AGE-FRIENDLY OUTDOOR SPACES AND PUBLIC BUILDINGS IN CITIES: OLDER PEOPLE'S PERSPECTIVES

TRINH THAI QUANG(*)

Abstract: Outdoor spaces and public buildings are integral components of livable cities and are identified as key domains in the World Health Organization's (WHO) framework for age-friendly environments for older people. This study analyzed data collected from 402 older people in Da Nang and Hoa Binh city to evaluate their assessment of the importance of age-friendly outdoor spaces and public buildings in urban settings. The findings indicate that a well-functioning public lighting system, safe pedestrian crossings, and dedicated sidewalks for pedestrians and cyclists are considered the most crucial elements in this domain under the older people's (OP) perspectives. The study identifies several factors that influence older people's assessments, including education level, the number of generations within a household, income, and the level of interaction with friends and neighbors. Participants reported that the availability of age-friendly elements in outdoor spaces and public buildings is currently inadequate, particularly in Hoa Binh city. These findings suggest that the government should urgently develop a comprehensive set of criteria for constructing age-friendly environments. This framework should be supported by detailed implementation guidelines and take into account varying socio-economic and demographic conditions.

Keywords: *Age-friendly city; Healthy aging; Living environment; older people; Public spaces.*

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(*) Institute of Human, Family and Gender Studies, Vietnam Academy of Social Sciences.

1. Introduction

According to the WHO framework on a friendly living environment for all ages, the physical environment is one of the important environments that determine the quality of people's lives. (WHO, 2007). Outdoor areas and public buildings are components of the living environment of the elderly in urban areas. The structure or design and condition of outdoor areas and public buildings can affect the access and use of those areas by people in general and the elderly in particular. If these areas are not safe and not easily accessible, it will be difficult to encourage older people (OP) to leave their houses and use these spaces. This will likely lead to negative impacts on the elderly's autonomy, mobility, and quality of life. Therefore, in order to increase the accessibility and use of these facilities for people of all ages, it is necessary to have appropriate designs and planning for each age group.

OP will be able to improve their health when they can regularly access and use outdoor areas and public buildings (Cauwenberg et al., 2011). Unsafe public facilities such as inappropriate, slippery walking areas, or entrance and exit areas of public buildings without handrails can lead to injuries for the elderly due to the risk of falling.

According to WHO's checklist on outdoor spaces and public buildings, outdoor spaces and public buildings that are friendly to the elderly should cover the following (summarized) criteria: 1) clean environment, appropriate noise levels, little unpleasant or harmful odors; 2) sufficient green spaces and walkways; 3) available outdoor seating; 4) sidewalks are wide enough, anti-slip, have wheelchair ramps, are unobstructed and give priority to pedestrians; 5) non-slip roads, crosswalks, and light signals long enough for elderly people to cross; 5) strict enforcement of traffic rules, 7) bicycle paths; 8) safety; 9) services are distributed at an appropriate distance from the elderly's residence, with priority queuing places for the elderly; 10) Buildings are accessible and require secondary criteria such as elevators, ramps, non-slip flooring, etc.; 11) There are clean public toilets, in suitable locations, easily accessible to everyone.

This article uses data from the survey of the research project "Living environment of urban elderly in the context of population aging in Vietnam" (a case study in Da Nang and Hoa Binh City) to analyze aspects of outdoor spaces and public buildings in the two cities. It attempts to examine how OP perceive the

importance of an age-friendly environment in terms of outdoor spaces and public buildings in these two cities and how friendly these cities are under the assessment of their elderly citizens on the availability of these factors in the cities.

2. Methodology and data

Literature review

Outdoor spaces and public buildings are one of the domains of the physical human living environment. Many social geographers, urban planners, and architects have undertaken further studies of specific enabling environments, such as barrier-free environments, parks, and recreational environments for the elderly (Carp & Christensen, 1986; Kaplan, R., 1985; Phillips et al., 2005; Rosenberg, 1998). The built environment significantly influences whether older individuals engage in physical activity or not. Living in an age-friendly community increases the likelihood of outdoor activity for older persons (Younes et.al, 2024). Common public spaces such as cafes, parks, shopping malls, libraries, markets, and community centers are considered third places, different from first places (home) or second places (work/school). Third place promotes voluntary social interaction and provides opportunities for OP to participate in their local community to form weak and strong social bonds with others that combat isolation and loneliness (Chau, H. W.; Jamei, E., 2021).

