Research on Architectural Design of Elderly Care Residence under Home-based Elderly Care Mode

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Keywords: home care model; residential building; design and research

Abstract: China has entered the age of population aging, the number of elderly population increased sharply. It is of great significance to improve the living environment of the elderly and improve their happiness index to promote the construction of a harmonious society and strengthen the humanistic construction. At present, China's pension model is mainly divided into social pension model, institutional pension model and home pension model. Affected by the traditional lifestyle, the elderly are more inclined to choose home care mode. In the home-based care model, family is the core element, community is the support, professional service is the support. It is a form of socialized service to solve the daily life difficulties of the elderly. Therefore, the architectural design of pension housing based on this model should meet the needs of the elderly and facilitate the life of the elderly, reflect the humanized design and improve the quality of life of the elderly. Deeply analyze the architectural design of nursing home under the mode of "home-based elderly care", conduct detailed research and Thinking on the design work, and realize the optimal design of nursing home.

1. Introduction

With the development and progress of the society and the gradual increase of the elderly population, the traditional living mode has been unable to meet the living needs of the elderly. Based on the home care model, how to provide a safe, comfortable and healthy living environment for the elderly has become the focus of public concern. In this paper, starting from the living status of the elderly, and combined with the physiological and psychological characteristics of old people analysis, proposed pension related principles of housing design, summarizes the methods and strategies of residential design, in order to design a set of meet the demand of the elderly's pension house in many aspects, so as to improve the elderly living environment, improve the quality of life of the elderly. Under the humanized design concept, embodies the humanistic care for the elderly. It is hoped that this study can provide new ideas and methods for the design and development of residential buildings for the elderly under the home-based old-age care model.

2. Analysis on the Living Situation of the Elderly

Home-based pension model is the most common pension model at present. The advantage of this model is that the elderly will not be separated from their communication circle and can be taken care of by their families and neighbors. At the same time, the community will also provide help for the elderly and realize the combination of social pension and family pension. At present, home-based elderly care in China is divided into two forms. First, family care for the elderly living alone usually refers to the elderly with no children around. Second, it is multi generation home-based elderly care, which is a family based elderly care model. The elderly live with their children. With the development of society, there are great differences in living habits and ways of thinking between the elderly and young people. Therefore, more and more elderly people choose to live alone for the elderly, which has become a common form of pension in contemporary society. As shown in Figure 1:

  DOI: 10.25236/ichamhe.2022.085

Figure 1 A harmonious atmosphere with family.

As a new concept, home-based elderly care model is still in the stage of research and exploration. At present, there are many irrationalities in the design of old-age housing in China, and the needs of the elderly are not considered. For example, the design of residential space is unreasonable, and the physiological changes of the elderly are not considered in the residential design. For example, the elevator is not installed in the place with high floor height, which brings great inconvenience to the travel of the elderly. For example, the size and anti-skid design of kitchen and toilet are not based on safety principles, which makes the elderly have great potential safety hazards when using. At the same time, the layout of outdoor supporting facilities is unreasonable, which greatly reduces the activity places of the elderly. Therefore, when designing the residence of the elderly under the home-based elderly care mode, we must consider the principles of safety, convenience and health, improve the adaptability of the elderly to the living environment and make the housing design more reasonable.

3. Architectural Design Principles of Pension Housing

3.1. Security

The key of residential design for the elderly under the home-based elderly care mode is to ensure the safety, convenience and comfort of the elderly. As the elderly grow older, their physical function decreases and their movement is slow. Therefore, the design of residential buildings for the elderly should follow the principle of safety and comfort. Specifically, the design of indoor ground must pay attention to anti-skid and leveling, especially the anti-skid treatment of kitchen and toilet, so as to reduce the occurrence of accidents. On the other hand, the elderly often lack mobility, so indoor barrier free design should be carried out to enable the elderly to reach every corner of the room smoothly. At the same time, handrails should be added in the space where the elderly often move to help the elderly carry out indoor activities. Considering the safety principle, the most critical point in the design is to install emergency rescue devices indoors. At present, the mode of home-based elderly care is mainly living alone. Old people are prone to accidents at home alone. The installation of rescue equipment can contact the outside world as soon as possible.

3.2. Functionality

The functional principle requires that in the design of pension housing, the indoor space layout should be reasonably arranged and the house type layout should be grasped. The design area of housing for the elderly should not be too large. If the amount of exercise is too large, it will increase the exercise burden of the elderly and may lead to accidents. The area should not be too small. If it is too small, it will affect the normal life of the elderly, cause inconvenience and reduce the quality of life of the elderly. At the same time, starting from the elderly themselves, the location of interior design, including switches and door handles, should be reduced. It is better not to set the lighting as

voice control, but to reflect the humanized design idea. Therefore, the functional design of pension housing should grasp the scale and layout of indoor space, and carry out reasonable design on the basis of comprehensively considering the activity scope, living needs and architectural environment of the elderly, so as to improve the quality of the living environment of the elderly.

