist them in reasonable life planning.

3. Intelligent health management service design presentation

First of all, service design is user-centered, with the help of advanced technology, to design a mature system to provide services for users. It has a strong role in promoting and differentiation, and can transform concepts into the service design of the evolution process of products with use value. First, service design is a new mode of connected communities and virtual measures. By innovating services or improving service experience, optimizing existing services or providing new services, it can bring more perfect service experience to users, with features of ease of use, usefulness, availability and effectiveness; second, service design organizes technology, process and interaction, brings multi-level and differentiated improvement, designs tangible or intangible operation modes, and creates value for stakeholders. From the perspective of users, the service system presents diversified types and rich product styles. It is not to sell existing products and operation status to customers, but to explore more personalized products for users[4]. However, in the process of operation, there is no corresponding relationship between the diversified characteristics of products, and the two can be linked at the same time. In the early stage of service, the overall type can be investigated, researched, judged or demonstrated according to the needs of users; in the medium-term stage, the customization of products needs to involve designers and experience. In addition, when establishing services, users can enhance the style, color, material and shape of products by means of transformation, trial, design and finalization, which can promote users to have a series of interaction and experience behaviors and deepen their participation in the customization process; In the later stage, in order to provide users with better service experience, the platform is used to collect users' relevant information. Secondly, the construction of intelligent health service design system is to continuously improve the user's perception and experience in the coordinated use range from the perspective of users, aiming to enhance the effectiveness of intelligent health services, use system thinking to establish situational experience, and create a more high-quality service scene atmosphere for users, which can greatly improve the user's use frequency and dependence on the service system, such as the creation of experience atmosphere experience a series of behaviors such as process building, space design, theme setting, etc. And the intelligent health service design system aims to continuously build a positive evaluation system for service brands by participants. In this process, with the help of journey maps and service blueprints, not only can enterprises in the operation system optimize and update the service contacts in each link, but also can improve the relationship between users and service systems and products, and strengthen the experience process management.

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4. Design of intelligent health management service

4.1 Design principles

Intelligent health management services take data collection, exchange, distribution, integration, mining and analysis as the core services. Through voice interaction with robots, medical institutions at city, district and county levels are connected to realize information sharing and interconnection of medical rehabilitation and health care data in the region. The platform provides health services for community hospitals, medical institutions at all levels and patients through the combination of artificial intelligence, mobile medicine and health management, and can provide accurate services for the population. Relying on the mobile Internet of Things and artificial intelligence technology to realize the collection of user's physical sign data, and further provide in-depth health services such as intelligent consultation, health risk warning and warning, health education, etc.

4.2 Design ideas

The design of intelligent health management service follows the principle of "monitoring, evaluation, intervention and promotion", and achieves the purpose of rapid, convenient and scientific health management with the help of artificial intelligence equipment or technology. It mainly includes four service links: health information management system, health assessment management, guidance, intervention and promotion. Among them, the health information management system includes subsystems such as health monitoring health management App, wearable intelligent monitoring of health monitoring equipment, etc; the health assessment management subsystem mainly includes: (1) health guidance and intervention service system. The health guidance and intervention service system includes scientific management projects, methods, means, intelligent management equipment, intelligent health places and other subsystems; (2) Health promotion system. The health promotion system includes feedback information platform, health management evaluation, health culture atmosphere building center, website knowledge base, interactive communication platform and other subsystems.

First of all, the intelligent health management service is designed to monitor users' real and reliable health data, and use wearable intelligent products to establish a health cloud information system; Secondly, through App software or intelligent instruments, analyze the collected individual or group monitoring health cloud data, and initially diagnose and establish the evaluation of the user's health status, thus interfering with the construction of health assessment management; Finally, in the intelligent health place, the intelligent health management system uses scientific health management projects, methods or means to guide and intervene the health status. At the same time, in order to promote online and offline interaction between health managers and users, users can obtain feedback information through the network knowledge base for self-health management. Therefore, for users of different groups and ages, intelligent health management service design can not only facilitate health management users to use intelligent platform data more flexibly, but also help users to query, evaluate and promote their own health information, so as to customize a personalized health management scheme for users, which is not only conducive to elderly health management services, chronic disease health management services, etc., but also can form a series of health management service systems, Promote the efficiency of intelligent health management.

4.3 Design features

In the intelligent management service system, the Internet is an important medium for the status of social medical and health services. Through the establishment of digital communities, people can participate in the intelligent management service system, and can establish new community relations, rapid and orderly communication channels between individual users and the medical system, which is more widely used, and consolidate the mutual trust between users and the medical system. In the construction of digital community, the intelligent management service system needs to work together, experience together, and create a good communication context and action basis, such as government, enterprises, communities, designers and residents, to experience together. At the same time, in the process of community service design, users should be actively guided to generate behaviors in offline space, residents should be encouraged to participate actively through design, and the effectiveness of design decisions should be improved by expressing their own subjective will. Through the establishment of a record database of doctors and patients' relevant living conditions and case data, doctors and residents are guided to consciously make two-way choices [5]. On the basis of establishing a relationship with

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each other, the digital service mechanism should comprehensively manage information such as diet and lifestyle, and try and explore the diagnosis of patients. In addition, the data center is not only willing to protect the private data generated by relevant services, but also can provide real and intuitive feedback on data, improve the quality of privacy protection, and feedback real and effective data to the data center. The operation mechanism of the digital community can promote the online and offline full-link operation, promote the sustainable development of community relations, establish trust relationships and form interactive closed-loop iterations through continuous collection of user data, with the optimization and perfection of system rules and the controllability and transparency of operation mechanism, as shown in Figure 1.