Many studies on the age-friendly environment from the viewpoint of older adults in industrialized nations have examined the elements impacting the aging population's happiness from the standpoint of the physical and social environment (Garner & Holland, 2020; Muller & Oswald, 2019). Age-friendly public and outdoor spaces encourage OP to spend time outside and socialize with others to combat isolation and loneliness. If public spaces are age-friendly so that people feel safe and comfortable, their willingness to spend time outside will increase. Besides, safe public areas with many green spaces can also encourage older people to perform physical activities. Regular physical activity contributes to beneficial health effects, helping to fight overweight or obesity (Frank, Andresen, Schmid, 2004). Because walking is an important outdoor physical activity for OP, the physical environment is often evaluated by the elderly's ability to accommodate walking activities (Borst et al., 2009).

Additionally, different types of neighborhoods are characterized by location, environmental quality, access to services and facilities, and population density. A neighborhood's ability to accommodate walkability depends on its land use mix, street connectivity, and population density (Van Holle et.al., 2014). The appropriate combination of functions that integrates residential, commercial and public services will attract people out on a variety of schedules. Street connectivity correlates with street pattern and block size is an indicator of the accessibility of a residential area (Chau & Jamei, 2021). OP living in different neighborhoods have significantly different socioeconomic characteristics and behaviors (Knox & Pinch, 2000; Chai, 2010; Wu, F. L., 1992). Thus, they will also make different assessments of various aspects of the elderly's living environment (Cunningham & Michael, 2004; State Advisory Council on Aging, 2007).

Previous studies also indicate that the majority of older adults opt to grow old in their own residences rather than in institutional settings (Yıldız, et.al., 2023). The quality of communities and neighborhoods plays a crucial role in enabling aging in place, as these environments are closely linked to longer periods of residence (Bottini, 2018). Rowles highlights that with age, people become more attuned to and affected by their social and physical surroundings (Zhang, et.al, 2022). Moreover, elderly individuals generally favor engaging in recreational activities within their communities rather than traveling to more distant urban parks (Lak, et.al, 2020).

OP's age, income, and house accessibility status were also found to have an impact on their perceptions of the importance of constructed environmental characteristics, which point to potential for public health action to better reach and engage OP by life-course trajectories in age-friendly communities, as seen by the differences in perceptions of built environmental elements among older adults across health and home status as well as age and income (Black & Jester, 2020). Older adults' health is most commonly linked to safety, amenities, pedestrian-friendly areas, transportation infrastructure, and social and public places. Specifically, it is thought that pedestrian-friendly areas and safety are crucial for the physical well-being of older individuals, while amenities and safety are crucial for their social well-being and aesthetics and navigation are crucial for their mental well-being (Bhuyan & Yuen, 2022).

Paying attention to the importance of developing an age-friendly environment for people of all ages, particularly older people, the Vietnam Government has set a target to build a friendly living environment for the elderly at the commune/ward level in the Program on Health Care for Older People to 2030 under Decision No 1579/QĐ-TTG, dated 13/10/2020. Nevertheless, there are not many studies on age-friendly living environments for older people in urban areas in Vietnam even though, this topic has been discussed on social media and in policy on care for OP. The most recent study focusing on outdoor public areas conducted in Ho Chi Minh City through interviews with the elderly showed that the majority of the elderly participating in the survey felt satisfied with public spaces in the city. However, many people also expressed concerns about accessibility, proximity, cleanliness, natural conditions, security issues, and exercise equipment (Le Thi Thuy Hang & Le Thi Thu Huong, 2023).

This paper analyses how older people perceive the importance of age - friendly public buildings and outdoor spaces and provides policy recommendations for building age-friendly environment in urban setting, particularly in outdoor spaces and public buildings. It may also contribute more knowledge, data, and insight into the research topic of age-friendly environment in Vietnam.

Data source and sample

This paper used data from a sample of 402 elderly people in two cities including Da Nang and Hoa Binh. The sample selection for this study aimed to balance participants between two survey areas and by gender, resulting in a relatively equal distribution of 47% elderly men and 53% elderly women. The predominant age group of the elderly participants is between 60-69 years, comprising 47.8% of the sample. Approximately two-thirds of the participants are of Kinh ethnicity. The education level of the participants is primarily at the middle and high school levels. Most elderly individuals in this study are married and live in three-generation households, accounting for 57.2% of the sample. A majority, 77.1%, self-assess their living standards as average. Currently, 21.6% of the elderly participants are still engaged in income-generating work. The detailed socio-economic and demographic information of the sample are shown in the following table:

Table 1. Characteristics of the research sample

Characteristics	No.	Percentage %
Cities		
Da Nang	203	50.5
Hoa Binh	199	49.5
Sex		
Men	189	47.0
Women	213	53.0
Age range		
60-69	192	47.8
70-79	148	36.1
80+	65	16.1
Ethnicity		
Kinh	263	65.4
Others	139	34.6
Education		
Primary and lower	70	17.5
Secondary	147	36.8
High school	114	28.5
Vocational – college or higher	69	17.3
Marital status		
Never married	7	1.7
Married	267	66.4
Separated/Divorced	5	1.2
Widowed	123	30.6
Currently working	**87**	**21.6**
Number of generations in the household		
1 generation	70	17.4
2 generation	82	20.4
3 generation	230	57.2
4 generation	20	5.0
Self-assessed living standard		
Very poor/poor	47	11.6
Average	310	77.1
Well-off	45	11.1
In the list of poor households		
Poor	13	3.2
Close to poverty	4	1.0

Source: Data from the survey 2023.

