

Construction Strategy of Elderly Care Service Facilities Planning System in Old Industrial Residential Areas

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Abstract:

Based on the investigation of the existing problems of various service facilities in China's elderly care community at the present stage, the research systematically analyzes the service facilities at the hardware level, such as road traffic, facility layout, green space planning, and the service facilities at the software level, such as communication space, health care space, living space, etc. On the one hand, it constructs the optimization strategy system of elderly care community service facilities, on the other hand, it puts forward constructive optimization strategies, so as to provide a reference basis for building an elderly care community that meets the needs of the new era.

Keywords: *Elderly care service facilities, Planning objectives, Planning principles, Hardware level, Software level.*

I. INTRODUCTION

At present, China's aging has become a serious social problem. Creating and updating the living environment of the elderly has become an important topic in residential planning and design. Due to the late start of the construction of elderly care community in China, there are various problems, and there is a great room for improvement and adjustment in the design concept and configuration of service facilities. Combined with the current planning and design status of the elderly community, study the basic living needs and physiological and psychological characteristics of the elderly, plan and design a livable space environment, explore the existing problems and optimization strategies of the elderly community service facilities, deeply study the elderly buildings, and draw the design countermeasures suitable for the construction of the elderly community in a certain period in the future, This has positive practical significance for improving the architectural design theory and service architectural creation practice of pension community in China. The research divides the service facilities of the elderly care community into hardware parts: road traffic, facility layout, green space planning, etc. and software parts: communication space, health care space, living space, etc. from the perspective of design, the problems that need to be optimized are divided into planning level and configuration level, and the optimization strategies are put

forward respectively, It can not only provide important guidance for the optimization and transformation of elderly care community service facilities, but also provide rich experience for the research of elderly care in other residential areas, but also provide a powerful reference for the construction of residential areas now and in the future. (As shown in Fig 1.)

II. OBJECTIVES AND PRINCIPLES OF PLANNING

2.1 Planning Objective System

Based on the concerns of the elderly, the construction of the planning objective system of elderly care service facilities in old industrial residential areas is divided into two parts: hardware level and software level. Among them, the software level is the core, the most essential content of elderly care facilities is service, and the hardware level is the premise. Elderly care service facilities should be age-oriented. Without perfect and humanized hardware, software is difficult to play a role. At the hardware level of facilities, starting from the relationship between site and environment and the development of community and city, fully meet the living needs and changes of living needs of the elderly in terms of planning layout and planning and design. The planning and design shall improve the living environmental conditions of the elderly, set up a good living space, and provide supporting service facilities such as road traffic and landscape environment, Define its unique functional requirements. At the software level of facilities, we should start from the real needs of the elderly, grasp the characteristics of serving the elderly in the early configuration, medium-term management and later operation, and provide humanized and diversified life service space for the elderly by creating management units and life groups suitable for the elderly Fig 1.

2.2 Planning Principle System

Combined with the established planning objective system of elderly care service facilities in old industrial residential areas, the research puts forward the planning and design principles for the hardware and software aspects of elderly care service facilities Fig 2.

Principle of livability: meeting the livability of residents is the basic principle for the construction planning, transformation and renewal of facilities in elderly care residential areas. The livability principle is reflected in all aspects of design, such as perfect functional location, beautiful environmental form, friendly spatial scale, etc., so as to create a good living environment for the elderly.

Principle of evenness: all kinds of elderly care service facilities combine the different scale levels of the residential area, take the needs of the elderly as the core, consider the activity radius and nearby characteristics of the elderly, carry out zoning and hierarchical design of the activity space, take into account each residential group, and evenly arrange all functions in each area to ensure appropriate evenness.

