A Study on the Elderly-Orientation of Urban Public Space

—The Case in Dazhou City

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Abstract

At present, the aging population in cities is growing sharply, and the problem of elderly-oriented urban public spaces is gradually coming to the fore and urgently needs noticing and addressing. As an illustration, we may take Dazhou City as an example. Conclusion can be drew form the questionnaires and offline visits that the elderly generally have difficulties in traveling, shopping and medical care, affected by the lack of community infrastructure, their physical condition, living habits and knowledge structure, etc. We propose to improve the adaptability of the elderly, build a comprehensive system of elderly services, create an elderly-oriented urban space as well as an atmosphere of respect for them to level their well-being index up and settle the issue of elderly-oriented retrofitting of urban public space.

Subject Areas

Sociology

Keywords

Urban Public Space, Elderly-Oriented, Retrofit, Dazhou City

1. Introduction

With the development of the country, the population-aging trend is getting increasingly obvious. In 2020, the General Office of the State Council and the Ministry of Industry successively issued the "Implementation Plan on Effectively Solving the Difficulties of Using Intelligent Technology for the Elderly", "The Internet Application for Elderly-Orientation and Barrier-free Retrofitting", and other documents, which all indicate the directions for the retrofitting. By con-

sulting CNKI under the title of "Elderly-Orientation", 503 articles are found (Figure 1), and the research time mainly concentrated in the last five years, involving topics on old urban neighborhoods, residential buildings, rural dwellings, and network applicable retrofitting and so on, while the systematic research on the elderly-orientation of urban public space is relatively less.

According to the bulletin of the seventh national census of Dazhou City, the population aged 60 and above was 1,204,400, accounting for 22.36%. Among them, the population aged 65 and above is 967,400, accounting for 17.96%, which is higher than the national and provincial average.

In the document on the development of the elderly and the construction of the pension system in Dazhou city, the social problems brought aging, advanced aging, deactivating, empty-nesting and weakening function of home pension are prominent. There is also an urgent need to conduct research on elderly-oriented retrofitting of urban public space in Dazhou, which is both the implementation of the national policy of positive aging concept and healthy aging, and the key to advance the high-quality development of elderly services.

2. Theoretical Overview

2.1. Definition of Urban Public Space

For the public space environment, its social attributes often emphasize "public" rather than "private use", which means social members have free access to activities, being blessed with public nature [1]. Urban public space is an open place for residents to interact with each other and carry out various activities with the charm of diversity [1]. Residents' needs for urban public space are divided into five levels, from high to low, they are security needs, accessibility needs, comfort

Figure 1. Search results for elderly-orientation title.

needs, pleasure needs, and sense of belonging needs, respectively [2]. With the growing needs of people for a better life, the development trend of urban public space gradually appears diversified, combined with the development characteristics of the times. This paper considers urban public space as a place for daily activities such as health sports, recreation, etc. And they can be divided into physical public space and network public space.

It's invariably the case that the public space environment of the city or residential areas often carries large-scale events such as public events, festivals and gatherings. While the public space environment of residential areas or neighborhoods is mainly open to community residents for their daily activities. The Cyber public space is an extension of the physical one, which emerges under the development of the Internet era.

2.2. Definition of Elderly-Oriented Retrofitting

At present, there is no precise and unified definition of "elderly-oriented retrofitting" in domestic academic circles [3], while Fu Yuefeng and Hu Huiqin put more emphasis on "daily care that suitable for the old" [3]. In recent years, as people have gained a new understanding of the development of the elderly group, the one of "elderly-orientation" should be changed accordingly. Elderly-orientation retrofitting is to solve the unsuitability of old buildings and facilities for the elderly, to adapt to their living habits, to level their living comfort up, and to make their life safer. In this paper, we reckon that elderly-oriented retrofitting is the process of promoting the overall development of the elderly.

3. Survey Analysis of Elderly-Oriented Urban Public Space in Dazhou City

3.1. Questionnaire Design

Based on the current situation of aging and documents such as "Implementation Plan on Effectively Solving the Difficulties of Using Smart Technology for the Elderly" and "The Internet Application for Elderly-Orientation and Barrier-Free Retrofitting", the questionnaire was designed from the perspective of today's seniors to investigate the physical public space and online public space in Dazhou City. From January 18-22, 2022 through Questionnaire Star (https://www.wjx.cn/report/147582964.aspx). A total number of 400 questionnaires were received, among which 305 questionnaires were valid.