Analysis method

Analyses in this paper used both quantitative and qualitative methods to examine urban OP's assessment of their living environment in the domain of outdoor spaces and public buildings.

In quantitative analysis, the independent variables include demographic and socio-economic characteristics of the OP and their households. Dependent variables are their assessment of the importance of the age-friendly factors in terms of outdoor spaces and public buildings and their availability in the cities where OP is living. By that, it assesses the age-friendliness of the living environment in that domain.

A 5-level Likert scale was used to measure the elderly's assessment of the importance of age- friendly outdoor spaces and public buildings in the living environment, which is: 1) Very unimportant, 2) Not important, 3) Neutral, 4) Important, and 5) Very important. The respondents made self-assessment on each indicator. There are ten indicators of the age-friendly outdoor spaces and public buildings for older people to assess their importance. These ten indicators have been selected and adapted from WHO framework on building age-friendly environment in urban setting for the outdoor spaces and public buildings domain.

Descriptive analyses including frequency, binary analysis and mean comparison are used to examining the relationship between variables. The One-way ANOVA test was used to compare the mean values of the OP's assessment of 10 indicators all together (range of value is from 10 to 50) to examine the variances among different groups of OP based on some of their characteristics.

Qualitative information is used to alternate for quantitative, particularly for illustrating the perspectives of those who work in urban management related to the living environment of OP in those two cities. Qualitative information was gathered by in-depth interviews with representatives from the cities' departments such as Department of Urban Management, Department of Health, Department of Transportation, and representatives from city's Association of The Elderly.

3. Results

The importance of age-friendly outdoor spaces and public buildings in urban older people's living environment in older people's perspectives

As mentioned, outdoor spaces and public buildings have been shown to have a close relationship with the elderly's health, autonomy, independence, mobility, and access to these areas. This study examines the views of elderly people in urban areas on the importance of outdoor spaces and public buildings' age friendliness in the living environment.

The data analysis results in Table 2 show that, at "very important" level, the elderly reported that "public lighting system" is the most important, accounting for 62,4%, followed by "safe crosswalks and with appropriate crossing time for the elderly and people with disabilities" with 56,2%. The third "very important" factor is "Separate paths for pedestrians and cyclists" with 49,0% of respondents. The results indicate OP's interest in the features related to walkability in outdoor living spaces, primarily concerning pedestrian security and safety. According to other research, other factors influencing the walkability of the built environment include pedestrian safety from vehicular traffic through lower speed limits and increased number of road crossings, connectivity of pedestrian pathways, public safety, the presence of trees and vegetation for shade and aesthetics, clear signage for navigation, accessible street furniture, and inclusive urban design with barrier-free access (Davoudian, 2019; Crowe, 2013).

Table 2. Older people's assessment of the importance of age-friendly outdoor spaces and public buildings in urban setting (N=402)

Unit: %

	Levels					Mean	SD
	1	**2**	**3**	**4**	**5**		
1. The parks/green spaces are safe and well maintained	0.5	2.5	4.2	48.5	44.3	4.34	0.72
2. The parks/green spaces are within walking distance of the older people's residence	0.2	3.0	6.7	50.2	39.8	4.26	0.73
3. There are sufficient seats in the public parks/green spaces	0.5	3.2	8.7	46.8	40.8	4.24	0.78

	Levels					Mean	SD
	1	**2**	**3**	**4**	**5**		
4. Public parks/green spaces are open spaces, without fences and free entry	7.2	10.7	9.5	42.5	30.1	3.78	1.19
5. Walking paths are in good condition, unobstructed and safe for pedestrian and accessible by wheelchairs or other mobility aids	0.7	3.0	5.5	47.0	43.8	4.30	0.77
6. Public buildings and facilities are well maintained and accessible to people with (physical) disabilities	1.2	3.0	9.0	48.0	38.8	4.20	0.82
7. There are separate paths for pedestrians and cyclists	0.5	4.0	3.7	42.8	49.0	4.36	0.78
8. Sidewalks are well maintained, free of obstructions and reserved for pedestrians, with ramps for people with disabilities using wheelchairs or other mobility aids.	0.2	2.7	3.7	48.5	44.8	4.35	0.71
9. Public lighting system	0.2	2.5	1.5	33.3	62.4	4.55	0.68
10. Safe crossings and appropriate crossing times for the elderly and people with disabilities	0.7	2.7	2.2	38.1	56.2	4.46	0.74

Source: Data from the ministerial-level research collected in 2023.

