Designing an Elderly-Friendly City in Cardiff: Cultivating Sense of Security for the Aging Population: Transforming Butetown for the Entertainment, Health, and Diversification of the Elderly

Yedi Tian*

Cardiff University, Cardiff CF10 3AT, Wales, UK

***Corresponding author:** Yedi Tian, 506659278@qq.com

Abstract: As an important part of urban construction, elderly-friendly construction is crucial to the formation of an elderly-friendly society, which has been widely recognized internationally. Especially after the COVID-19 pandemic, various organizations around the world have called for changes in public space and urban building planning, with an emphasis on the accessibility of green spaces. This underscores the complexity and difficulty of integrating vulnerable groups of the elderly into cities and using infrastructure and public space.

Keywords: Aging population; Elderly-friendly city; Urban planning; Built environment; Design

1. Introduction

Urbanization and aging are profoundly impacting our lives, work, and spatial experiences, making aging an unavoidable issue in urban development. The proportion of the global population aged over 60 has increased from 9.2% in 1990 to 11.7% in 2013 and is projected to reach 21.1% by 2050 [1]. Countries experiencing rapid demographic transitions must urgently address the challenges of aging. Consequently, the construction of elderly-friendly cities has become a significant and urgent measure to ensure that urban environments can accommodate and support the needs of an aging population.

The redesign of urban public leisure spaces increasingly considers the needs of minority groups by incorporating features like facilities for the disabled and the blind, which exemplify humanized urban construction. However, as society ages, urban space construction often lacks awareness of the aging population. City parks frequently lack adequate signage, causing elderly individuals to get lost easily. Moreover, many leisure squares are built in areas with significant traffic interference, noise, and complexity, making them

difficult for older people to access and enjoy.

The World Health Organization (WHO) issued the *Guidelines for the Construction of Global Friendly Cities on Ageing*, emphasizing that city design should consider the abilities and resources of elders, and flexibly predict and respond to their needs and preferences related to elderly care. The decisions and chosen lifestyles of the elderly should be respected. As a vulnerable group, the elderly require protection, and the built environment should promote their integration into community life [2]. In 2010, the WHO established the Global Network of Elderly-Friendly Cities and Communities (GNAFCC). By 2022, its membership had grown to 1,000 cities across 47 countries [3].

This report aims to enhance public spaces to be more favorable for elderly people in cities. By promoting elderly-friendly initiatives on multiple scales and from all perspectives, cities can improve their performance in health, leisure, services, and accessibility of facilities for the elderly

2. Significance and impact of an elderly-friendly society in Butetown

This study focuses on designing urban public leisure spaces to be elderly-friendly by identifying essential components of an elderly-friendly city. It aims to supply a variety of comfortable outdoor areas for senior citizens, assist them in engaging in social activities, help them realize their values, provide a sense of empowerment, and foster a positive aging-related social environment. The study highlights innovative urban planning initiatives and improvement strategies to make roads, parks, and public spaces socially inclusive, equitable, and safe for the elderly population by analyzing research conducted from the perspective of elderly friendliness.

3. Designing a city that is elderly-friendly

As a valuable resource in society, cities need to foster a friendly attitude toward the elderly and assist them in integrating into the community [4]. This necessitates urban designers adopting elderly-friendly language and thinking models in the design of spaces, structures, and services [5]. It is recommended that cities consider elderly-friendly approaches across three spatial scales: at the city level (urban plan and policy), at the street and community level, and at the housing level (space and product) [6].

Many frameworks have been developed to conduct interventions within urban contexts to improve the overall quality of life for the elderly population. The following are three prevalent models with their essential characteristics: the concept of Active Ageing, brought up by the WHO, which focuses on improving health, participation, and security for the elderly [7]: the Connectivity Model, integrating ecological notions and emphasizing the interaction environment for the elderly, covering housing, transportation options, supportive community, and engagement [8]; and the AdvantAge Initiative (2002) in the United States, which aims to establish an elderly-friendly city with four primary features [9] – meeting basic needs, promoting social involvement, supporting the independence of disabled populations, and enhancing overall well-being. Manchester is part of the pioneer group that joined the GNAFCC. The Manchester City Council developed a strategic plan to address inequalities and challenges in impoverished areas [10].

3.1. Safe transportation system

Ryan and Wretstrand stated that the decline in the well-being of the elderly is caused by social isolation and reduced access to goods and services, which is closely related to low mobility, especially for disabled people [11]. Bannister and Pauling found that urban transportation and travel potential are of great significance to the well-

being of the elderly [12]. Through outdoor activities, the elderly can not only escape a monotonous life but also integrate into modern society and cultivate their own interests. Outdoor activities are beneficial to physical and mental health and can also stimulate the vitality of the elderly.

Many elderly individuals face difficulties when engaging in outdoor activities due to their limited mobility and cognitive challenges. Simple tasks such as navigating unfamiliar areas can cause anxiety, necessitating careful planning beforehand. The absence of pedestrian-friendly amenities like benches, public restrooms, and bus shelters further complicates their outdoor experiences. Road closures and construction projects also present formidable obstacles [13]. Inadequate road infrastructure and transportation services also have a significant psychological impact. Social exclusion limits their ability to participate socially and economically, which in turn exacerbates health issues and lowers their overall quality of life. This situation undermines the cohesion and equity within aging societies [14]. Research indicates that elderly individuals in urban settings often experience marginalization and heightened vulnerability to social inequality, resulting in limited engagement in daily activities and a gradual decline in physical well-being [15]. Insufficient availability and accessibility of transportation and convenient travel options perpetuate these challenges, further exacerbating their conditions.

