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Study on the Elderly-oriented Improvement of Rural Idle Schools

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***Abstract*—In recent years, a large number of rural schools have been idle due to some reasons such as "school mergence". After China stepped into the aging society in 1999, the aging population surged, and it has become a huge challenge for nowadays society. Compared with cities, the problem of supporting old people in some rural areas with backward economics and culture is more prominent. Rationally transforming the idle "Hope Project" into "Setting Sun Project" will be an effective way to alleviate the problem of rural elderly care. This paper studies the elderly-oriented improvement of rural idle schools in order to alleviate and improve the current situation of rural old-age care.**

Keywords—rural; idle schools; elderly-oriented improvement

I. THE CURRENT SITUATION OF RURAL ELDERLY CARE

A. Limited Number of Beds in Nursing Homes in Rural Areas

From the end of 2012 to the end of 2017, the number of beds in nursing homes in China increased from 3.81 million to 7.142 million [1], almost increased by double. However, due to the continuous increase of the elderly population, the per capita beds in nursing homes for the elderly tend to be stable after the rapid growth (see "Fig.1"). The Thirteenth Five-year Plan describes the current aging situation as "severe situation", and indicates that the aging degree of the actual resident population in rural areas may be further deepened.

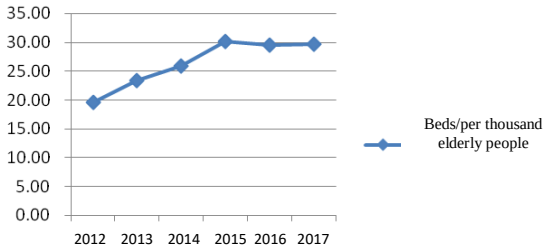

Fig. 1. Elderly care beds per thousand elderly people in 2012-2017

B. Great Differences in the Rural Elderly Population Received by Care Facilities

Supported by the government, rural happiness homes have been implemented rapidly. Based on providing day care, it has become the main way and form to develop the care facilities for the elderly in rural areas. For example, by 2017, Henan province had built 8,639 rural happiness homes [2], giving full play to their public welfare nature and pension function and providing convenience for nearby villagers. These elderly care facilities mainly receive self-care elderly people, are equipped with a small number of service personnel to offer basic daily services including catering and sanitation, and guide people to help each other and enjoy old-age resources. Because of the limited beds, it cannot meet the needs of the elderly in rural areas.

Another form of care facilities for the elderly in rural areas is private non-enterprises. Compared with rural happiness homes, it has a smaller number with a larger scale, a wider geographical range for receiving population, and lower requirements for the elderly self-care ability, and its charge is mainly based on the elderly self-care ability. This kind of care facility for the elderly is the main form to address the collective pension of the disabled elderly in rural areas, and it also becomes an effective supplement for the collective pension of the elderly in urban areas. However, due to the limitations of its distribution area, it is difficult for it to become the first choice for many rural elderly people.

C. Backward Infrastructure of Care Centers for the Elderly in Rural Areas

The construction of care facilities for the elderly in rural areas is mostly carried out during the communication between the person in charge and the craftsman. The lack of professional guidance and design will lead to unreasonable use of space and inconvenient use of space. Due to the limitation of funds, some functional space will be missing, thus greatly reducing the quality of care centers for the elderly in rural areas.

II. SUITABILITY ANALYSIS OF THE ELDERLY-ORIENTED IMPROVEMENT OF IDLE SCHOOLS

A. Idle Schools Provide a Site Support for the Elderly-oriented Improvement

The phenomenon of "primary schools in every village and middle schools in every town" in the last century has been broken under the policy of "School Mergence" in this century,

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and many schools have been idle and become empty. In recent years, rural schools have further disappeared due to the continuous flow of rural population, the decrease of school-age population, school choice in cities and other factors. Among these schools, there are some well-structured and well-located idle schools, and their good practical conditions and appropriate service radius provide the possibility for its transformation into care facilities for the elderly. The elderly-oriented improvement of idle schools not only avoids the waste of public resources, but also revitalizes the rural idle schools, and alleviates the status quo of the rural elderly care.