Note: 1 = not important at all, 2=not important, 3=neutral, 4=important, 5=very important.

Examining the mean values of the OP's assessment of the importance of age-friendly outdoor spaces and public buildings shows similar results. Accordingly, the factor identified by the OP as the most important is the public lighting system (mean value: 4.55), followed by a safe crosswalk and a crosswalk light signal with timing suitable for the elderly and people with disabilities (mean value: 4.46). The third important factor is having separate paths for pedestrians and cyclists (mean value: 4.36). In fact, among the ten factors evaluated concerning outdoor spaces and public buildings in urban living environments for the elderly, public lighting systems were the most frequently mentioned (91,5%), indicating their widespread availability in urban areas where the elderly reside. This result is consistent with the requirement of city classification criteria

indicated in the Resolution 1210/2016/UBTVQH13 (amended by the Resolution 26/2022/UBTVQH15) that the percentage of streets that are illuminated must reach at least 95%, and the percentage of alleys and lanes that are illuminated must reach at least 80%.

A noteworthy observation is the relatively low percentage of elderly individuals who consider the need for parks and green areas with open spaces, devoid of barriers, and offering free entry, as significant. Specifically, up to 17,9% of the participants believe that this factor is not important in their living environment. In practice, only approximately 54,4% of respondents reported that their residential areas feature well-maintained parks and public gardens, which are unfenced and offer free, open access. Furthermore, merely 53% of respondents indicated the presence of well-conditioned pedestrian paths without obstacles and safe for use by pedestrians, safe crosswalks with adequate crossing times suitable for the elderly and disabled in their localities. The factor with the lowest availability was parks/gardens within walking distance from the respondent's home (36,3%). This partially reflects the shortage of green spaces in urban areas. This is consistent with qualitative interviews in a certain extent. The majority of respondents in in-depth interviews indicated a lack of parks and green spaces in the survey area.

"The city exhibits a low proportion of green park areas. At present, there is only one established park, while several additional parks have been planned. However, the implementation of these plans is hindered by a lack of funding" (IDI with representative of Department of Urban Management, Hoa Binh city).

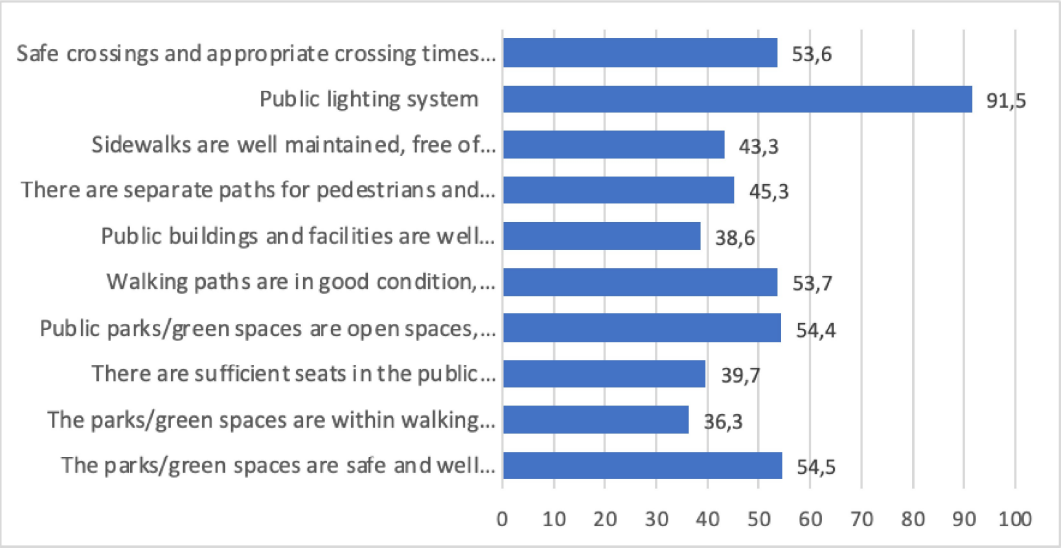
"There is a notable lack of green parks here; the area is densely packed with houses, and open spaces are scarce. It seems that in the future, even when our children are ready to build their own homes, there may be no land available. This is a clear indication of Da Nang's rapid development" (IDI with a female OP, Da Nang city).

