

Research on the Design Strategy of New Elderly Apartments Based on Intelligence

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ABSTRACT

Many traditional elderly apartments and other elderly service facilities have problems such as backward hardware facilities, incomplete software services and lack of human resources. With the rapid development of Internet of Things and Internet technology, intelligent design is gradually introduced into the design of elderly apartments. This paper analyzes the problems of traditional elderly apartments, briefly describes the intelligent new elderly apartments, and researches the design strategies of intelligent new elderly apartments, with the intention of providing some help for intelligent elderly care in China.

Keywords: *Parameterized; Intellectualization; Provide for the aged; Apartment for the elderly*

1. INTRODUCTION

In recent years, Chinese society is rapidly growing economically while the population structure is rapidly shifting to an aging structure, and the phenomenon of aging and advanced ageing of the population is becoming more and more obvious. Therefore, in order to meet the needs of the elderly in the new situation, new apartments for the elderly have emerged.^[1]

The higher design standards of the new elderly apartments can better meet the needs of the elderly groups. With the development of technology, intelligence is becoming more and more integrated into people's lives, and technologies such as wireless networks, emergency alarms, and personnel location management systems are becoming more and more mature, providing the basis for the design of new elderly apartments, and the introduction of intelligent applications into elderly apartments is inevitable.

At present, the design of intelligent elderly apartments in China is not perfect, and many functions that should be available have not been achieved.^[2] Therefore, this paper focuses on the design of intelligent new elderly apartments, which have positive practical significance for the development of China's elderly care.

2. PROBLEMS OF TRADITIONAL ELDERLY APARTMENTS

2.1. *Blind pursuit of hotel-style design principles*

At present, there are more and more so-called "high quality" elderly apartments, but the high quality elderly apartments seem to be extraordinary lack of connotation, only using high-quality wooden materials, smooth and reflective marble materials.^[3] This kind of high quality positioning ignores the economic status of the elderly families, and on the other hand, it brings a psychological feeling of living in a short-term inn rather than a warm feeling of providing a long-term residence for the elderly.

2.2. *Lack of attention to the perceptual experience of older adults*

Existing traditional elderly apartments do not pay enough attention to the main body of the building and the personal experience and psychological needs of the elderly. Designers usually follow the design of the whole space. Such as the function and layout of the space is too uniform, giving the elderly an "institutionalized" bad psychological experience and other problems.^[4]

2.3. *Socially isolated closed design*

Under the influence of sociological theory, the design

principles of traditional elderly apartments emphasize the creation of a very quiet and relatively independent environment for the elderly. To a certain extent, traditional elderly apartments indirectly weaken the connection between the elderly and other groups in society, thus isolating them in a relatively closed environment. In such a closed elderly living model, it will enhance the sense of spiritual loneliness and loss of the elderly.

3. INTELLIGENT NEW ELDERLY APARTMENT

Intelligent new elderly apartments mainly cover three themes of health, safety and convenience, and by realizing the interactive integration of online and offline, they can precisely match the needs of elderly people with different elderly care and care needs. As shown in Figure 1, compared with traditional elderly care institutions such as orphanages and homes for the elderly, the new intelligent elderly apartments have improved in terms of facilities, management and environment. By focusing on the two main elderly care priorities of health and safety, the new elderly apartments are able to develop a variety of intelligent elderly care services that meet the core needs of the elderly, their children, the project owner and the operator at the same time. Intelligent elderly care services are based on the intelligent technology of intelligent new elderly apartments, which usually use intelligent means to continuously provide high-quality elderly care services to the elderly. [5]



Figure 1 Intelligent new elderly apartment

4. DESIGN STRATEGIES FOR NEW INTELLIGENT ELDERLY APARTMENTS

4.1. Establish intelligent health archives

The first is the health archives of the elderly. Unlike the long time interval of medical checkups in traditional elderly apartments, the health records of the elderly need to be evaluated and modified at all times in the new intelligent elderly apartments, and the records are in

dynamic change. [6] As shown in Figure 2, the intelligent center can track, monitor and predict the health condition of the elderly for a long time through daily physical examination, intelligent health monitoring bracelet and other technical means, and record the basic information of the elderly, the health record of stay, health assessment record, daily health record and other systematic information, all the dynamic monitoring and evaluation information is managed in a unified manner, and summarized into a dynamic, full-cycle health information file of the elderly, and through the health archive and maintenance Through the health records and the maintenance program, we can form a linkage and make a personalized health intervention program for the elderly.