B. The Correlation Between the Actual Conditions of Idle Schools and Care Facilities for the Elderly

In essence, the elderly-oriented improvement of idle schools is the transformation of two different functional buildings. There are some correlations between the two, which can reduce the intermediate links of elderly-oriented improvement.

1) Building scale: Design Standard for Buildings of Care Facilities for the Elderly (2018 edition) makes specific requirements for the buildings of care facilities for the elderly whose number of beds or the total number of elderly people is more than or equal to 20 beds or 20 persons. Most of rural idle schools are primary or secondary schools, and the teaching classes are usually 5-8. Through rational utilization, the number of beds can reach more than 30, forming a small care facility for the elderly.

2) Building width and depth: Excessive depth will greatly affect the natural lighting and indoor ventilation of the building, thus reducing the indoor living environment. The construction of rural idle schools is relatively early, and the building structures are mainly frame structure and brick-concrete structure. The building is usually 9-10 meters in width, and 6.6-7.2 meters in depth, and the clear width of corridor is 1.5-2 meters. Appropriate size can avoid the appearance of dark room in the process of transformation and improve the indoor living environment. For a classroom, it is usually converted into three bedrooms or one large bedroom and one small bedroom to meet different living requirements.

3) Building form: Rural schools are mostly situated in the middle or side of natural villages, with superior geographical location. The scale of the school is generally small. It mostly has one to three storeys, and is usually built as a one-line, L-shaped or U-shaped veranda-style building. At present, the unit management mode is often used in the care facilities for the elderly in China. The one-line, L-shaped or U-shaped building can be easily divided into one or more units, and the veranda-style building has great flexibility for the construction of additional stairs or elevators in the renovation.

4) Sunshine and ventilation conditions: Design Standard for Buildings of Care Facilities for the Elderly (2018 edition) requires that the living room should have natural lighting and natural ventilation conditions, and the duration of sunshine on the winter solstice should not be less than 2 hours. Enough land and simple building forms provide the basis for adequate sunshine. Code for Design of School (2011) requires that the duration of full window sunshine in ordinary classrooms on the winter solstice should not be less than 2 hours. The requirements for kindergartens are even higher. In the sunshine duration, rural idle schools can meet the requirements of care facilities for the elderly.

C. Legal Support for the Elderly-oriented Improvement of Idle Schools

In view of the new proposition that how to make rational use of idle schools in this era, provinces and cities issue the Opinions on the Disposal of Rural Idle Schools and propose three disposal methods. The first is the internal transformation of the education system, transforming them into practice base or faculty dormitory. The second is the evaluation and auction, using to pay off school building debt. The third is for village-level public utilities [3].

In the construction of care facilities for the elderly in rural areas, there are construction subsidies for newly-built buildings and reconstruction and extension buildings. Upon the acceptance of rural happiness homes that have been transformed by the existing houses, a one-time subsidy for construction will be given. In the later management and operation, it will enjoy the management and operation subsidy. The subsidy standard is the same as the subsidy for the newly-built rural happiness homes, which will be used for happiness homes' daily operation expenses, such as water, electricity and fuel.

D. The Elderly-oriented Improvement of Idle Schools Is in Line with People'S Living Wishes

Compared with the young, the elderly have stronger traditional pension concept and their ability to adapt to the new environment has declined. They prefer to stay in the environment that they are familiar with to live (See "Fig. 2"). The rural idle schools will weaken the elderly people's sense of exclusion to the strange environment because of their own geographical advantages. From the perspective of children, it is also convenient for their daily visits to choose a nursing home that is closer to their own home.

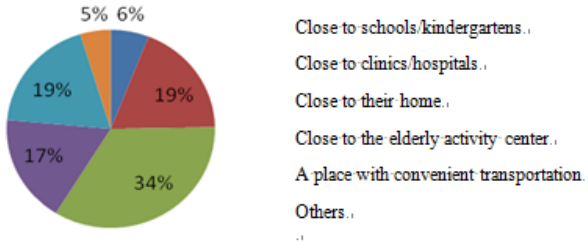

Fig. 2. Expectations of the elderly aged 60 and above for the location of elderly care facilities.