3.2. Analysis of Questionnaire Results

3.2.1. Physical Space

1) The Situation of Survey Subjects

The number of participants in the survey is 305, of which 51.82% are living alone or with a spouse (Table 1). 169 people have difficulty in adapting to urban public space, and most of the elderly prefer solitary and spousal living, there is also a great demand for the elderly-oriented retrofitting of urban public space.

2) Survey on the Issue of Elderly-Orientation

There are still a lot of problems in traffic safety, living environment, recreational facilities, living habits and other aspects of the elderly-oriented urban public space retrofitting in Dazhou. According to the survey (Figure 2), 64.71% of the elderly people think that traffic safety is the most prominent problem, for the narrow roads and the high traffic flow of people in the city can easily lead to road congestion and traffic accidents, affecting the traveling of the elderly as well. Building layout and dirty environment is another key concern of the elderly. Relatively speaking, the elderly think that in recreation-retrofitting there are fewer problems.
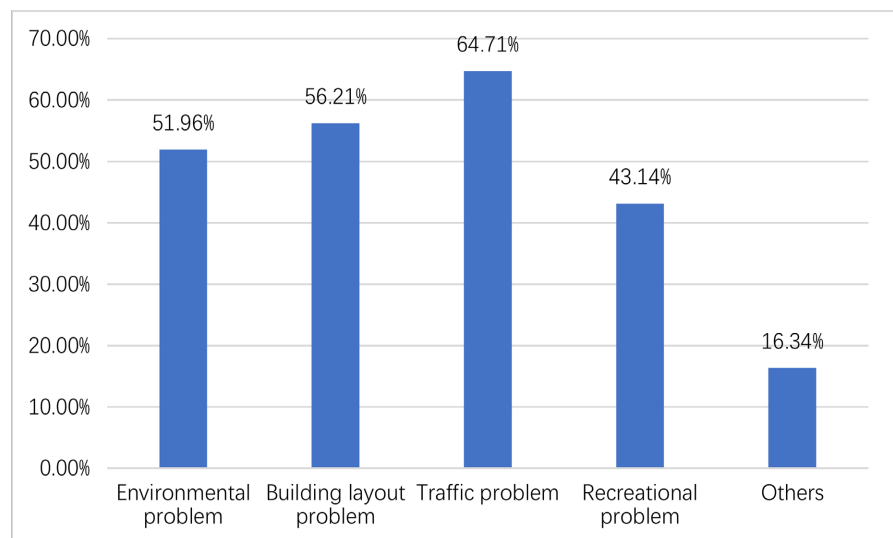
3) Survey on the Scope of Retrofitting

In the survey, 65.03% of the elderly are desperate for retrofitting their home environment and the vicinity of it where they spend most of the time in their daily life. Secondly, 63.07% of the elderly are hoping that medical, transportation and other building sites and facilities to be elderly-oriented, because they are frequent visitors. In addition, 56.54%, 53.27%, and 42.48% of the elderly want to retrofit urban cultural construction sites, including public places and electronic equipment, also natural scenic spots such as forests.

If the elderly-orientation of home environment and surrounding activity sites

Table 1. Living conditions of the elderly at home.

Sorting	Name	Number of people
1	Live alone	76
2	Live with a spouse	79
3	Live with grandchildren	42
4	Live with children	108
5	Total	305

Figure 2. The problems in public space.

