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Aging-in-Place Model and Its Localization Study: A Case of Xi'an

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Abstract: Based on the study of aging-in-place models in representative Asian countries, this paper analyzes the aging process and the current situation of elderly care in Xi'an. It explores the major challenges related to planning, architecture, and operations in the implementation of the aging-in-place service system in Xi'an, and proposes corresponding solutions. It is suggested that accessibility and convenience should be the highest standards for allocating resources for elderly care. In terms of specific strategies, priority should be given to housing and communities. On the one hand, support should be provided for aging-friendly renovation of privately-owned residences; on the other hand, public rental housing and shared-ownership housing should incorporate more considerations for aging-friendly design. Additionally, efforts should be made to strengthen the service support functions of community-based elderly care facilities, addressing issues in planning, design, and operation. Diverse business models should be explored to improve professional service standards and optimize financial sustainability.

Keywords: Aging-in-place; aging-friendly design; community support

Introduction

The concept of "aging-in-place" was first introduced in 1999 by Singapore's Inter-Ministerial Committee on Aging Population as a response to demographic aging. Its core idea is to create living environments suitable for the elderly—particularly aging-friendly housing, neighborhoods, towns, and cities—so that older adults can achieve active aging within familiar surroundings.

Aging-in-place refers to "growing old in familiar homes and community environments with minimal disruption to original living patterns and daily activities" [1]. This model not only reduces social costs but also better safeguards the independence and autonomy of the elderly, enabling them to access social support and maintain social connections within their own communities.

1. Overview of the Development of Aging-in-Place

With the deepening of global population aging, an increasing number of countries are facing challenges in elderly care. Although the traditional institutional care model can provide certain nursing services, it often comes with high costs and psychological adaptation difficulties for the elderly. By contrast, the aging-in-place model enables older adults to continue living

in familiar environments, maintain existing social relationships and lifestyle habits, and has thus gained wide attention and recognition. In Asia, Singapore and Japan—both representative of rapidly aging societies—have developed and continuously practiced the aging-in-place model relatively early.

1.1 Singapore

Since the late 1990s, Singapore has developed a relatively reliable aging-in-place system through over two decades of coordinated efforts in community planning, architectural design, and socio-economic support. Comprehensive solutions have been provided in terms of elderly financial security, aging-friendly housing and communities, urban construction, and the integration of care services.

Singapore's public housing system serves as the key foundation for the aging-in-place model. From elderly studio apartments to flexible two-room flats and multi-generational family apartments, housing options are designed to meet the diverse needs of older adults. In its age-friendly urban planning, Singapore has integrated family service centers, eldercare facilities, and childcare centers into public housing estates, creating more inclusive and multi-generational community spaces. Adjustments to public housing policies also encourage parents to live near their children, reinforcing family support and laying the groundwork for aging-in-place [2].

In terms of financial support, Singapore has implemented compulsory savings through the Central Provident Fund (CPF), along with policies such as the "Lease Buyback Scheme" and "Silver Housing Bonus." These housing-based financial mechanisms allow older adults to obtain additional economic support without leaving familiar living environments.

In actual construction and operations, some practices combine institutional and community-based care. For example, the Ren Ci @ Ang Mo Kio Nursing Home integrates the concept of "institutional care + community care," offering diverse elderly care options to nearby residents, thereby maximizing the effectiveness of aging-in-place.

1.2 Japan

In Japan, the aging-in-place model has evolved into the Community-based Integrated Care System, which is also the core of its home-based care policy. The goal of this system is to ensure that older adults can "live and age in place" by coordinating personnel, services, and diversified facilities. Specifically, it integrates five categories of services—medical care, nursing care, preventive care, health promotion, and daily living support—into a localized system centered around home and community. A key principle is that essential care resources should be accessible within a 30-minute walking distance from the elderly person's residence. The primary institutional guarantee of this system is Japan's long-term care insurance, implemented in 2000. Through this scheme, older adults can not only apply for financial support for home modifications but also access daily care services by paying only about 10% of the total service costs.

During the market-oriented development of the care system, not only have large-scale nursing facilities and small-scale care agencies expanded, but pharmacies, convenience stores, and other existing community retail and logistics nodes closely tied to daily life have also played crucial roles in providing home-based medical and daily support services.

Another notable aspect is Japan's mature elderly assistive device market, which has gone beyond meeting rigid demands. A wide variety of aging-friendly products are available, and many of them are partially reimbursable through insurance. This significantly enhances the quality of elderly life in terms of daily living, leisure, and recreation.

2. Exploration of China's Localized Aging-in-Place Practices

2.1 Overview of Elderly Care in China and Xi'an

In 1993, China officially proposed the establishment of a multi-level social security system. With the deepening of population aging, related policies have shifted from focusing on institutional bed construction to promoting home- and community-based care. In 2019, the government emphasized the development of a multi-level elderly care service system—based on home care, supported by communities, supplemented by institutional services, and integrated with medical resources. China's community-based elderly care system and facilities have drawn lessons from Japan's community-based integrated care system, while local regions have actively explored different models of development.

In Xi'an, with the improvement of living standards, changes in elderly care perceptions, and higher levels of education, the traditional view of relying on oneself or family members for elderly care is gradually evolving. Home-based care supported by community services has emerged as a new option. According to the *Survey Report on the Living Conditions and Elderly Care of the Elderly in Xi'an*, home-based care remains the mainstream, but residents express higher expectations for professional and convenient community-based elderly care services.