One plausible explanation is that while the elderly participants acknowledge the importance of park areas and green spaces, they may not consider factors such as free entry and the absence of barriers to be as significant. Moreover, as indicated in IDIs, many older people choose to walk and exercise in their

neighborhoods, therefore, they may be more concerned with the safety and security of pedestrian areas than parks, gardens that are often not within walking distance of their residences. This is somehow consistent with previous research indicating that OP prefer to utilize outdoor spaces located at traffic intersections and roadsides with high pedestrian traffic (Yang, et.al, 2023).

Other factors maintain the availability levels ranging from approximately 36% to 55% as of OP's assessment (see Figure 1).

Figure 1. OP's assessment on the availability of age-friendly outdoor spaces and public buildings in their urban living environment (N=402)

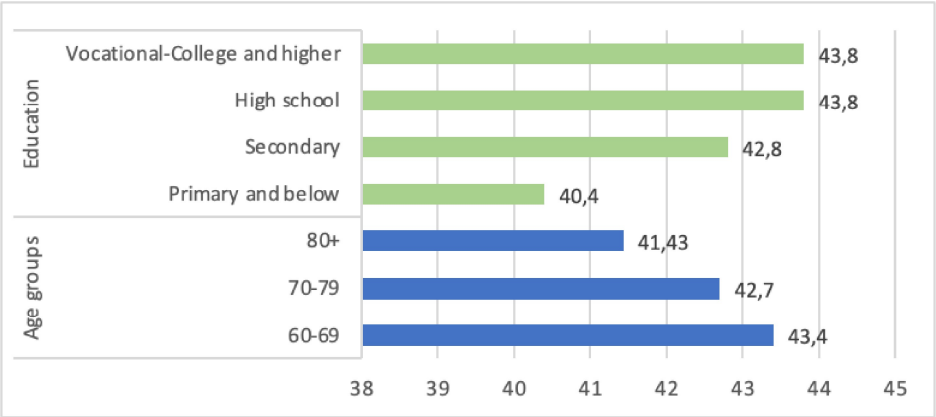


Source: Data from the ministerial-level research collected in 2023.

OP's assessment of the importance of age-friendly outdoor spaces and public buildings in urban areas by their characteristics.

The results of the One-way ANOVA analysis show that there is no difference between the OP in Da Nang and Hoa Binh in their assessment of the importance of age-friendly outdoor spaces public buildings. However, the results show differences between OP at different ages. The younger they are, the more they appreciate the importance of having those age-friendly elements in outdoor spaces and public buildings in urban living environments ($p<0.05$). OP with higher education levels also rated the importance of having these factors in their living environment higher ($p<0.001$).

Figure 2. Mean values of OP's assessment of the importance of age-friendly outdoor spaces and public buildings in urban setting by age and education (n=402)

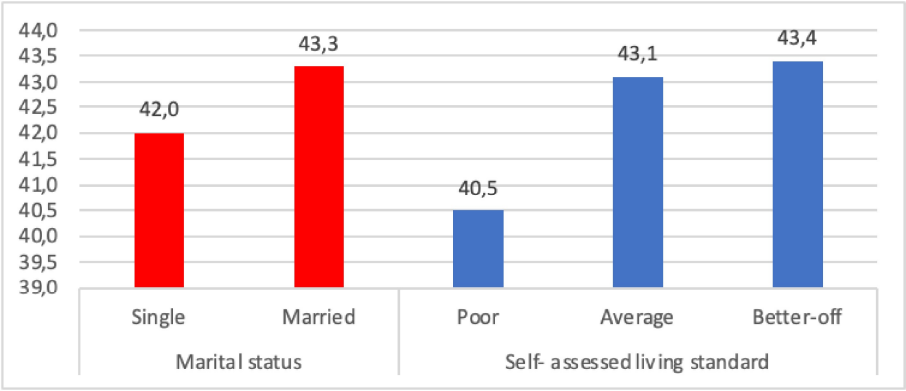


Source: Data from the ministerial-level research collected in 2023.

Note: mean values of the total 10 items in Table 2.

The analysis results also show that the OP who currently in a marriage appreciate the importance of these age-friendly factors more highly than those who do not currently have a spouse (widowed/divorced/separated), the corresponding mean values are 43.3 points and 42.0 points ($p<0,05$). OP with a better living standard also rate the importance of these factors in their living environment higher than those with a poorer standard of living. Statistics in Figure 3 show that, among poor OP, the mean value is 40.5 points but increases to 43.1 points among average OP and 43.4 points among better-off OP ($p<0,05$).

Figure 3. OP's assessment of the importance of age-friendly outdoor spaces and public buildings in urban setting by marital status and self-assessed living standard (n=402)



Source: Data from the ministerial-level research collected in 2023.

Influencing factors towards OP's assessment of age-friendly outdoor spaces and public buildings

This paper presents a linear regression to find out what factors influence the OP's assessment of the importance of age-friendly outdoor spaces and public buildings in urban areas. The dependent variable is a continuous variable with value ranging from 10 to 50. The higher the value is, the more important the age-friendly outdoor spaces and public buildings are as of the OP's assessment.