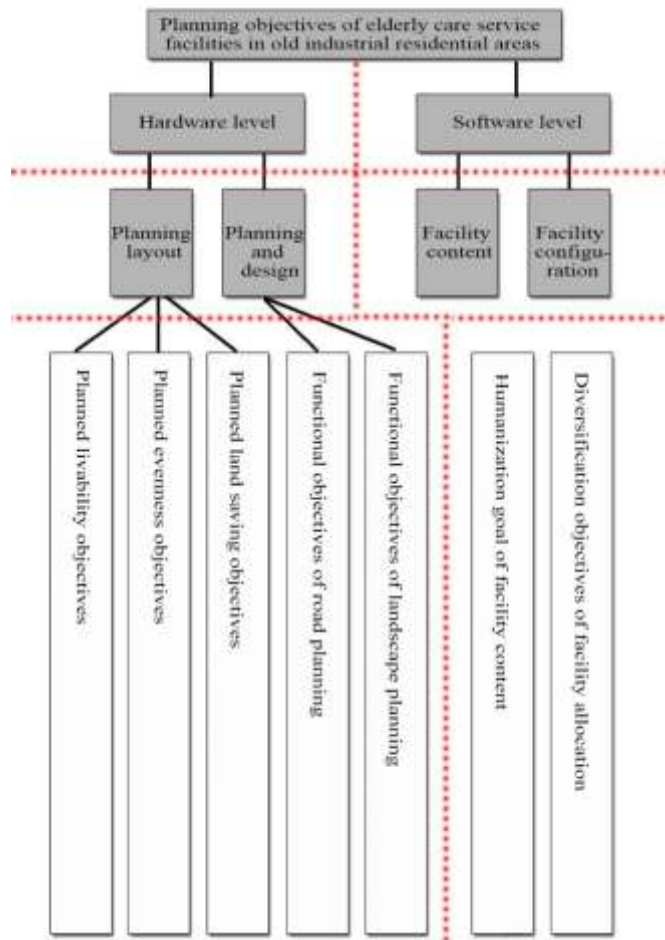


Fig 1: Planning objective system of elderly care service facilities

Principle of mutual integration: the life of the elderly needs a certain degree of security and independence, but they also prefer to integrate the living environment with the surrounding environment of the site. When planning, we should fully combine the characteristics of the surrounding environment, make full use of the outdoor space environment while strengthening the sense of domain, improve the use efficiency of outdoor public space, and fully consider the future development, so as to create a safe, comfortable and easy communication residential environment for the elderly, so as to organically integrate the community with the surrounding environment.

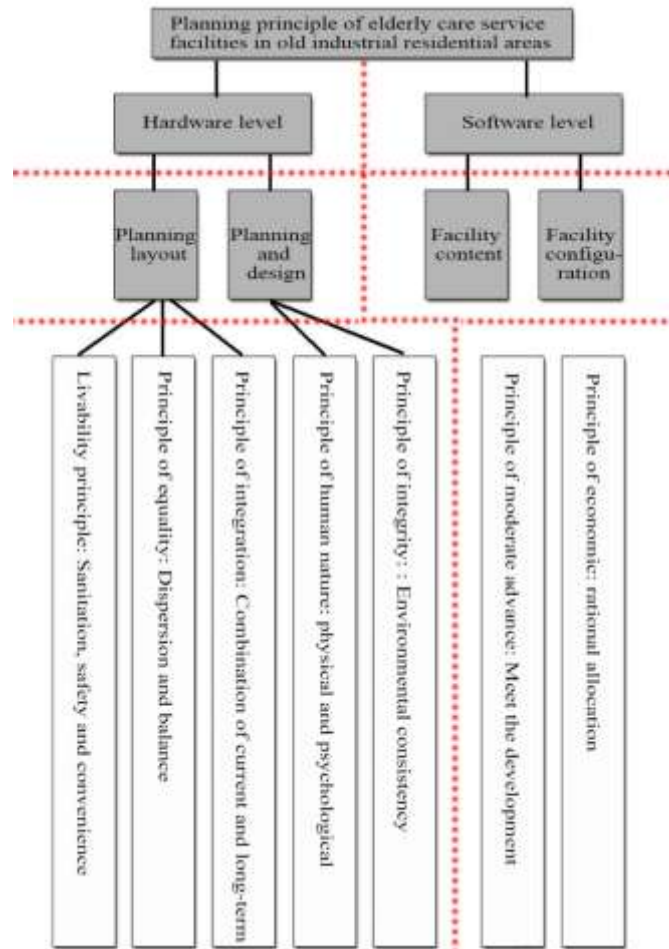


Fig 2: Planning principle system of elderly care service facilities

Human nature principle: Although there are many problems in the old industrial residential areas, such as too many environmental constraints and difficulties in environmental renewal and transformation, with the improvement of the quality of life, more and more elderly people put forward higher and higher requirements for residence. For example, in view of the decline of reaction speed and memory of the elderly, the design should strengthen the convenience and smoothness of traffic organization and the clarity and continuity of the identification system; In view of the weakening of the activity ability of the elderly, various materials in contact with the elderly shall be made of solid, anti-skid and anti falling materials. In view of the attenuation of the eyesight of the elderly, soft and warm colors and eye-catching and clear signs should be adopted in the design.

