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**Research Paper**

# Older Adults' Perception toward Landscaping of Nursing Homes

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***Abstract***
*This study explores older adults' perceptions of open-space landscaping in nursing homes, focusing on the psychological underpinnings of their preferences. A photo-based questionnaire employing the Content Identification Method (CIM) was administered to 277 residents of the Khooban Nursing Home in Tabriz. The instrument included three sections: demographic information, dependent variables, and visual imagery of the facility. Findings indicated that respondents highly valued "viewing green spaces was reported to provide comfort" and, in terms of safety, emphasized the importance of "appropriate flooring". Additionally, "having comfortable seating within green areas" emerged as the top priority. Factor analysis identified four key spatial dimensions—complexity, mystery ($\alpha = 0.71$), prospect ($\alpha = 0.63$), and refuge—with complexity receiving the highest mean preference rating (3.96 out of 5). Participants also expressed a strong appreciation for landscapes that evoke a "sense of comfort". In terms of visual quality indicators, preferences were ranked in the order of prospect, mystery, complexity, and refuge. These findings can be of interest to landscape architects and urban designers to create appropriate spaces based on the preferences of older adults in nursing homes.*

***Keywords:*** *Aging fact, Landscape content, Landscape spatial, Image simulation, Nursing homes.*

## INTRODUCTION

Recent research underscores a significant demographic shift as societies across the globe face an accelerating aging population (Mattisson et al., 2023; Scott, 2021; Veitch et al., 2020). This trend presents complex challenges, particularly in urban environments that often remain ill-equipped to accommodate the evolving physical and cognitive needs of older adults. Without appropriate adaptations, homes and public spaces can inadvertently become confining or even hazardous, exacerbating social isolation and vulnerability among the older adults (Samadi-Todar & Hami, 2025). Individuals over the age of 60 are increasingly exposed to psychological distress and social risks, especially within urban areas and public parks where accessibility, safety, and inclusivity may be lacking.

The aging phenomenon is no longer a distant policy issue; it represents an urgent global concern with implications for both human health and environmental sustainability. Older adults are a key demographic in the use of green spaces, which play a crucial role in promoting social engagement, physical activity, and mental well-being (Wang et al., 2019). Mental health, as a fundamental aspect of overall health, must be addressed proactively—not merely through the treatment of disorders, but by creating environments that foster emotional resilience and social connectedness.

In response, international health authorities have begun to prioritize aging as a central focus of public health strategy. The World Health Organization has designated 2020– 2030 as the "Decade of Healthy Ageing," highlighting the critical role of supportive environments in sustaining the autonomy and well-being of older individuals. Mental health disorders, which affect an estimated 15–25% of the elderly population (Arias-Fernández et al., 2023), are among the most significant barriers to healthy aging. Thus, policies and urban design strategies that prioritize age-friendly environments are essential for enhancing the

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quality of life and preserving the functional independence of older adults.

### *Older Adult Definition and Attitudes*

From a biological standpoint, aging refers to the progressive deterioration in the structure and function encompassing bodily physiological, motor, neurological, and psychological domains (Sturge et al., 2021). In the field of aging psychology, attention is given to behavioral and psychological transformations such as declining memory, reduced attentional capacity, and increased introversion (Cahill, 2020; Førsund et al., 2018). It is important to recognize that aging in place, particularly at home, may present significant obstacles, including difficulties in navigating outdoor environments and increased risk of social isolation (Odzakovic et al., 2018). Physical limitations commonly lead to decreased energy, bodily discomfort, pain, and disturbances in sleep patterns among older adults (Yu et al., 2024). These conditions often contribute to the development of depressive symptoms, anxiety, and feelings of boredom, potentially culminating in more severe mental health disorders (Kim and Ko, 2018). In this context, maintaining social ties is vital, as social relationships provide essential emotional support and help sustain connections with family and friends (Suragarn et al., 2021).

### *Older Adult Recreational Demands*

The role of physical activity and exercise in enhancing the physical and mental well-being, as well as the overall quality of life of older adults, is well-established and widely acknowledged (Samadi-Todar & Hami, 2025). Consequently, it is essential to design environments that support and enhance the quality of life and satisfaction of the elderly population. Beyond caregiving practices and human-centered approaches, various environmental and architectural factors— such as the design and location of residential buildings, lighting, color schemes, acoustic quality, presence of green spaces, and climatic conditions—play a significant role in supporting elderly well-being (Yu et al., 2024). Green spaces, in particular, contribute directly to behavioral improvements by mitigating environmental stressors, such as air and noise pollution, regulating temperature, and promoting stress reduction (Hami et al., 2025; Samadi-Todar et al, 2024).