3.2. Sense of security

Recent studies increasingly demonstrate a positive link between well-designed outdoor spaces and elderly health. However, unfamiliarity with the built environment significantly reduces the frequency of outdoor travel among the elderly. Urban landscapes are rapidly changing due to redevelopment while declining cognitive functions make once-familiar surroundings unrecognizable for older adults. These factors contribute to diminished mental well-being, as simple outings can evoke discomfort and anxiety [16]. Deteriorating navigation skills further exacerbate feelings of insecurity, fear, and reluctance to engage in social activities, thereby deterring elderly individuals from accessing public spaces. Therefore, fostering place attachment becomes essential to support aging in place among the elderly population [17].

Environmental gerontology focuses on how older adults perceive and respond to their architectural surroundings, aiming to understand the dynamic relationship between their capabilities and environmental needs [18]. Studies have shown that poorly designed neighborhoods can exacerbate mobility issues by hindering walking and exercise opportunities [19]. In urban settings, researchers have found that imposing buildings, confusing street layouts, and expansive open spaces can be intimidating for people with dementia [20]. As individuals age, they become more sensitive to loud noises, bright colors, and crowded environments. Spaces that appear unsafe, such as dark alleys, dirty underpasses, and narrow pathways, create barriers that deter older adults from engaging with their surroundings. Additionally, complex transportation hubs, large commercial plazas, and vibrant neon lights and billboards can overwhelm the senses of the elderly, leading to sensory overload.

Urban planning should enhance the awareness of active response to aging and ensure that the needs of the elderly are fulfilled. Constructing green space suitable for the elderly is important. Designers should design public leisure environments according to the physical, psychological, and social characteristics of the elderly. For instance, as most elderly people spend a relatively long time in the park, more restrooms, seats, signs, and maps should be set up around the park. Pedestrian and vehicle areas should be separated, and weatherproof corridors should be designed to provide all-weather travel conditions. Seating and other rest facilities should be available every 20 minutes of walking to help the elderly rest. By offering a comfortable environment, their sense of security can be improved.

4. Research methodology

4.1. Literature review

It is crucial to refine the characteristics and shortcomings of existing studies, identify emerging research trends, and determine the entry points for further investigation in the context of elderly-friendly design. This can be achieved by gathering documents and data that include relevant policies related to urban fitness for the elderly, research on elderly-friendly theories applied at urban and community levels, and specific aspects such as green space construction in parks, road design, and services tailored to elderly populations. Establishing an evaluation system will provide a theoretical foundation to enhance the scientific rigor and comprehensiveness of the research, aiming to contribute to the advancement of elderly-friendly urban design practices.

4.2. Field study

To gather information on Cardiff's fitness for its elderly population, methods like observation and interviews can be used. This will include examining aging facilities in the city, residences, and public spaces used by elderly groups. The goal is to collect case data to support further research.

4.3. Questionnaire survey

Understanding the daily activities and spatial needs of the elderly, as well as conducting satisfaction surveys of comprehensive urban parks, are crucial steps in this study. Additionally, it is essential to comprehensively assess how the elderly utilize roads, public spaces, and buildings within the study area. The research will focus on identifying key aging factors within parks to support the development of an aging evaluation system.

Relevant data can be sourced from three main areas: extensive basic data provided by city officials for service provision and planning, health statistics, and interviews conducted to assess the specific needs of the elderly population.

5. Limitations and barriers of this research on the investigation of elderly-friendly communities

Currently, research on aging issues primarily focuses on evaluating and designing community spaces, residential areas, roads, and parks. However, the existing literature on aging design and evaluation is limited and lacks a cohesive research framework. This study recognizes the inherent subjectivity and limitations in extracting and categorizing evaluation indicators from the available literature on the aging population. To address these shortcomings, future research should broaden the scope of literature review, incorporate more quantitative indicators, and establish a more comprehensive and scientifically rigorous evaluation system.

In studying aging adaptability in urban areas, the research is constrained by time limitations, the specific demographic composition of the elderly population, and their varying capabilities within the study area. Consequently, the selection of studies may be limited, potentially resulting in a somewhat biased understanding of aging adaptability and the activities of elderly groups in urban environments. To overcome these challenges, future research should explore more efficient and comprehensive research methods and data collection approaches to expand the sample size and deepen insights into aging issues in urban contexts.

6. Conclusion

In light of significant demographic aging and the evolving and diverse needs of the elderly, we must actively address the challenges of an aging population by updating our approaches and expanding our design concepts.

Designs should focus on fun, safety, and interactivity to meet new requirements and forms. This research facilitates the integration of social resources for the elderly and breaks down barriers, continuously improving their living conditions and overall quality of life. Creating an elderly-friendly society enhances the city's livability and sustainable growth, boosts its reputation, and promotes social participation among the elderly.

Disclosure statement

The author declares no conflict of interest.

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