Integrity principle: the elderly care service facilities should be coordinated with other types of architectural design in the residential area in order to play their maximum role. The allocation of health care centers, day care centers and various recreational facilities in residential areas shall be coordinated with the development planning and development scale of the city, and the long-term planning and

development of the overall project shall be considered. Elderly care facilities can be set independently or combined with other buildings according to the situation. When combined with other buildings, they should be considered as a whole to avoid mutual interference. At the same time, the architectural shape, external color and volume height should be connected and integrated with other buildings in the residential area.

Principle of moderate advance: the design and planning of elderly care service facilities should be based on development and consider sustainable development. In China, the construction of elderly care service facilities has strong demand and broad prospects, but the situation is also very urgent. It is a long way to find a service facility planning and design strategy suitable for the development requirements at this stage and in the future. Various facilities are equipped with high standards. It can more effectively and professionally provide real-time, efficient, networked and intelligent elderly care services for service objects.

Economic principle: in the planning and design of elderly care service facilities, especially under the background of transformation and renewal of old industrial residential areas, we should pay more attention to the use efficiency of land. On the one hand, we should save land and avoid waste. On the other hand, we should also minimize the damage of development and transformation to the overall environmental intention of the original residential areas.

III. CONSTRUCTION OF ELDERLY CARE SERVICE FCILITIES PLANNING SYSTEM IN OLD INDUSTRIAL RESIDENTIAL AREAS - HARDWARE LEVEL

3.1 Facility Layout Planning

The layout of facilities is rooted in the daily life of the elderly and is closely related to their quality of life and happiness index. The survey found that the activities of the elderly pay special attention to convenience, which is first reflected in the activity distance[1]. It is generally believed that it should be reached within 10 minutes and the service radius should be within 200 meters, At the same time, it is convenient to complete some life shopping and other activities in the activity area.

In terms of road traffic system, first of all, the current road traffic planning of most elderly care communities mostly adopts the form of diversion of people and vehicles, with vehicles in the outer ring and pedestrian roads in the interior. Secondly, the shortage of parking spaces in community planning is also the main reason for the phenomenon of disorderly parking in the community. The lack of reasonable spatial separation and restriction between various road traffic facilities and the living space of the elderly encroaches on the activity space of the elderly and brings no small potential safety hazards to the outdoor activities of the elderly, This limits the occurrence of outdoor activities of the elderly to a certain extent. Finally, there are deficiencies in barrier free design and road traffic ancillary facilities, which reduce the community activity willingness of the elderly and weaken the vitality of the community. It is suggested to

improve the current road walking environment and fully understand the activity law, activity radius, activity habits and other characteristics of the elderly. Firstly, a basic and suitable walking system should be provided to meet the outdoor activities of the elderly, combined with the entrance and exit of the road, length, width, paving materials, landscape plants on both sides of the road, landscape sketches, perfect lighting facilities, seating facilities Planning and design of drainage facilities; Secondly, the safety is improved through barrier free facilities such as curb ramp, handrail and steps and ground guidance signs; Finally, for different types of elderly people, such as visually impaired and wheelchair elderly, the specific traffic requirements of pedestrian walkways are considered.

In terms of facility structure system, optimizing the layout of community facilities must be based on a comprehensive understanding of the environment in the community, the use habits, hobbies and physiological and psychological needs of the elderly[2]. On the one hand, provide them with various necessary and effective community activity places, and configure them with necessary basic leisure facilities, commercial facilities, living facilities, etc. in order to improve the comfort and convenience of life; On the other hand, comprehensively consider the economic and cultural development level around the residential area, clarify the number and proportion of the elderly population in the residential area, and adjust the types and forms of facilities needed by the elderly in the residential area in real time from the perspective of structural variability. This dynamic planning is reflected in timely obtaining the needs and evaluation of the elderly in the community for facilities, and adjusting the types of facilities, so as to ensure that the types and quantity of service facilities in the community can meet the needs of the elderly at all stages, and better improve the service level of the community through the layout of facilities[3].