Recent studies have emphasized the significance of human-nature interactions in urban green spaces—including parks, gardens, and natural landscapes—yet the specific relationship between natural environments and distinct age demographics, such as the elderly, remains underexplored (Samadi-Todar et al., 2025). Urban planners are therefore urged to adopt inclusive design approaches that cater to the diverse needs of all age groups, particularly older adults (Artmann et al., 2017). Relocation to nursing homes often brings considerable lifestyle changes for the elderly, where the absence of accessible open spaces and limited opportunities for physical engagement become apparent (Sullivan & Asselin, 2013). Besides physical accessibility, the perceived attractiveness and diversity of elements within green spaces also influence their usability (Sugiyama et al., 2010), with specific design features shown to positively impact health outcomes (Hegetschweiler et al., 2017).

For older individuals, amenities such as shaded seating areas, age-friendly furniture, and non-slip walking paths are vital for safety and comfort (Samadi-Todar et al., 2025). Given the physical and psychological challenges often encountered in later life, the thoughtful design of outdoor spaces can substantially address emotional needs and encourage meaningful interaction with the environment. Due to retirement and age-related social changes, many elderly individuals face a reduction in social ties and experience increased loneliness. Meaningful leisure activities—such as reading, casual social interaction, observing nature, or gentle walks—are essential for well-being. Additionally, culturally and socially engaging events, including religious gatherings, festivals, musical performances, and recreational games, can significantly enhance emotional health and reduce daily monotony.

### *Landscaping of Nursing Houses*

Artmann et al. (2017) emphasize that green spaces significantly enhance physical activity, recreational engagement, and social interaction among older adults. Similarly, Dahlkvist et al., (2016) demonstrated that the presence of lush green environments around nursing homes facilitates experiences of tranquility and awe, encourages more frequent visits, and contributes positively to residents' overall health. Moreover, visual access to greenery from communal or dining areas within nursing homes has been shown to reduce stress and enhance residents' quality of life. According to Sugiyama et al. (2010), living in areas with views of natural landscapes may help protect against the decline in mental health among the elderly. Despite this, outdoor environments and open spaces in nursing homes are often overlooked, with many older adults spending extended periods indoors, resulting in heightened feeling of isolation and depression. Current quality assessment systems for nursing homes tend to

prioritize medical services and room capacity (i.e., single or shared accommodation), while often neglecting the importance of outdoor spaces. However, prior research (Skalicky & Čerpes, 2019; Žegarac Leskovar & Skalicky Klemenčič, 2022) underscores that, alongside other factors, the availability and quality of green and open spaces play a vital role in promoting the physical and mental well-being of elderly residents. Consequently, greater attention should be directed toward designing and providing accessible open spaces and greenery in close proximity to nursing homes (Žegarac Leskovar et al., 2021).

Outdoor space satisfaction has been recognized as a crucial component of quality of life. High-quality outdoor environments can facilitate a wider range of activities and longer engagement for older individuals (Skalicky Klemenčič & Žegarac Leskovar, 2023). Such spaces enable diverse behaviors, including movement, accessibility, walking, leisure, social interaction, shopping, and cultural exchange. They must also cater to residents' spiritual well-being and maintain a standard of environmental quality. In well-designed open areas, not only are basic needs met, but opportunities for enjoyable recreational and social activities are also provided. However, these activities can only be sustained when the environmental attributes are favorable— meaning the space is aesthetically pleasing, functional, and engaging. Under such conditions, older adults are more inclined to spend time outdoors beyond necessity, as the space becomes a source of pleasure and enhances social interaction, thereby fulfilling essential psychological and spiritual needs. According to the information processing theory proposed by Kaplan and Kaplan (1998), four environmental qualities— complexity, coherence, legibility, and mystery—shape human environmental preferences. Complexity pertains to the diversity and richness of visual elements within a space, including the interplay and scale of landscape components. Coherence relates to the visual harmony of a scene, emphasizing consistency in attributes like brightness, scale, and texture, and also reflects the alignment between land use and the natural environment. Legibility denotes how easily a space can be understood and remembered, with clearly defined and recognizable elements. Mystery arises when a setting contains concealed features, inviting exploration and engagement—curved paths lined with vegetation that obscure the view ahead exemplify this characteristic.