2.2 Survey Data in Xi'an

As of 2025, statistics show that the elderly population aged 60 and above in Xi'an exceeds 2.4 million, accounting for 18.36% of the total population [3]. In some older residential communities, the proportion of elderly residents is even more pronounced, reaching over 40%. According to the *Survey Report on the Living Conditions and Elderly Care of the Elderly in Xi'an*, most elderly people still prefer home-based care by themselves or family members. Regarding their own future elderly care, 37.2% of respondents chose "home-based care supported by community services." The survey further revealed that 73.1% of respondents indicated their parents live independently, 22.3% said their parents were cared for by children or family members, while only 4.6% relied on other methods. Among them, only 0.1% were cared for by community day-care centers, reflecting the fact that most elderly individuals in Xi'an still maintain strong self-care abilities [4].

2.3 Improving Aging-Friendly Residential Spaces

To realize aging-in-place, residential environments must be able to adapt to the needs of older life stages. According to a Special Survey on the Living Quality of Urban Elderly Residents conducted by the Xi'an Municipal Aging Committee in collaboration with universities, the average living area per elderly resident is only 4.6 m^2, lower than the family per capita of 5.3 m^2. Moreover, 24% of elderly individuals live in spaces smaller than 10 m^2, while 45% reside in the 10–15 m^2 range. In households where living space exceeds 10 m^2 per person, older adults are often not the head of the household, highlighting the risk of compromised residential rights for the elderly in multi-generational households. This indicates an increasingly acute mismatch between elderly living environments and the demands of modern elderly care.

2.3.1 Home Renovations for Aging-Friendliness

Two major challenges arise in adapting private housing for aging-in-place. First, feasibility of renovation. Many small-sized residential units, designed to minimize cost, compress space to the extent that aging-friendly modifications become difficult. Structural constraints in high-rise buildings also limit remodeling options. Solutions may include not only building new elderly-friendly housing or expanding/modifying existing ones but also innovating assistive equipment. For example, designing wheelchairs that can maneuver in smaller spaces could reshape behavior patterns and reduce adaptation costs.

Second, financial support for renovation. Xi'an has already introduced subsidy standards for aging-friendly home modifications: 4,000 RMB per urban household and 2,000 RMB per rural household. By early 2025, a total of 7,037 homes of elderly individuals with special difficulties had been modified. It can be anticipated that, with continued policy promotion and greater awareness, home modifications will significantly improve the quality of life for older adults.

2.3.2 Aging-Friendly Design in Public Housing

In terms of public housing, greater emphasis should be placed on aging-friendly design in rental housing and shared-ownership housing, ensuring flexible adaptation in later stages. Public housing inherently aligns with aging-in-place needs, as it leverages existing public service facilities, emphasizes public transit accessibility, and promotes mixed-residence communities that prevent social isolation.

According to the *14th Five-Year Plan for the Development of Public Rental Housing in Xi'an*, the primary target groups for new public housing are recent university graduates and migrant workers. While this positioning is reasonable in the present, over the coming decades, demographic shifts may lead to a substantial change in user groups. Drawing on Singapore's experience with aging-in-place policies, anticipating the needs of an aging society at this stage could yield significant savings in future public investment.

2.4 Improving Community Support

Comprehensive community support is a critical

component in realizing aging-in-place. As the basic unit of urban life, communities need to make greater efforts in improving living environments, assisting family caregiving, and constructing diverse and accessible elderly care networks. However, in Xi'an, community elderly care facilities have not yet fully achieved their intended role in supporting aging-in-place.

2.4.1 Current Status and Issues of Community Elderly Care Facilities

Community elderly care facilities have developed rapidly under supportive planning and construction policies. On the one hand, supporting facilities for community-based elderly care are becoming increasingly complete. Since 2014, national policy has required all new residential projects to allocate no less than 0.1 square meters per capita for elderly care facilities, ensuring simultaneous planning, construction, acceptance, and delivery with residential communities. On the other hand, under the influence of commercial interests, many facilities are only built to meet the minimum regulatory requirements, often with poor environmental and spatial quality. Problems also include operational difficulties after handover, a low proportion of facilities actually put into use, and some elderly care spaces being repurposed for non-care functions.

Additionally, compared with Japan's small-scale multifunctional elderly care institutions, China's community-based elderly care centers are not inferior in terms of hardware. However, because most are community-managed or rely on government-purchased services from social organizations, their degree of marketization remains low. The lack of professional care personnel is notable. Free-service models, while inclusive, limit the development of high-quality professional services and place significant financial pressure on many centers.

2.4.2 Strategies and Recommendations for Enhancing Community Elderly Care Services

In developing elderly care facilities, greater emphasis should be placed on small-scale, multifunctional institutions. Social organizations and elderly care enterprises with chain-operation capabilities should be encouraged to participate. Publicly built but privately operated models, supported by market-oriented operations, can improve service professionalism. Moreover, combining government-purchased home care services with fee-based market services can provide a hybrid model, improving financial sustainability and avoiding the inherent challenges of maintaining small-scale facilities. Exploring more diversified operational strategies will also be essential.

Conclusion

Population aging should not be regarded as a burden but as an opportunity to build better cities. For aging-in-place, accessibility and convenience of elderly care resources should be prioritized over scale or comprehensiveness of facilities. Enhancing accessibility requires a nuanced understanding of local elderly residents' daily habits, and services should be designed to either fit seamlessly into or gently guide those habits. In Xi'an, further improving the adaptability of aging-in-place requires attention to housing and community. On the one hand, support should be provided for aging-friendly renovations of private housing; on the other hand, public rental and shared-ownership housing should incorporate aging-friendly design from the outset. At the community level, enhancing the supportive role of elderly care facilities is critical. Facilities should emphasize small-scale and multifunctional models. Beyond adopting public-private partnerships and market-oriented operations to raise professional standards, integrating government-funded home care services with fee-based services and diversifying operating strategies will be necessary.

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