In terms of facilities and site allocation, the psychological needs of the elderly need a certain sense of identity and belonging, which is often met through social activities. Therefore, first of all, creating a suitable place for social activities is an important condition to enhance the vitality of the community and improve the happiness index of the elderly. On the one hand, flexible outdoor residence space should be created nearby, which is a prerequisite for triggering social exchanges and promoting communicative activities. For example, open small landscape space should be set near the entrance and exit of living space, semi open space nodes for stopping and staying should be set on the roads between houses, etc. On the other hand, these spaces are equipped with landscape sketch facilities such as tables, racks, seats and pavilions suitable for the elderly, so as to enhance their staying ability. Secondly, in larger group squares or community center squares, set conditions that can facilitate some group activities, such as seating facilities and shading facilities. Finally, the optimization of communication facilities should also reflect the spiritual needs of the elderly, set up some artistic and cultural communication spaces, and create some small-scale cultural communication spaces for the elderly Fig 3.



Fig 3: Layout planning elements of facilities in old industrial residential areas

3.2 Landscape Facilities Planning

The landscape greening space in the old industrial residential area has a long history, insufficient maintenance in the later stage, poor integrity, and rough tree species and vegetation landscape[4]. At the same time, due to the single spatial type of the old industrial residential area in the layout, the landscape greening space is lack of contact with each other, the spatial order is complete, but the transition and change are insufficient. Suggestions on landscape facilities planning: firstly, for the self-care elderly, provide them with more activity venues, such as activities with children, gathering venues, rest venues, daily exercise venues, rehabilitation activity venues, chat venues, etc. At the same time, the activities of children and young people in the old industrial residential areas shall be reasonably designed to enable the elderly to fully enjoy a vibrant life. Secondly, for the landscape facilities design of the semi disabled elderly, in addition to creating a comfortable, quiet and safe landscape space to meet their basic activity needs, the design should also focus on providing more rest places, more walking and talking space to deal with the characteristics of their weakened action ability. At the same time, other activities in the residential area should be introduced and viewing sites should be reserved. For the fully disabled elderly, it is analyzed that they are psychologically eager for spiritual calm, and want to feel the external environment and contact their peers[5]. Therefore, the activities are mainly to rest, experience the outdoor space landscape and watch other people's activities. It is suggested that the planning and design of landscape facilities emphasize the viewing and feeling needs of the elderly, enhance their experience, and have higher requirements for barrier free design.

3.3 Service Facility Design

The optimization of service facility design should first be reflected in the construction of rich and variable space forms to meet the composition structure and activity willingness of different types of elderly people. At the same time, on this basis, more convenient storage space and neighborhood communication space should be set for the elderly, such as the allocation of residential courtyard space with appropriate scale, which will help to create a close neighborhood mutual assistance environment[6], Improve the life

happiness of the elderly; Secondly, we should carefully optimize the indoor and outdoor details, consider appropriate barrier free measures in terms of indoor materials, lamps, electrical appliances, kitchen and bathroom facilities and furniture, effectively distinguish dynamic and static zoning and variable design, and ensure the privacy of architectural space of various service facilities. Use ergonomics to determine the spatial scale and operation mode of each facility to ensure the safety and convenience of the independent life of the elderly; Finally, it is to optimize the comfort needs of the elderly, comprehensively consider the lighting, ventilation and air conditioning of the facility building environment, and take the physiological and psychological needs of the elderly as the starting point, such as inconvenient activities, decreased vision and weakened thermoregulation ability, and set up indoor facilities in line with their activity habits according to the standards of the elderly.

IV PLANNING SYSTEM OF ELDERLY CARE SERVICE FACILITIES - SOFTWARE LEVEL

The software level of the elderly care service facility planning system is different from other urban and construction facility products. It is highly targeted and professional. These highly targeted designs should provide the elderly with various humanized, professional and convenient services as the starting point. The construction of the system and the layout of facilities are different from other types of residential products and construction facilities.

4.1 Service Content of Elderly Care Facilities

The setting and adjustment of service content of elderly care facilities is a dynamic process, which is not only suitable for the development of national economy at the present stage, but also consistent with the characteristics of community development[7]. The research shows that the content of elderly care service facilities in old industrial residential areas at this stage should be combined with the comprehensive allocation of home-based elderly care and community elderly care. Give full play to the role of the community and make it a living place that can provide professional services for the elderly. It is also a real estate form and residential development concept that can provide public service facilities and medical rehabilitation functions for the elderly[8]. The mature community environment of old industrial residential areas is an important support for home-based elderly care services. At the same time, it can also be comprehensively developed and constructed in combination with the current conditions and existing community medical and health care resources. The specific service content and service mode that can be provided are mainly set according to the health status and family situation of the elderly. For the healthy elderly who can take care of themselves, more concentrated family services such as shopping, housekeeping, catering, legal consultation and culture and education can be provided; For the semi disabled and fully disabled elderly, door-to-door services such as medical treatment, health care, barrier free transformation, housekeeping, catering and emergency assistance should be provided[9]; For the elderly living alone or elderly, emergency call and spiritual comfort services should also be provided. At the same time, combined with the characteristics of centralized setting of old industrial residential areas but large scale, multiple community elderly service stations should be set up to ensure the basic service

function of day care.