is to be carried out, the most expected project of the elderly is the beautification of the community environment, accounting for 73.53%. Moreover, the elderly have a greater demand for adding wall handrails, public facilities and activity venues, accounting for 53.59% and 50.33% respectively. The demand for adding elevators, enlarging balconies, reducing the height of stairs, and increasing public communication space is relatively small, making's up for 49.02%, 39.22%, 42.48%, and 44.44%, respectively (Figure 3).
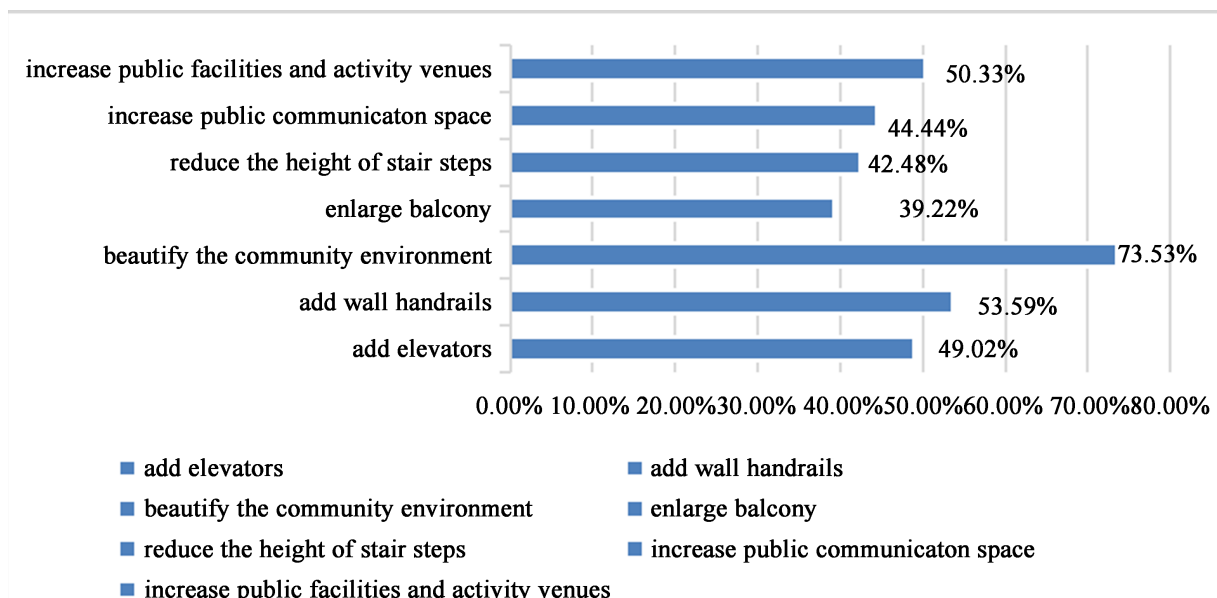
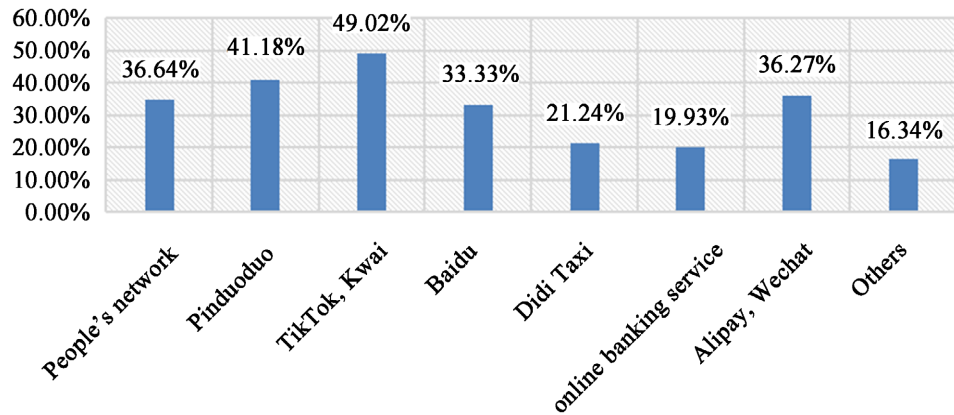### 3.2.2. Network Space

1) Survey Respondents

Among the elderly, 30.72% use smartphones, 55.23% use senior phones, 4.25% use landline phones, and 9.8% don't use any communication tools. Among the respondents, most of the elderly have only received junior high school education or below, proportion being as high as 83.33%, and only 16.66% of them have received high school education or above. Low education level is considered one of the main reasons why the elderly can't use smartphones.

2) Network Behavior Survey

Among the elderly people who use smartphones, the proportion of those who use TikTok and Kwai (a short video app in China) ranks the first, percentage being 49.02%; the proportion of those who use pinduoduo (a shopping APP in China) is the second largest, accounting for 41.18%; the proportion of those who use Alipay and WeChat is 36.27%; the percentage of those who use the People's network is 34.64%; and those who use Baidu APP takes up 33.33%. The usage rate of the rest of APPs is not high, all below 30%. The rest of the APPs have a low usage rate of less than 30%. From which we can see that the elderly have a great demand for online entertaining, shopping and information-getting (Figure 4).

Figure 3. The most expected elderly-oriented project of the elderly.

Figure 4. Websites and APPs that employing elderly-oriented and barrier-free versions.

Table 2. Survey statistics of network public space retrofit.

Sorting	Name	Percentage
1	Large fonts, large icons and high contrast, etc	71.57%
2	Elderly-oriented content	65.03%
3	Remote assistance from children	60.78%
4	Elderly taxi hotline, one-click taxi hailing, simple health code, etc	60.13%
5	Addition of more easy-to-understand tutorials of every applications and websites	43.79%

3) Survey on Retrofit Projects

There are 71.57% of the elderly hoping that the website and mobile applications to have the functions of large fonts, large icons and high contrast text to solve the problems that the ones with weak eyesight having; 65.03% of them are expecting the website and mobile applications to have the elderly-friendly, caring and barrier-free version; 60.78% of the elderly want to have a smartphone with remote assistance function so that their children can assist them remotely just through the network; and 60.13% of the elderly hope a hotline to be opened for them to make one-click taxi hailing, as well as to realize the using of simple health code, etc. And still others reckon that the more easy-to-understand tutorials should be added in the applications and websites (Table 2).