## MATERIALS AND METHODS

### *Questionnaire Structure*

The first part of the questionnaire contains questions about respondents' personal information. Before rating landscape images, participants were asked to answer questions about their gender, marital status, age, level of education, monthly income, and number of children. The question about the age of the respondents had 4 options (41-50, 51-60, 61-70, and higher than 70), questions about the level of education had 4 options (Secondary, under diploma, Diploma, Bachelor and above) and questions about monthly income included 3 options (Less than 500 USD per month, 500-1000 USD per month, 1000- 1500 USD per month).

The second part of the questionnaire is devoted to assessing the dependent variables in the form of the main research question. The dependent variables are: Landscape function in the nursing home (10 items; Impact of green space on improving mental and physical health, how trees and flowers are planted, older adult landscape preferences), security (6 items: type of sidewalks, lighting, flooring type), older adult facilities (14 items; older adult furniture, older adult paths, gathering spaces, Physical and mental activities in the green space and how they spend their Leisure time) and landscape preferences for nursing home landscaping (11 items; environmental nursing preferences, type of green spaces (natural or artificial), color types, fountain in nursing home, access to the green space as well as direct or curved access to the paths) that were designed in the Likert spectrum.

Finally, a photo questionnaire including simulated images of the Khooban nursing home was used. Photographs from interior spaces of the nursing home were taken, and images were modified using 3Dmax software. Images were divided into five patterns of landscapes: 1) shady trees, 2) shrub and hedge combination, 3) hedgerow, 4) hedge and tree combination, and 5) combination of hedges, trees, shrubs. A total of twenty-four images were used. Each planting group contained 4 images, including complexity, mystery, prospect, and refuge.

### *Survey Procedure*

To determine the appropriate sample size for this study, Mitra and Lankford's (1999) formula was employed. Based on an assumed sampling error of 3%, the calculated sample size amounted to 277 individuals. Accordingly, during the months of July and August 2024, a total of 277 elderly participants were systematically selected from among the residents of the Khoban Nursing Home to participate in the study. These participants were asked to complete a structured questionnaire consisting of 41 items and 24 visual prompts or images designed to assess various cognitive, emotional, environmental, and aesthetic factors relevant to their well-being.

Data collection was scheduled during the hours of 10:00 a.m. to 12:00 p.m., a time typically designated for rest and minimal activity among the residents, in order to minimize disruption and ensure better focus. Given the advanced age and varying health conditions of the elderly respondents, the completion of the questionnaire required approximately 30 to 45 minutes per participant. To promote engagement and comprehension, researchers carefully explained the purpose of the study, the significance of the research, and the structure of the questionnaire prior to administration. Ethical considerations were observed throughout the process, and informed consent was obtained from all participants or their legal guardians, as appropriate.

To ensure reliability and analytical robustness, multiple statistical techniques were employed using SPSS software (Version 25). Descriptive statistics, including frequencies and descriptive measures (means, standard deviations), were calculated to summarize demographic and response data. To explore the underlying dimensions of the questionnaire constructs, exploratory factor analysis (EFA) was conducted. In addition, inferential statistical techniques such as Independent Samples t-tests and One-Way Analysis of Variance (ANOVA) were utilized to compare mean responses across different demographic and categorical groups, such as age ranges, gender, and health status. These analyses aimed to identify significant patterns, differences, and relationships within the data, thereby contributing to a more nuanced understanding of the environmental and psychological needs of older adults in institutional settings.

### *Study Area*

The study was conducted in Tabriz, a city situated in the northwestern region of Iran (Samadi-Todar et al., 2025; Hami et al., 2024). Tabriz hosts a total of 48 nursing homes, including 4 daily care centers specifically dedicated to older adults. For the purposes of this research, Khooban Nursing Home was selected due to its inclusion of outdoor green spaces. This facility, which provides care and medical supervision for over 320 older adult residents, operates under the oversight of Tabriz University of Medical Sciences.

## RESULTS

### *Demographic Information*

According to Table 1, of the 277 respondents, 142 (51.3%) were men and 135 (48.7%) were women. The majority of the participants are over 70 years (n=226, 81.6%). The educational status of 105 participants (37.9%) was in high school, and 183 participants had a monthly income of 500-1000 USD (66.1%). On average, 76 participants (27.4%) had three children.