III. THE PRINCIPLES OF ELDERLY-ORIENTED IMPROVEMENT OF IDLE SCHOOLS

A. Economy Principles

The investment amount of care facilities for the elderly in rural areas is relatively single. However, the source of investment for rural happiness homes varies from region to region, which is generally shared by village committees, town governments and municipal governments. The private non-enterprise care facilities for the elderly are mostly funded by individuals, with relatively large investment, and the financial pressure is greater. In the process of reconstruction, attention should be paid to the preliminary planning, avoid the waste of land resources and reduce the secondary reconstruction, so as to ensure the effectiveness of capital investment.

B. Safety Principles

To ensure the safety of the elderly in an all-round way, construction and management services should be carried out simultaneously. First of all, relevant laws and regulations should be strictly observed in the renovation and expansion projects to avoid the injury and loss caused by the use of non-compliant products. Secondly, the details of care facilities for the elderly should be optimized. For example, the indoor and outdoor floors should adopt the material with good skid resistance; the water permeability of materials in outdoor floors also should be taken into account, so as to avoid prolonged water accumulation caused by rain and snow weather on the ground and hinder outdoor activities of the elderly. Considering the decline of limb coordination ability of the elderly, when using the protective pad, they can be fixed on the ground to prevent the slippage caused by it; the adjacent water boundary should be equipped with guardrails, and a striking sign also should be added, so as to prevent the elderly from accidentally falling into the water. It can also use electronic monitoring equipment to grasp the dynamic information of the elderly in a comprehensive and timely manner, so as to timely detect and rescue the elderly when accidents occur.

C. Elderly-oriented Principles

The update of functions is an important part of the process of elderly-oriented improvement for idle schools. Reasonable space transformation should aim at meeting the usage requirements of different groups of people. The main user of care facilities for the elderly is the elderly, and how to meet the request for utilization of the elderly is the key and difficult point in the transformation process. Elderly-Oriented principle should take into account both the building and the outdoor environment. The following points should be emphasized in the process of transformation: first, reducing the vertical height difference or handle the smaller vertical height difference with the ramp. Falling has become one of the reasons that affect the health of the elderly. The elderly after falling often has further deterioration of self-care ability and decline in confidence, which makes them more likely to fall [4]. Replace the ramp with a small height difference to prevent the elderly from being injured due to tripping during walking. Second, additional handrails should be added on both sides of the corridor. The corridor is the main horizontal traffic space. Generally, the walking limit of healthy elderly people is 10 minutes, and the walking distance is 450 meters [5]. The setting of the handrails can help the elderly to rest properly when their physical strength is insufficient. Third, the width of the corridor should be appropriately increased. The activity rooms in the care facilities for the elderly are often cold and cheerless, while activities often occur in the corridors, such as sunbathing, playing Mahjong, and stopping to chat. The spacious corridors increase the visibility of the elderly and further increase the possibility of communication and activities for the elderly. Fourth, accessible toilet should be set. The improvement of accessible toilet is mainly done by a variety of handrails, including the vertical handrails for access, the horizontal handrails for horizontal movement, and the horizontal handrails for assisting. Depending on the needs of the elderly with different levels of care, installing the appropriate handrail type can save money and save space.

D. Humanized Design Principles

The elderly will have a sense of loss and loneliness due to changes in family status, social status, and lack of solicitude and care of their children. The design should grasp the characteristics of the changes in the mental state of the elderly and respond to them to arouse their enthusiasm for life. In the transformation, the color selection of the wall and the configuration of the furniture can be warmly colored to create a warm living atmosphere; the outdoor landscape can be decorated with local materials to increase the sense of belonging of the elderly; the plant can be mixed with brightly colored and scented plants, further stimulating the visual perception experience of the elderly.

IV. CONCLUSION

The elderly-oriented improvement of rural idle schools effectively completes the transformation of functions between schools and care facilities for the elderly, so that these homes carrying memories are rediscovered and utilized, which stimulates the vitality of the buildings, provides a possibility of rebirth for the old buildings that are gradually disappearing during the urbanization process and offers a choice for alleviating the current situation of the elderly in rural area of China.

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