4. Dazhou City Public Space Elderly-Oriented Strategy

4.1. Improve the Adaptability of the Elderly

4.1.1. Encourage the Elderly to Continue Learning

Encourage the elderly to do self-learning and keep learning modern knowledge. The community should organize regular lectures to let the elderly experience the convenience of the Internet through live demonstrations, and to solve the problems brought by the Internet and smart devices for the elderly. Children are supposed to guide the elderly to learn the basic operation of smart devices, experiencing the fun of it.

4.1.2. Strengthen Social Training Guidance

Each community should carry out publicity campaign for elderly-oriented training, conduct vigorous propaganda of it, let the elderly groups understand and actively participate in the training, support municipal and county (city and district) radio and TV universities in allowing them to give play to resource advantages, set up elderly TV (Internet) universities, improve the community learning network for the elderly, create an information-based learning platform for elderly education, and promote them to progress with the times.

4.2. Build a Comprehensive System of Elderly Services

4.2.1. To Improve the Basic Elderly Service Policy System

Establish a basic elderly service list system and clarify service standards. Improve the community home-based senior care service network, promote the elderly-oriented transformation of public facilities, promote the extension of professional institutional services to the community, and strive to develop community home-based senior care services. Promote the linkage of community, social organizations and social workers, improve the community-based senior care model of "community nursing home + community nursing station + community home care", to realize a home care service network with elderly service enterprises and social organizations as carriers and social workers and volunteers as the backbone.

4.2.2. To Foster Home-Based Senior Care Service Enterprises and Institutions

To provide personalized services such as meal assistance, bath assistance, cleaning assistance, emergency assistance and medical assistance for the elderly at home, and to provide the senior and the disabled ones with door-to-door services, so as to level the coverage rate and service standards up. Promote in-home elderly "refinement" and understand precisely the real needs and habits of the elderly, and carry out targeted renovation. As the bathroom is the place with the greatest demand and safety hazards, the universal design and the adaptation of auxiliary devices should be accelerated [4]. Design compact elderly-oriented sinks and other facilities to widen the passage space to facilitate the mobility of elderly people's mobility aids; set up the shower stand and shelf near the toilet for the convenience of independent bathing. Other aspects also include the design of the opening and closing direction of the door, anti-slip flooring and indoor floor height difference, and the installation of smoke alarms in the kitchen, etc.

4.2.3. To Develop a Smart Senior Care Service System

Relying on the Internet, support communities, senior care institutions, social organizations and enterprises to use the Internet of things, the Internet, cloud computing, big data and other information technology, develop and apply intelligent terminals and home community senior care service wisdom platform, information systems, applications (APP), WeChat official accounts and other as-

pects to provide personalized services for the elderly and protect their personal safety, to promote " Internet +" smart senior care project [5]. For instance, the millimeter wave radar mentioned in "Elderly-Oriented Smart Home: Millimeter Wave Radar at the Right Time". A single millimeter wave radar monitoring product is similar in size to the smoke alarm that is often used at home, which can monitor human movement within 7 meters. Except for the advantages of previous electronic products, it protects the privacy of the elderly while capturing their movement, body posture, heart rate, breathing and other types of data in a timely manner. And it can be integrated into home appliances to achieve falling alarm, sleep, respiratory and heartbeat monitoring and other functions. The research and development of millimeter wave radar will have a significant impact on the wisdom pension.

4.3. Create Elderly-Oriented Old Urban Space

4.3.1. Promote the Construction of Barrier-Free Infrastructure

The diversification of the functions of urban public space has an important impact on our city lives. In the environmental aspects of the public space around the city, the transformation is mainly reflected in the "accessibility" and the strict implementation of the laws and regulations related to the construction of barrier-free environment. The design of the vegetation along the route can choose low shrubs to ensure the open view, so that the elderly can identify the direction. In terms of greening plants, canopy form, branch size and dense degree should all be taken into consideration to create different seasonal landscape effects. For the old neighborhoods, high floors, safety hazards and other problems bring inconvenience to the elderly. We may take cool water well in Dazhou City as an example, the "new elevator policy" has already been implemented. As for the elderly-oriented household facilities, the community should pay special attention to those in the homes of the elderly, and do a good promotion, such as designing the residential space specifically for the elderly, and expanding the public recreation area and other related projects. In terms of the living of the elderly, attention should be paid to strengthening property supervision, adopting simplified workflow, strengthening supervision over the whole process, and offering financial subsidies, etc.

