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Design of an Intelligent Monitoring Bracelet under the Smart Elderly Care System

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Abstract: With the increasingly severe aging situation in China, more and more elderly people need to seek help when encountering problems, and their children can not always be around, so they can not receive timely and effective treatment when the health status of the elderly changes suddenly. The popularization and development of intelligent products and mobile medicine can provide solutions for them, which can facilitate the life of the elderly through the realization of the concept of "changing life information for data processing". This article intends to design and conceive an intelligent detection bracelet aimed at the concern and discovery of the elderly's life health monitoring, providing a new idea for "the elderly have a sense of security and a sense of support".

1. Research Background

In recent years, in the elderly care industry, especially in the smart home elderly care industry, the country has introduced a series of policies and regulations to support the development of the industry, providing a general direction for enterprises. In 2017, 30 relevant ministries and commissions of the country have issued and implemented the Three Year Action Plan for Promoting the Healthy Development of Smart and Healthy Elderly Care Health Industry (2017-2020), which is the first time that the central authority issued the plan for establishing a national level key industrial system and public service development platform system related to modern elderly care service industry with smart health management services. In recent years, The smart elderly care industry has always been regarded as a key area of strategic priority development by the country. With the promotion of local governments, it has made orderly development and progress, and gradually accelerated the progress of smart elderly care work in the national community. "Smart elderly care" has become one of the key development plans of the national smart community work, and increasingly focuses on and relies on applications in cloud computing, big data, Internet of Things, mobile big Internet A variety of cutting-edge emerging technologies, such as artificial intelligence and computing science, innovate the integrated development model of

smart elderly care and other elderly care services[1].

2. Key Points of Intelligent Bracelet Design

At the beginning, the bracelet was conceived to avoid the tragedy that the elderly could not save themselves and no one would help them when they were alone. Now, with the development of science and technology, the advent and use of various sensors, the portable bracelet can carry more content. It can not only respond to emergencies, but also add more functions. It is important to integrate the application of the smart bracelet into the whole medical treatment work, promote the intelligent and rapid response of key human and material treatment, intelligent interconnection, real-time information exchange, etc. [2], At the same time, it also brings hope for realizing real anytime, anywhere diagnosis. The analysis of application elements mainly includes the following aspects:

First, the interface settings are simple. In view of the poor eyesight of the elderly and the limitation of the size of the bracelet, the initial interface of the bracelet should be as simple and clear as possible, but its functions should also be complete and easy to operate, so that both the elderly with experience in using intelligent products and those who use intelligent products for the first time can adapt to and like the design. The most commonly used functions of the elderly, such as daily reminders, medication, memos, time, and call functions, can be placed in a prominent place, and the main menu can also be personalized by children and other people familiar with electronic products to meet different needs.

Second, data transmission synchronization. Monitoring the health of the elderly requires the help of the user's daily measurement data. Through long-term monitoring of the common health problems of the elderly, the bracelet can remind the elderly to cooperate with the detection by linking other portable devices, so as to avoid the monitoring vacancy caused by the elderly's inability to use or forgetting to measure various single function instruments, causing the consequences of failure to predict the arrival of diseases in advance.

Third, positioning monitoring alarm. Family members and children can't always accompany the elderly, but smart products can fill the gap. The design provides the bracelet monitoring function. When the elderly's body data is abnormal, or if the monitoring finds abnormal, the monitoring video can be sent to the children or doctors in an emergency. For privacy reasons, there is no active monitoring function on the mobile phone APP, and only in emergency can the monitoring data be sent to the mobile phone from the bracelet. In addition, it shall have the function of automatically sending and positioning in case of emergency.

3. Interactive Design of Bracelet

In the interaction between the elderly and the health monitoring bracelet interface, the target user is the elderly. Because of the changes in their physiological characteristics, the learning ability curve cycle becomes longer. At present, many devices with high complexity requirements are difficult to operate freely, so the information interaction system in the elderly family environment needs to be simplified as much as possible in the design. The power on key should be a physical key and provide power on feedback to prevent users from being confused by the power off after power on. In terms of memo and monitoring functions, data sharing between the mobile phone and the bracelet. Voice broadcasting will not only broadcast to the customers at the ring end at the preset time, but also pop up information at the APP end. In order to prevent the mobile phone from being forgotten at home or not being heard when going out, the bracelet can also remind the elderly, and the time should be updated automatically according to the time when the user takes the medicine.