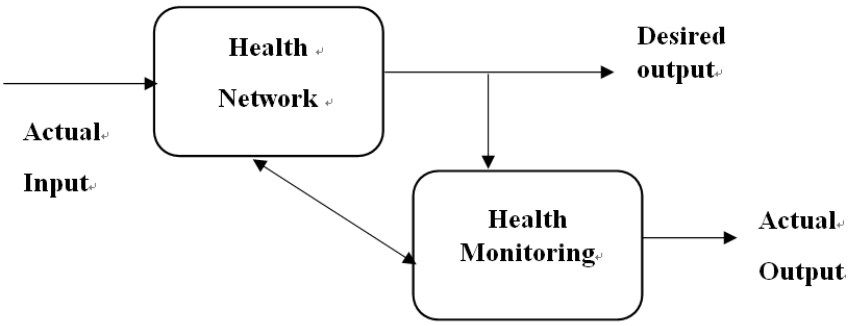

Figure 1: Intelligent health management service design platform

5. Operation process of intelligent health management service system

Although the operation process of the intelligent health management service system is complex and cumbersome, it breaks the drawbacks of the traditional health management mode. In terms of structure, the intelligent health management service system has truly realized the dynamic multidimensional management of the whole life cycle of the national health archives, and completed the recording, information transmission, data collection and filing, storage, calculation and processing of the real health data of the community residents. With the help of "vertical layering" and "horizontal cross-domain", it has realized the formation of various application schemes and user report transformation of data and information, and realized the interconnection, sharing with various clouds collaborative processing not only provides users and residents with real-time health management services, but also provides health managers with dynamic data of health archives, and provides online service platforms for health instructors [6]. The main steps are as follows: First, health managers sign service agreements with users and residents; Second, through the cloud service center, users or residents can establish complete and dynamic personal electronic health information files; Third, the health management cloud service model can provide a more scientific basis for the health assessment report, achieve the integrity of user or resident information, and conduct predictive analysis by integrating data such as the physical and mental conditions of users or residents; Fourth, the cloud service center can develop personalized health management intervention plans. Through comprehensive evaluation of health data, it can provide classified services or on-demand services. For example, with the help of artificial intelligence equipment or cloud data technology, health conditions such as health, sub-health and disease can be analyzed in detail, and then the healthy population can be divided into child health care, maternal health care, elderly health care, etc., and the three health conditions can be further refined, and the health guidance plan can be formulated according to the health report; Fifthly, on the basis of comprehensive assessment of the health status of users or residents, realize health promotion, enter the implementation process of intelligent personalized health intervention, and complete the operation of intelligent personalized health management service system. As shown in Figure 2.

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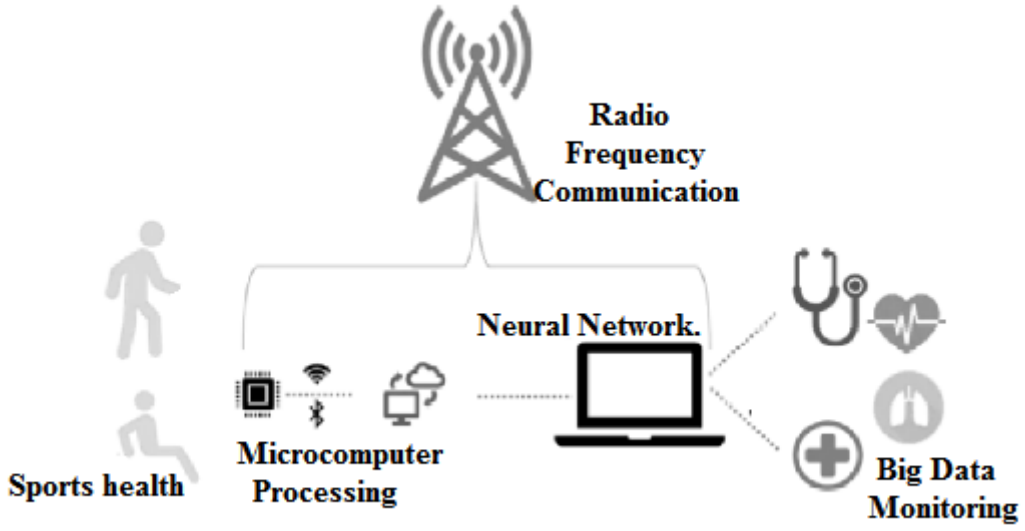

Figure 2: Intelligent Health Management Service Process

6. Conclusion

Health management service mode can obtain personal health test data through intelligent instruments or devices, and then input relevant information management personnel into intelligent software or network platform. In order to diagnose the health status of individuals or groups, health managers can integrate the lives of residents, conduct qualitative and quantitative analysis, and then give health assessment and prediction by the network platform; Through intelligent software or network platform, managers can communicate with residents, maintain, promote and improve management, and also promote healthy residents to self-monitor, control their health status, and timely find, analyze and solve problems. You can timely consult with online health managers and doctors, and obtain the most favorable health management plan.

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