4.3.2. Promote Urban Elderly-Oriented Retrofitting of Transportation

The most basic thing in the traffic environment is to divide the flow of people and traffic, set up clear traffic flow lines and guidance signs, connect all activity sites and form familiar activity paths for the elderly, so that they can travel more conveniently and safely. The road pavement should be made of materials that are friendly to the elderly, flat, non-slip and with good water permeability. The landscape walkway should be reasonably set up with long chairs and related resting facilities to ensure the health condition of the elderly. At the same time, it's also necessary to consider the elderly in wheelchairs, exclusive areas for the elderly in bus stations, train stations and other transportation hubs should be set

up accordingly to provide priority convenience services.

4.3.3. Accelerate the Elderly-Oriented Retrofitting of Cyberspace

Based on the advent of 5G era, there's intelligent mainstream in public places. According to the 305 questionnaires in the online survey, 70% of the elderly do not have smartphones, which is a major difficulty for the elderly in terms of intelligence. In response to the national policy, various institutions have launched elderly-oriented retrofitting, and medical institutions have implemented green channels for the elderly to optimize the "digital gap", specialized acts like introducing special telephone reservation services, and "smart elderly assistance" provide the elderly with "health code-free access". The unveiling of the first "bank branches for elderly" in the west of financial services also issues "convenient, elderly-friendly" version of the manual service software, solving the problem of "fear of operation" for the elderly. The community government can organize some internet knowledge activities in the daily life, like internet knowledge competitions and practical internet training, to change the adaptability of the elderly to the internet and increase their sense of social belonging.

4.4. To Create a Cultural Atmosphere of Respect for the Elderly

4.4.1. Increase the Facilities and Places for Cultural and Recreational Activities for the Elderly

In order to enhance the physical fitness of the elderly and enrich the aging culture, it is advised to open up venues suitable for recreational activities. For example, expand the activity space or rebuild theme parks and fitness venues, equipped with adapted facilities and equipment to carry out sports activities; add some educational and entertainment facilities such as chess and cards in community streets to fully exercise the brain cells of the elderly; build simple dance, music and drama venues, for the purpose of utilizing their own interests and hobbies and keeping up with the trend of the times; establish some natural scenic spots suitable for the elderly for excursions and fishing can play a role in lowering pressure and reducing fatigue; invite professional doctors to teach the elderly the correct knowledge of health care and give them basic examination and care in a regular routine to ensure a healthy life.

4.4.2. Increase the Special Cultural Activity Programs Suitable for the Elderly

Develop senior media to meet the various spiritual needs. As an illustration, Yanzhao Senior News has launched the "I Travel, I Enjoy" edition, in which columns such as "Traveling", "Unforgettable Journey" and "Where Have I Been Recently" meet the needs of senior readers to publish travelogues and enhance their interest in life. The "Traveling", "Unforgettable Journey" and "Where Have I Been Recently" sections meet the needs of senior readers to publish travelogues, through which their interest in life is greatly enhanced as well. The News takes seniors' needs as a starting point, not merely limited to organize offline activities to teach the elderly how to use their smartphones, but also takes the initi-

ative to teach the elderly readers who submit articles to the news how to use their cell phones and how to submit articles. Meanwhile, the relevant teaching activities of some communities and aging organizations are also actively reported. Local governments can also make joint efforts to organize some special cultural competitions to give active guidance to the elderly for learning some cultural activities on their own initiative, take the lead to participate in various competitions such as chess, dance, music, calligraphy, etc. On this occasion the elderly could learn something and enrich their spiritual world [6].

5. Conclusion

Under the increasing trend of population aging, "elderly-orientation" retrofitting is imperative. At the core of it, urban public space is closely related to the daily life of the citizens. We're supposed to promote the construction of public facilities, level the quality of life of the elderly, and enhance their sense of well-being. At the urban planning level, we should clarify the configuration standards of facilities, provide a reasonable layout at the level of community design, provide a complex public service facility system, and pay great attention to the coverage, accessibility, recognizability and safety of facilities. For construction and implementation, supervision and management should be strengthened so that the facilities retrofitting can be reasonably and legally implemented, promoting the elderly-oriented plan of Dazhou City with high quality and providing services for the elderly groups.

Conflicts of Interest

The authors declare no conflicts of interest.

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