УДК 712

DESIGNING BARRIER-FREE PUBLIC SPACES IN ELDERLY RESIDENTIAL COMMUNITIES: IMPROVING INCLUSIVITY AND QUALITY OF LIFE

WANG Ganqing[1,2], SHMELOVA-NESTERENKO Oleksandra[1]
[1] Shaanxi University of Science and Technology, Xi'an, People's Republic of China
[2]Kyiv National University of Technologies and Design, Kyiv, Ukraine
545297946@qq.com, shmelova.oy@knutd.com.ua

With the global aging population growing, the design of public spaces in residential communities faces urgent demands for age-appropriate, barrier-free solutions. Based on survey data regarding the physical limitations and activity needs of elderly residents, and taking into account the principles of universal design, this paper proposes practical recommendations to enhance the accessibility, comfort, safety, and inclusiveness of public spaces in residential complexes.

Key words: *barrier-free design, public space, the elderly, residential community, age-appropriate design, environmental design.*

INTRODUCTION

As society ages, the life and health of elderly individuals increasingly draw attention. Residential communities, which serve as primary living environments, must support not only leisure and social interactions, but also ensure accessibility and inclusiveness for all, including elderly residents, persons with disabilities, pregnant women, and children. Barrier-free design plays a critical role in improving the quality of life and fostering a safe, supportive community environment.

PURPOSE

This paper aims to analyze the physiological obstacles and daily activity needs of the elderly and, based on the principles of barrier-free design, propose practical strategies for designing accessible public spaces in residential communities to improve their functionality and inclusiveness.

RESULTS AND DISCUSSION

A survey conducted among 70 elderly residents in a Xi'an community identified a wide range of age-related physical challenges affecting vision, hearing, mobility, touch sensitivity, and memory [1]. To summarize:

- Declining sensory and motor abilities such as vision impairment, hearing loss, reduced smell, limited mobility, and memory deterioration create specific needs for safer, more accessible environments.
- Based on these findings, the study recommends clear lighting, non-slippery flooring, soft transition zones between surfaces, handrails, easy-to-recognize visual signals, and adaptive furniture.

An analysis of the elderly's activity preferences showed that 25.7% preferred outdoor sports, 20% regularly escorted grandchildren, 15.7% enjoyed gardening, 14.2% walked dogs, and a smaller proportion engaged in games or cultural activities. This highlights the need for diverse, flexible public spaces that can accommodate a wide variety of activities.

Design priorities for public space were grouped into key areas:

- ***Safety:*** Ensuring traffic, site, and behavioral safety through thoughtful design solutions like barrier-free paths and rest areas.
- ***Health:*** Prioritizing natural lighting, ventilation, and the use of non-glare materials to enhance physical and mental well-being.
- ***Communication:*** Providing spaces that facilitate social interaction and emotional connection among residents.
- ***Privacy:*** Incorporating semi-private areas to respect personal space.
- ***Information Accessibility:*** Using highly visible and understandable symbols and cues to aid navigation.
- ***Service Accessibility:*** Ensuring access to leisure, medical, and recreational services to support active aging.

Based on the above, specific design recommendations for barrier-free public spaces in residential communities include:

Traffic Space:

Traffic should be organized to separate vehicular and pedestrian flows, ensuring safe movement for elderly residents. Road layouts should avoid long, straight corridors, which can cause psychological discomfort; instead, nodes like resting areas should be added to maintain orientation and reduce fatigue. Clear wayfinding systems should be implemented to assist navigation, especially for users with declining cognitive abilities.

Parking Space:

Special parking areas for elderly residents should be established near elevators or key facilities. Parking bays should be wider than standard (over 3.5 meters) to accommodate wheelchairs and assistive devices, and include clear signage for ease of recognition.

Travel Space:

Pathways and activity areas must have sufficient width to allow easy movement for wheelchairs and walkers. Ground surfaces should maintain minimal height differences (ideally ≤3 mm) to prevent tripping hazards. Anti-slip paving materials should be used, and surface materials should minimize glare and reflection. Warning signs should employ high-contrast colors and multi-sensory cues for better visibility and recognition [2].

Resting Space:

Seating should be designed with ergonomic considerations: appropriate seat heights, soft cushions, and safety armrests to facilitate sitting and standing. Resting areas should be placed at regular intervals along pedestrian routes. Shade structures are recommended to protect users from sun and rain.

Landscape Space:

High-quality landscape design not only beautifies the environment but also provides therapeutic benefits. The selection of plant species should ensure seasonal variation, easy maintenance, and the promotion of mental relaxation for elderly users.

Information and Communication Space:

Signage and environmental graphics should prioritize clear, familiar symbols that are easy for elderly individuals to recognize and interpret. Orientation and wayfinding should rely on strong visual markers, supplemented by tactile or auditory cues where appropriate.

Community Service Space:

Residential communities should include accessible service zones such as property management offices, healthcare facilities, recreation areas, and gathering spaces. These services must be planned around ease of access and usability for elderly residents, supporting their independence and active participation in community life.

CONCLUSIONS

Barrier-free public space design is crucial for improving the inclusiveness and quality of life of elderly residents. It supports independent living, enhances community engagement, and fosters dignity among older adults. This study, based on a limited sample size, emphasizes the need for further investigation into specific case studies to develop even more comprehensive and practical design solutions.

REFERENCES

1. Zhang J. Renovation Design Research for the Aged on Public Place on Old Residential Area: Master diss. Beijing, 2014. 56 p.
2. Hu B. Research on the Adaptive Renovation Design of public space in Old Communities under the Community pension Model: Master diss. Nanjing, 2023. 118 p.

ВАН Ганьцін, ШМЕЛЬОВА-НЕСТЕРЕНКО О.

ПРОЄКТУВАННЯ БЕЗБАР'ЄРНИХ ПУБЛІЧНИХ ПРОСТОРІВ У ЖИТЛОВИХ КОМПЛЕКСАХ ДЛЯ ЛЮДЕЙ ПОХИЛОГО ВІКУ: ПІДВИЩЕННЯ ІНКЛЮЗИВНОСТІ ТА ЯКОСТІ ЖИТТЯ

У контексті глобального старіння населення проєктування публічних просторів у житлових комплексах стикається з нагальною потребою у створенні віковідповідних безбар'єрних середовищ. Спираючись на результати опитування щодо фізичних обмежень та потреб в активностях людей похилого віку, а також враховуючи принципи універсального дизайну, ця стаття пропонує практичні рекомендації для підвищення доступності, комфортності, безпеки та інклюзивності житлових громадських просторів.

Ключові слова: *безбар'єрний дизайн, громадський простір, люди похилого віку, житлові комплекси, віковідповідний дизайн, екологічний дизайн.*