Figure 2 Intelligent health record management center

4.2. Health monitoring and tracking, intervention and feedback

As shown in Figure 3 and 4, we provide all-weather health sign monitoring service for the elderly. Through the deployed health monitoring devices, we collect the data of blood pressure, pulse rate, heart rate, blood sugar, blood oxygen, etc. in real-time. The intelligent monitoring devices are docked with the automatic data of the health management system, and when the health data changes significantly and the health collection tends to be at risk, early warning alerts are pushed to the elderly and the health manager, and timely feedback is provided. Both the elderly and their families can view health information through the intelligent terminal to realize real time inquiry and sharing of health data.

At the same time, through the long-term collection of vital signs information, periodic analysis is carried out to form a trend report, timely measures are taken and improvement suggestions are recommended, making the care services more scientific and targeted. Dietitians and rehabilitation specialists make personalized health management service plans for the elderly according to their health conditions in terms of diet, exercise, medical, psychological and environmental interventions, and provide timely feedback of treatment effects and assessment data to the elderly and children's end, so that the elderly and their families can understand their physical conditions more timely and clearly.



Figure 3 Health monitoring tools



Figure 4 Monitoring and positioning Bracelet

4.3. Design strategies for intelligent terminals

Some elderly groups are frail and infirm, their limbs are inflexible, they need to use external force to live, and sometimes it is difficult for them to take care of themselves, which indicates that the design of elderly apartments should be well thought out and make effective use of intelligence. The intelligent terminal interface should be easy to see and operate. The learning and memory ability of the elderly gradually degrades, [7] and they generally do not have computer application skills, and it is difficult to learn complex operations due to the degradation of physical functions. Control home equipment, etc.

4.4. Personnel location management system

Considering the safety of the elderly and the need of the new elderly apartment management, a personnel positioning management system can be set up. [8] As shown in Figure 5, RFID technology can be used, using data transmission networking system to connect personnel positioning base stations, readers and intelligent bracelets carried by personnel, combined with the system back-end personnel management special software and background database for data exchange, to achieve personnel tracking and positioning and security management.

4.4.1. Positioning

Each elderly citizen is provided with a portable device, which can feedback the location and status of the

personnel to the management end in real-time and accurately, so as to react to the unexpected situation in time, with a positioning accuracy of <math><1\text{m}</math>.

4.4.2. Personnel Search

the current location of a specific person can be located by entering the name of the elderly and the electronic tag number in the management terminal.

4.4.3. Cross-border Alarm

It can set the area range, unauthorized personnel entering the area can be alarmed instantly, and it can also set the area and time range, outside a specific time, personnel leaving the area, instant alarm, such as late at night when the elderly leave the room, the floor nursing staff can be notified immediately to check.

4.4.4. Stay Alarm

set the area, if the personnel stay in this area for too long, you can prompt an alarm, such as the elderly in the bathroom for more than the set time limit, you can notify the nursing staff to go to check, to reduce the occurrence of accidents.



Figure 5 The smart Bracelet sends the positioning information to the monitoring center and the children of the elderly

4.5. Introduction of intelligent furniture

Most of the elderly groups are frail and infirm, with inflexible limbs, and need to live with the help of external forces, and sometimes have difficulties in taking care of themselves, which indicates that the design of senior apartments should be well thought out and effectively use intelligence. Regarding the interface of the intelligent terminal, it should not only be easy to understand but also convenient for the elderly to operate. It is known that the learning and memory ability of human beings will gradually degenerate over time, and the elderly people who are staying in the senior apartments will generally not learn to use the emerging smart phones and terminals. Due to the degeneration of physical functions, they have

difficulties in performing complex operations and learning how to use them. Therefore, corresponding measures must be taken in human-computer interaction to make intelligent device systems more suitable for the elderly. For example, the use of voice to control household devices, cameras to intelligently recognize human movements, sensor elements used in switch positions, the placement of respirators in the interior of the room, the installation of a one-touch call system, including alarm reminders, call reminders, charging reminders and other functions. To a certain extent, the introduction of such intelligent systems can not only facilitate the life of the elderly, but also help them integrate into modern Internet life.

5. CONCLUSION

To sum up, as the intelligent technology is more and more developed, the intelligent new elderly citizen apartment will also become the future trend of elderly citizen in China. Only the scientific design of intelligent elderly citizen apartment can better help the elderly to solve many troubles and make their later life more happy.

AUTHORS' CONTRIBUTIONS

In this paper, we analyze the existing senior apartments and come up with a way to use intelligent furniture to participate in the renewal of senior apartments, so as to help the elderly get a better feeling of life and maximize the most enjoyable life in their old age.

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