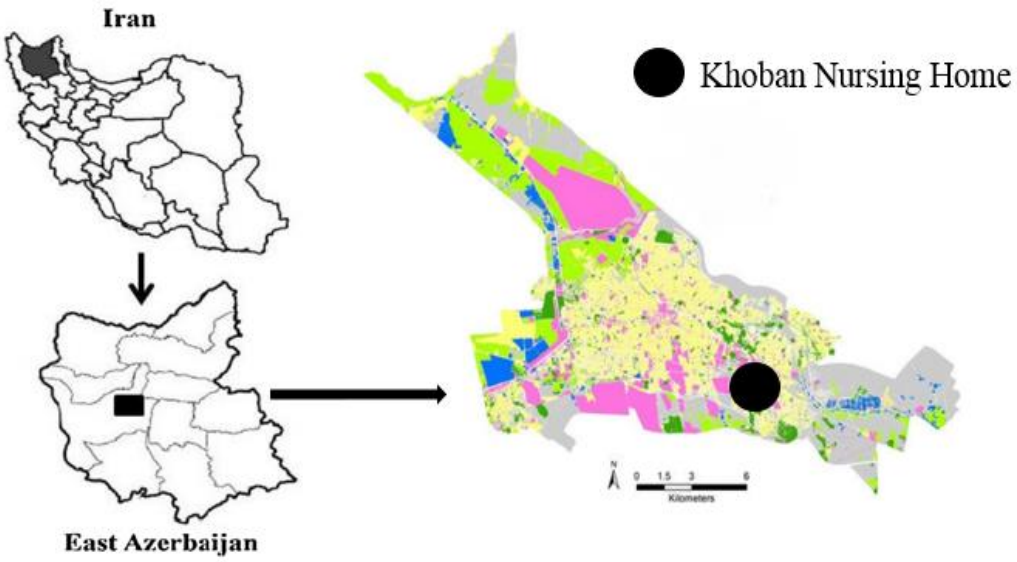


**Fig 1.** Location of the Khooban Nursing Home in Tabriz, Iran

***Factor Analysis***

Based on the findings from the descriptive analysis, respondents rated "watching the green space causes comfort" as the highest priority, with a mean score of 4.49 and a standard deviation of 0.70. The second most valued aspect was "planting a variety of trees results in liveliness and happiness," which received a mean of 4.17 and a standard deviation of 1.05. Conversely, the least preferred option among older adults regarding nursing home landscaping was the inclusion of "aromatic trees in the green space" (mean = 3.31, SD = 1.54). Furthermore, results from the factor analysis revealed that the functional aspects of green spaces in nursing homes could be categorized into two main dimensions: *liveliness* (Cronbach's alpha = 0.57) and *feeling of comfort* (α = 0.56). Additional information is presented in Table 2.

Continuing with the descriptive analysis of the variables, the item *"having a good seat and a chair for sitting"* in the green areas of nursing homes received the highest priority among respondents within the facilities dimension (M = 4.79, SD = 1.26). Conversely, *"having spaces for mental activity"* was rated as the least important in this category (M = 3.60, SD = 1.39). Regarding the physical activity dimension, the item *"having adequate furniture for the older adults to rest in the yard"* was identified as the top priority (M = 4.61, SD = 0.57). Factor analysis of the facility-related variables revealed two main components: *"social interactions"* (Cronbach's α = 0.68) and *"physical activities"* (Cronbach's α = 0.57), as detailed in Table 3.

**Table 1.** Demographic Information

| Green space performance | α | M | S.D |
|---|---|---|---|
| liveliness | 0.57 | 3.71 | 0.84 |
| Planting a variety of trees will bring liveliness and happiness | | 4.17 | 1.05 |
| Use of varied and evergreen trees in the green space | | 4.05 | 1.05 |
| Trees in front of the windows | | 3.92 | 1.29 |
| Planting row trees increases the attractiveness of the green space | | 3.38 | 1.53 |
| The front of the window is suitable for flowering | | 3.62 | 1.58 |
| The presence of aromatic trees in the green space creates a vibrant environment | | 3.31 | 1.54 |
| Sense of comfort | 0.56 | 4.38 | 0.60 |
| Watching the greenery makes me relax | | 4.49 | 0.70 |
| Various seasonal flowers in the yard | | 4.45 | 0.79 |
| Green space affects mental and physical health | | 4.36 | 0.88 |
| I love shade trees more in the greenery | | 4.30 | 0.87 |