Independent variables include age of older people (1. 60-69; 2. 70-79; 3. 80+), sex (male, female), marital status (1. currently married, 2. Not with a spouse), education (1. Primary or lower; 2. Secondary; 3. High school; 4. Vocational, college/university or higher), city (1. Da Nang, 2. Hoa Binh), working status (1. Yes; 2. No), disability/acute disease status (0. No; 1. Yes, I have; 2. Yes, my spouse has; 3. Yes, both of us have), number of generations (continuous variable), OP's total income over the last 12 months (continuous variable), interaction with family member, friends/neighbors (1. Almost never; 2. Less than monthly; 3. Monthly; 4. Weekly; 5. Daily).

Results of the analysis are shown in the table below.

Table 3. Influencing factors to OP's assessment of importance of the age-friendly outdoor spaces and public buildings

	Unstandardized Coefficients		Sig.	95,0% C.I for B	
	B	Std. Error		Lower	Upper
Age	-0.41	0.42	0.34	-1.24	0.43
Sex	0.39	0.65	0.55	-0.89	1.68
Marital status	0.62	0.76	0.42	-0.88	2.11
Education	0.63	0.32	0.05	0.00	1.25
City	0.96	0.65	0.14	-0.31	2.22
Working status	0.11	0.73	0.88	-1.32	1.54
Disability/acute disease status	0.44	0.30	0.15	-0.16	1.03
Number of generations in the household	0.79	0.34	0.02	0.12	1.46
Total income of OP in 12 months	-0.01	0.01	0.01	-0.01	0.00
Interaction with family member	0.49	0.37	0.19	-0.24	1.21
Interaction with friends/neighbors	1.22	0.38	0.00	0.48	1.96

Source: Data from the ministerial-level research collected in 2023.

Table 3 presents the results of the linear regression analysis examining the OP's assessment of the importance of age-friendly outdoor spaces and public buildings in urban areas by their characteristics. The results indicate that several factors influence their assessment, including educational levels, the number of generations within their household, their total income over the past 12 months, and the degree of interaction with friends and neighbors.

The OP's educational levels positively impact their assessment of the importance of these age-friendly features. Older adults with higher educational attainment tend to place greater importance on these features compared to those with lower educational levels (B = 0.63, Sig. = 0.05). Educational attainment can influence an individual's perception and evaluation of various aspects of daily life. In this study, it is possible that the OP with higher levels of education have a greater understanding of the benefits of age-friendly outdoor spaces for quality of life, particularly for the elderly. Therefore, they are more likely to consider these factors as important compared to those with lower educational levels.

Those living in multigenerational households rate the importance of age-friendly outdoor spaces and public buildings higher than those living in fewer generation households (B = 0.79, Sig. = 0.02). Living in a multigenerational family has been demonstrated to bring numerous benefits to older individuals (Xavier, 2023), and it is also a traditional model of living arrangement in Vietnam. Co-residing with multiple generations of descendants within the family can enhance opportunities for social interaction among family members. Activities involving inter-generations can contribute to strengthening familial bonds, thereby mitigating the tensions that arise from loneliness and social isolation among OP. These interactive activities may take place both indoors and outdoors. Furthermore, living in a multigenerational household can also increase the likelihood of participating in outdoor activities with children and/or other family members. In practice, OP in this survey also reported that if cultural events occur far from their place of residence, their children often support them attending these events with other family members by taking them along.

Conversely, the income of older adults has an inverse relationship with their assessment. OP with higher income tend to perceive these features as less important than those with lower income (B = -0.01, Sig. = 0.01). The relationship

between older people's income and their assessment of age-friendly outdoor spaces and public buildings may also be influenced by factors such as accessibility, mobility, health, and social engagement. While higher-income individuals may recognize and prioritize the importance of these spaces, those with lower incomes might face barriers that limit their access and engagement, leading to a varied perception of their significance. In this research, the result is contradictory when indicating that OP with higher income tend to assess age-friendly outdoors and public buildings as less important than their counterparts who have lower income. This may be since OP with a higher income may have many opportunities to participate in other activities and in different environments rather than only in their surroundings, which may lead to their assessment of the results in this analysis.

The most significant factor influencing the OP's assessment is their level of interaction with friends and neighbors. The more frequently older adults interact with their neighbors and friends, the more they value the importance of age-friendly features in outdoor spaces and public buildings in urban areas (B = 1.22, Sig. = 0.001). This finding indicates that when the level of interaction of OP with friends and neighbors increases by one unit, their assessment of the age-friendly factors as important increases by 1.22 times.