4.2 Content Configuration of Elderly Care Facilities

Firstly, the content allocation of elderly care service facilities in old industrial residential areas should first be combined with the economic affordability of the elderly, on the basis of fully respecting the wishes of the elderly. The survey found that at present, the elderly residents in different physical conditions and ages have different requirements for the allocation of health care facilities[10]. For example, the healthy elderly want the community to fully allocate basic life service and leisure sports facilities; while the semi disabled elderly want to increase the allocation of rehabilitation, fitness and medical care facilities[11]; The fully disabled elderly need to be equipped with day care centers and nursing units within the appropriate scope of activities. Secondly, combined with the facility allocation of the overall resources of the community, the study the optimal combination of life service facilities, rehabilitation and fitness facilities, medical and health care facilities, cultural and entertainment facilities, etc. It can not only save the capital and time cost of pension service resources, but also promote the maximum utilization of existing community pension resources. Finally, the allocation of elderly care service facilities in old industrial residential areas should adhere to the principle of integrity, that is, combining the existing community health care facilities in old industrial residential areas, considering them with living space, focusing on the style and spatial form of other facilities from the perspective of environmental design, so as to make the configuration of facilities and environment as a whole, and make a unified planning with other elderly care facilities[12]. The implementation of resource integration and sharing can not only save community resources, but also reduce the cost of management TABLE I.

TABLE.1 Allocation Standards and Area Indicators of Various Elderly Care Service Facilities

CONFIGURATION STANDARD OF ELDERLY CARE SERVICE CENTER		
CATEGORY	POPULATION SIZE	BUILDING AREA (M²)
SUB DISTRICT OFFICE	30000-50000	1600
CONFIGURATION STANDARD OF COMMUNITY DAY ACARE CENTER		
CATEGORY	POPULATION SIZE	BUILDING AREA (M²)
CLASS I	30000-50000	1600
CLASS II	15000-39999	1085
CLASS III	10000-14999	750
CONFIGURATION STANDARD OF ELDERLY SERVICE STATION		
CATEGORY	POPULATION SIZE	BUILDING AREA (M²)
CLASS I	7000-9000	400
CLASS II	4000-6999	300
CLASS III	Below 5999	200
PROPORTION OF USABLE AREA OF VARIOUS HOUSES		

ROOM NAME		PROPORTION OF USED AREA (%)		
		CLASS I	CLASS II	CLASS III
HOUSING FOR THE ELDERLY	LIVING SERVICE ROOM	43.0	39.3	35.7
	HEALTH CARE ROOM	11.9	16.2	20.3
	LEISURE ROOM	18.3	16.2	15.5
AUXILIARY ROOM		26.8	28.3	28.5
TOTAL		100.0	100.0	100.0

V CONCLUSION

In view of the current aging situation in China, the research focuses on the planning and construction of facilities for the elderly, analyzes the problems in the hardware level of facility planning and design and the software level of facility content and configuration, and puts forward the solutions, The research systematically puts forward the planning principle system and target system of elderly care service facilities in old industrial residential areas. The main conclusions of the study include: In terms of the construction of elderly care service facilities system in old industrial residential areas, based on the careful analysis of the psychological, physiological and behavioral characteristics of the elderly, aiming at the problems found in the investigation, this paper first makes a systematic analysis of the causes of the problems, and puts forward corresponding solutions from the perspectives of urban development, urban planning and environmental design, Finally, it constructs the planning principle system and target system of elderly care service facilities in old industrial residential areas. In terms of the planning practice of elderly care service facilities in old industrial residential areas, the research puts forward specific planning and design methods in terms of hardware aspects such as planning and design layout, landscape facilities planning and service facilities design, as well as software aspects such as service facilities content and service facilities configuration, in order to explore the allocation and construction of elderly care service facilities in old industrial residential areas, build its planning and transformation strategy for the construction of subsequent related projects.

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