4. Sensor

Sensor sensor is a device that can convert various complex physical or chemical quantities into electrical signals. Biological information is complex and changeable, so it is necessary to unify complex biological signals into electrical signals that can be identified by the system for data analysis. For its detection contents, such as heart, brain and muscle, the biological electrode technology can be used to monitor the parts where life activities are realized through potential difference. For information such as blood pressure, body temperature, heart rate, respiration and pulse, the system first analyzes blood glucose data in vivo through a variety of chemical sensors, or determines the average concentration of elemental ions in urine and other liquids; On the other hand, the concentration of nucleic acid substances with strong neural activity such as enzyme content, neurotransmitter, antibody, antigen, DNA, RNA and neurohormonal enzyme can be directly detected, calculated and analyzed by biosensor. In the overall R&D and design system development of biological intelligence system products. Therefore, it is necessary to focus on the application of biosensor technology for real-time tracking and detection of routine human physiological information. The central bracelet analyzes the data obtained from various equipment and systematically collates them to further reduce errors and improve the overall reliability of the system[3].

5. Possible Problems

5.1. The Cognitive Difference of Different Elderly Groups on Intelligent Elderly Care is Significant

The difference of cultural level will also lead to the cognitive difference of the elderly on intelligent elderly care. This will affect the acceptance of elderly care products. Compared with the survey data on the elderly and intelligent products, the proportion of the elderly who have gone to college who know about intelligent pension is more than the elderly with low education background. About one third of the elderly not only know about this way of pension, but also are beneficiaries of this way of pension. They are enjoying the convenience brought by technology. The remaining half of the people have known about but have not really enjoyed and experienced the relevant intelligent services. Among the people with lower education, only about 12.5% of the people actually know about and have experienced the relevant intelligent services. However, 40% of the subjects think that these so-called intelligent products are useless and waste money.

5.2. Elderly People have Serious Concerns about Smart Elderly Care

The quality of service institutions' work, whether the price of service provision is fair and reasonable, and whether the service work will be controversial due to interest disputes are all factors that many elderly people worry about the smart family pension. In the development of smart elderly care, how to overcome such difficulties, make the product simple and easy to understand, and simplify the complexity is essential in promoting the development of smart elderly care [4], which is also a challenge.

5.3. Lack of Effective Top-Level Design

With the continuous development of society, the continuous progress of science and technology, and the ever-changing life, the smart elderly care industry also needs to continue to make progress. At present, although we have vigorously promoted the large-scale development of the smart elderly

care industry at the national level, we have found in the development process that the improvement of the system and the framework of the system are not clear enough, there is a lack of top-level architecture design, there is a gap in the connection of various systems, a complete system has not been formed, and there are differences in local policies, There is still room for improvement due to different service supervision standards and uneven data platform capabilities[5].

6. Proposal

First, strengthen relevant top-level scheme design. The country should establish a centralized data base as soon as possible, improve relevant laws and regulations on smart elderly care, fill legal loopholes, and provide data base and legal support for the industry while promoting the settlement of local industries, adjust policies at a macro level, and effectively integrate and summarize information. Second, the progress and promotion of urban elderly care service industry is also crucial. With the self progress of the enterprise, the relevant institutions will be optimized accordingly, and the industry and market will promote each other and develop together. Platform construction is the foundation, software is the core of elderly care services, and technical products must adapt to the functional requirements of software, which are closely related [6]. Third, take the community as the basic bearing unit, and combine with provinces, cities and townships to build an intelligent elderly care service operation platform, develop and deploy various health intelligent terminals, portable health monitoring intelligent devices, APP system intelligent mobile application system equipment terminals, etc. The professional elderly care consulting service team strengthened the link between the service industry and users, and upgraded the service from "popular" to "order based" products, so as to transform the service function to the personalized direction. Fully and effectively meet the individualized and intelligent service needs of the elderly with different social needs, and truly and effectively provide a perfect, high-quality, comprehensive, professional and efficient service for the elderly friends.

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