The availability of age-friendly outdoor spaces and public buildings in Da Nang and Hoa Binh in older people's assessment

Da Nang, a centrally governed city and one of the most developed urban areas in Vietnam with a high-quality living environment, also faces a severe shortage of green spaces due to rapid urbanization. According to a report by the Da Nang Department of Construction, in 2010, the urban green space per capita in the city was only slightly over 5 m²/person. By 2015, this figure had increased to 7.32 m²/person. In 2019, with a population exceeding 1.134 million, the green space per capita remained at 7.51 m²/person. According to the revised urban master plan for Da Nang up to 2030, with a vision toward 2045, the allocated public urban green space is set at 8.9 m²/person. Currently, the entire city has only two major parks: 29/3 Park in Thanh Khe District and Thanh Nien Park in Hai Chau District (Giang Anh, 2022). Based on qualitative data from the survey,

it is evident that a deficiency of green spaces is prevalent in residential areas, particularly within inner-city districts.

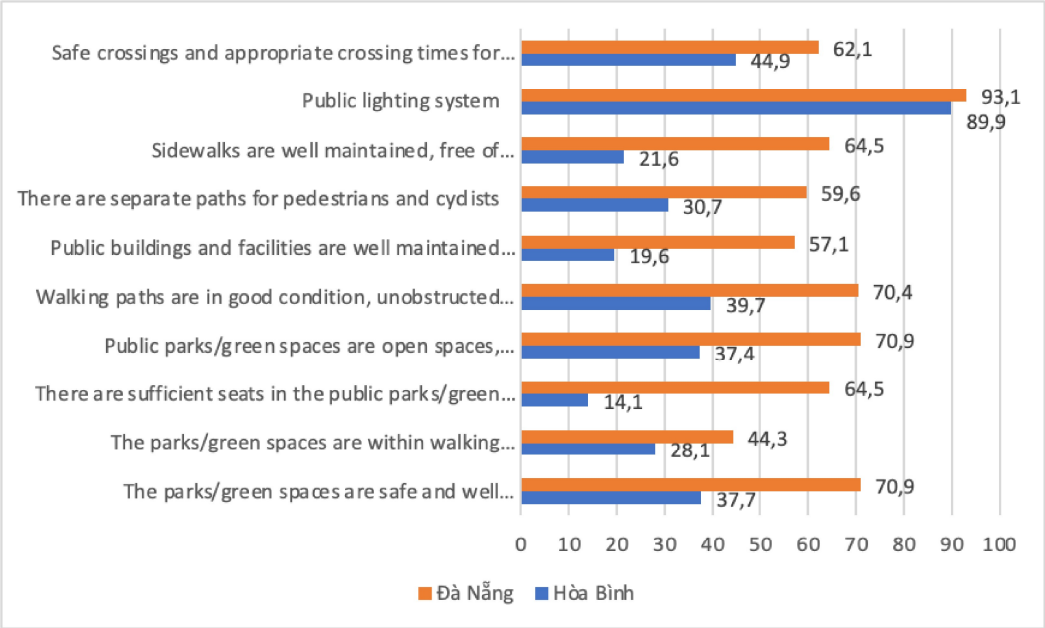
"There aren't many gardens or parks here. If we want to walk or exercise, we go to the streets or the seaside, but many places are too far to work out. We need more green areas, parks, and flower gardens for everyone, not just the elderly. This would make the environment cooler and more comfortable, improve our mood, and benefit our health. Right now, there's a big shortage of these spaces" (Focus group discussion with male elderly, Da Nang city).

Currently, Hoa Binh City is classified as a third-tier municipality, with plans to upgrade to a second-tier status by 2025, and a long-term vision extending to 2030. According to assessments by local officials, Hoa Binh City also has a low proportion of green spaces. Furthermore, public areas have not been adequately modified to enhance accessibility for the elderly and individuals with disabilities.

"The city currently has only one park, which does not serve extensive recreational needs. For leisurely walks, elderly residents often resort to quiet streets or public squares. However, these areas are not designed with considerations for accessibility; there are no ramps or other features to accommodate wheelchairs or support elderly individuals. At present, the city lacks infrastructure that facilitates access to public spaces for individuals with mobility challenges or wheelchair users" (IDI with representative of Association of The Elderly - Hoa Binh city).

Examining the data presented in Figure 4, it is evident that the availability of outdoor spaces and public buildings is more extensive in Da Nang City compared to Hoa Binh City, according to assessments by elderly residents. The most pronounced disparity is observed in the evaluation of public parks/gardens with sufficient seating, with a difference of 50.4 percentage points. The second most significant difference pertains to "sidewalks that are well-maintained, free of obstacles, designated for pedestrians, and equipped with ramps for wheelchair users or other mobility aids," showing a difference of 42.9 percentage points. The factor with the least variation between the two cities is "public lighting systems," with a difference of 3.2 percentage points.