3.3. Health and comfort

Under the home-based elderly care mode, the architectural design of elderly housing focuses on providing healthy and comfortable elderly care environment for the elderly, which requires the design to improve the quality of life of the elderly, including comprehensive consideration of building ventilation, daylighting, sound insulation and other factors[1]. In architectural design, we should grasp the orientation of the living room and bedroom of the elderly residence. As the main activity place for the elderly, we should ensure good ventilation and lighting conditions. On the other hand, in order to create a quiet and comfortable rest environment for the elderly, we must strengthen the sound insulation design of buildings. Sound insulation materials can be added to the wall to effectively avoid the impact of external environmental noise on the elderly and strive to provide a healthy and comfortable living environment.

4. Architectural Design Strategy of Nursing Home

The multi-level open space design requires to strengthen the integration of indoor and outdoor space, implant diversified, multi angle and multi-level life concepts in the design, create a humanized and entertaining livable elderly care space, fully mobilize the life enthusiasm of the elderly, strengthen the communication between the elderly, eliminate the psychological loneliness of the elderly and improve the life happiness index. The residential design for the elderly under the home-based elderly care mode is mainly from the perspective of meeting the needs of the elderly. By fully analyzing the daily living habits, behavioral characteristics and psychological needs of the elderly, the humanized residential design is carried out to optimize the elderly care space. The specific space design and optimization strategies are as follows.

4.1. Space optimization of entrance, exit and lobby

In residential design, the entrance and exit and lobby are important places connecting indoor and outdoor, which should be paid attention to in the design. First, the width of the entrance and exit should be designed to be more than one meter to facilitate the passage of the elderly on crutches or in wheelchairs; Secondly, smooth and flat materials should be selected for the ground and pavement to ensure the safety of the elderly; Finally, stools and handrails should be placed in the lobby to facilitate the elderly to change shoes and provide convenience for the elderly.

4.2. Living room and dining room space optimization

In order to reduce the burden of sports for the elderly, we can design the living room and the dining room. The living room is the main activity place for the elderly to chat, drink tea and receive guests. The optimization of living room space is particularly important. The design should be reasonably arranged to meet the needs of the elderly and reflect the humanized care of the design [2]. First of all, as the main place for the activities of the elderly, we must ensure sufficient light. Therefore, we should pay attention to the orientation of the room in the design to ensure the maximum lighting conditions. Of course, pay attention to shade in summer; Second, we should have a good ventilation environment to provide a healthy and stable living environment for the elderly. The blocked environment is not conducive to air exchange and will damage the health of the elderly(See Figure 2 below). Therefore, comprehensively considering that the living room space can be set in the middle space of the residence, which not only meets the ventilation and lighting, but also connects all parts of the residential space, providing great convenience for the elderly.

Figure 2 Warm home atmosphere.

4.3. Bedroom space optimization

As the main place for the elderly to rest, the optimization of bedroom space is of great significance to improve the quality of life and health level of the elderly. Different from the privacy design of young people's bedrooms, the bedrooms of the elderly pay more attention to comfort and safety. Therefore, the orientation of the bedroom space is suitable for the south, which can ensure the lighting and ventilation conditions, greatly improve the indoor air quality and temperature, keep it in an appropriate state, and bring a more comfortable rest environment for the elderly. At the same time, the scale design of bedroom space should be reasonable to ensure that the elderly can pass easily in wheelchairs. At the same time, it should not be too big. Too much space is not suitable for management, which is easy to cause the psychological loneliness of the elderly. Therefore, it is very important to grasp the size of space.

4.4. Optimization of outdoor space environment

As an important place for the entertainment activities of the elderly, the design of the outdoor space of the elderly residence should reflect the principles of ecology and nature. In the layout of outdoor space, increasing the amount of greening and improving the greening coverage can greatly improve the environmental quality. At the same time, it also provides an activity place for the elderly, strengthens the communication between the elderly and eliminates the sense of loneliness. On the other hand, in the design, we should pay attention to the harmony and unity between artificial elements and natural environment, follow the principle of not damaging the integrity of the environment, pay attention to the construction of landscape, and deal with the relationship between indoor environment and outdoor space. The construction of outdoor landscape should not affect the lighting and ventilation of indoor space, pursue the integration and unity of indoor and outdoor space, and create a livable living environment for the elderly.

4.5. Safety design principles of outdoor space

Safety awareness should be strengthened in the design of outdoor space. For example, the setting of access roads should be as gentle as possible to meet the travel safety of the elderly and improve the travel stability of the elderly in wheelchairs. Setting railings and doing a good job in pavement anti-skid are also important design contents. On the other hand, benches should be reasonably placed around the road. The elderly have inconvenient legs and feet and inconvenient movement. It is necessary to provide rest places for the elderly. It is worth noting that in the community, driving routes and walking routes should be separated to improve safety. The overall design should be reasonably designed from the perspective of meeting the needs of the elderly and ensuring safety.

5. Conclusion

To sum up, the architectural design under the community home-based elderly care mode can meet the various needs of the elderly and comprehensively improve the quality of life of the elderly. The architectural design under the best community home-based elderly care mode should pay attention to optimizing the community home-based elderly care service mode, improving the community home-based elderly care supporting facilities, building elderly care buildings and standardizing the community road signs.

Acknowledgments

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