Figure 4. OP's assessment on the availability of age-friendly outdoor spaces and public buildings in their urban living environment by cities (N=402)



Source: Data from the ministerial-level research collected in 2023.

These differences may highlight key considerations when developing criteria for creating age-friendly urban environments. Although both are urban areas, Da Nang and Hoa Binh are categorized under different urban classifications. Specifically, as mentioned, Da Nang is a centrally governed municipality classified as a first-tier city, whereas Hoa Binh is a third-tier city and currently in the process of meeting the criteria for second-tier status[1]. The distinctions between first-tier and second-tier city are reflected in specific criteria related to location, functions, roles, structural and socio-economic development levels, population size, population density, the proportion of non-agricultural labor, and the development of infrastructure and urban landscape (as defined by standards set forth in Resolution 1210/2016/UBTVQH13, amended by Resolution 26/2022/UBTVQH15). Notably, Criterion 5 outlines standards for urban greenery and the quantity of public spaces across different urban classifications.

[1] See Article 4 and 5, Resolution 1210/2016/UBTVQH13 for references of the criteria for first-tier and second-tier city.

4. Conclusions and discussion

This study highlights the importance of age-friendly outdoor spaces and public buildings for the elderly in urban environments, as assessed by the OP. Key elements include sidewalks, parks, green spaces, road crossings, and pathways that accommodate the needs of the elderly and individuals with disabilities. Among these elements, public lighting systems, well-designed crosswalks, and accessible sidewalks are particularly crucial. These findings may be linked to the elderly's need for walking and exercise, especially in areas where public spaces are limited near their residences.

Research has demonstrated that the outdoor environment provides health benefits to the elderly when specific standards are met. Active engagement in outdoor activities, including social interactions and physical exercises, can significantly improve health outcomes and reduce the risk of mental health issues such as stress caused by loneliness and social isolation. Public lighting is a crucial factor in ensuring the safety of outdoor areas and facilitating access for all individuals, including the elderly. A deficiency in public lighting can impede the elderly's ability to navigate outdoor spaces independently, as seen in pedestrian areas without adequate lighting systems (Rosenberg, et al., 2013; Schehl & Leukel, 2020). To enhance the accessibility and participation of the elderly in outdoor activities, it is essential to provide sufficient and well-designed lighting systems. Urban planning must incorporate lighting design into all relevant areas, such as parks, walkways, and bus stations, to ensure the safety and security of the community (ADB, 2020).

There are certain differences among elderly groups with varying characteristics in their assessment of the importance of these age-friendly elements in urban living environments. These factors include age, marital status, educational level, and living standards. Age is inversely related to the elderly's assessment of the importance of these elements in their living environment, meaning that older individuals tend to perceive outdoor elements as less important compared to younger elderly individuals. This result is consistent with the findings of several previous international studies, which explain that younger elderly individuals tend to use outdoor spaces more frequently and thus value

age-friendly elements more than older elderly individuals. Moreover, this study also observed no association between health status and the OP's assessment of the importance of age-friendly outdoor spaces and public buildings, which is also consistent with previous research (Black & Jester, 2020; Black & Hyer, 2020).

Results from regression analysis present significant influences of OP's education, income, number of generations in the household and levels of interaction with friends/neighbors on their assessment of the importance of age-friendly outdoor spaces and public buildings in the urban settings. However, further analysis is needed to be conducted in a larger scale and in various areas including suburban and rural areas to get more insights on the OP's opinion on their living condition.

The study's findings reveal that the elements essential for an age-friendly environment, particularly outdoor spaces and public buildings, are inadequate in both surveyed cities. Elderly respondents indicated that public lighting systems are the most accessible, with the highest proportion affirming their presence in their neighborhoods. Other elements are available to only approximately 50% of the respondents. Moreover, a comparison between the two cities uncovers a significant disparity in the availability of these elements, as perceived by the elderly. This discrepancy can be attributed to Da Nang's status as a more developed, first-tier city under central government jurisdiction, in contrast to Hoa Binh, which is a third-tier city and the provincial center of Hoa Binh province. These findings underscore the necessity of refining the criteria for creating age-friendly living environments and considering the differences between urban classifications to formulate appropriate strategies and plans.

The government should expedite the development of a comprehensive set of indicators for age-friendly living environments, along with corresponding guidelines. This initiative would allow provinces and localities to implement these measures promptly or integrate them into their overall urban planning strategies. Public spaces and buildings are critical components of urban planning and infrastructure development. The absence of such indicators may necessitate post-completion adjustments or retrofitting of projects to align with the established criteria, potentially resulting in unnecessary financial expenditure and inefficient use of already limited local resources.

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