**Table 2.** Factor Analysis of Liveliness and Sense of Comfort

| Green space performance | α | M | S.D |
|---|---|---|---|
| Social interactions | 0.68 | 3.96 | 0.7 |
| Have benches for sitting on | | 4.79 | 1.26 |
| I prefer to spend my leisure time in the green space | | 4.27 | 1.08 |
| I like to communicate with my friends in the green space | | 4.23 | 1.11 |
| Open area for gathering | | 3.92 | 1.27 |
| Have benches with shades | | 3.87 | 1.41 |
| Have a bathroom at a good distance from the green space | | 3.83 | 1.27 |
| I'd rather have a cafeteria in the elderly green space | | 3.76 | 1.53 |
| spaces be available for mental activity in the green space | | 3.6 | 1.39 |
| Physical activities | 0.57 | 4.30 | 0.83 |
| Enough furniture for resting in the greenery | | 4.61 | 0.57 |
| Design proper sidewalks for the elderly | | 4.38 | 0.62 |
| Enough space for physical activities | | 4.30 | 0.83 |
| Design appropriate routes for people in wheelchairs | | 4.30 | 0.83 |
| I like to do physical activities in the green space | | 4.28 | 0.97 |
| Appropriate sports equipment suitable for age in the green space | | 4.27 | 0.95 |

**Table 3.** Factor Analysis of Variables of Social Interactions and Physical Activities

| Green space performance | α | M | S.D |
|---|---|---|---|
| Social interactions | 0.68 | 3.96 | 0.7 |
| Have benches for sitting on | | 4.79 | 1.26 |
| I prefer to spend my leisure time in the green space | | 4.27 | 1.08 |
| I like to communicate with my friends in the green space | | 4.23 | 1.11 |
| Open area for gathering | | 3.92 | 1.27 |
| Have benches with shades | | 3.87 | 1.41 |
| Have a bathroom at a good distance from the green space | | 3.83 | 1.27 |
| I'd rather have a cafeteria in the elderly green space | | 3.76 | 1.53 |
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| Design appropriate routes for people in wheelchairs | | 4.30 | 0.83 |
| I like to do physical activities in the green space | | 4.28 | 0.97 |
| Appropriate sports equipment suitable for age in the green space | | 4.27 | 0.95 |

***Spatial Quality of Images***

Based on the findings from the factor analysis and the descriptive statistics presented in Table 4, older adults place the greatest emphasis on complexity in the nursing-home environment (Mean = 3.96, SD = 0.70, α = 0.58). This is followed by a preference for spaces characterized by mystery (Mean = 3.71, SD = 0.83, α = 0.71), prospect (Mean = 3.32, SD = 0.96, α = 0.63), and, to a lesser extent, refuge (Mean = 1.85, SD = 1.19, α = 0.54), in descending order of priority.

**Table 4.** Descriptive Results of the Quality of Spatial Composition of Images

| Spatial quality | Mean | Deviation | α |
|---|---|---|---|
| Complexity | 3.96 | 0.70 | 0.58 |
| Mystery | 3.71 | 0.83 | 0.71 |
| Prospect | 3.32 | 0.96 | 0.63 |
| Refuge | 1.58 | 1.19 | 0.54 |

*Refuge*: As shown in Figure 2, images 3, 7, 15, and 19 are effective in inducing "refuge". Based on the results of the descriptive analysis, the respondents gave the highest priority to image 15 (mean = 2.5, standard deviation = 1.7) and the least priority to image 19 (mean=1.88, standard deviation=1.42).

*Prospec*t: images 8, 12, 16, and 20 were in the Prospect Indicator group. Based on the results of the descriptive analysis, respondents gave the highest priority to Figure 16 (mean = 4.47, standard deviation = 1.22) and the least priority to Figure 12 (mean = 2.37, standard deviation = 1.67).

*Mystery*: images 9, 17, and 21 were effective in inducing "mystery" in the nursing home landscape, the older adult giving the highest priority to image 21 (mean = 1.92, standard deviation = 1.45) and the least priority to image 17 (mean = 1.81, standard deviation = 1.38).

*Complexity*: Images 4, 10, 14, and 18 were in the complexity index group. Based on the results of factor analysis, respondents had the highest preference for image 10 (mean = 3.10, standard deviation = 1.87) and the lowest priority for image 14 (mean = 2.89, standard deviation = 1.85).

Mean= 2.6, S.D= 1.17, Cronbach's alpha= 0.75

Picture 3

S.D= 1.5, M=2.01

Picture 7

S.D=1.52, M=2.17

Picture 15

S.D=1.7, M=2.5

Picture 19

S.D= 1.42, M=1.88

Mean = 3.32, S.D = 0.96, Cronbach's alpha = 0.408

Picture 8

S.D = 1.69, M = 3.61

Picture 12

S.D = 1.67, M = 2.37

Picture 16

S.D = 1.22, M = 4.47

Picture 20

S.D = 1.74, M = 2.81

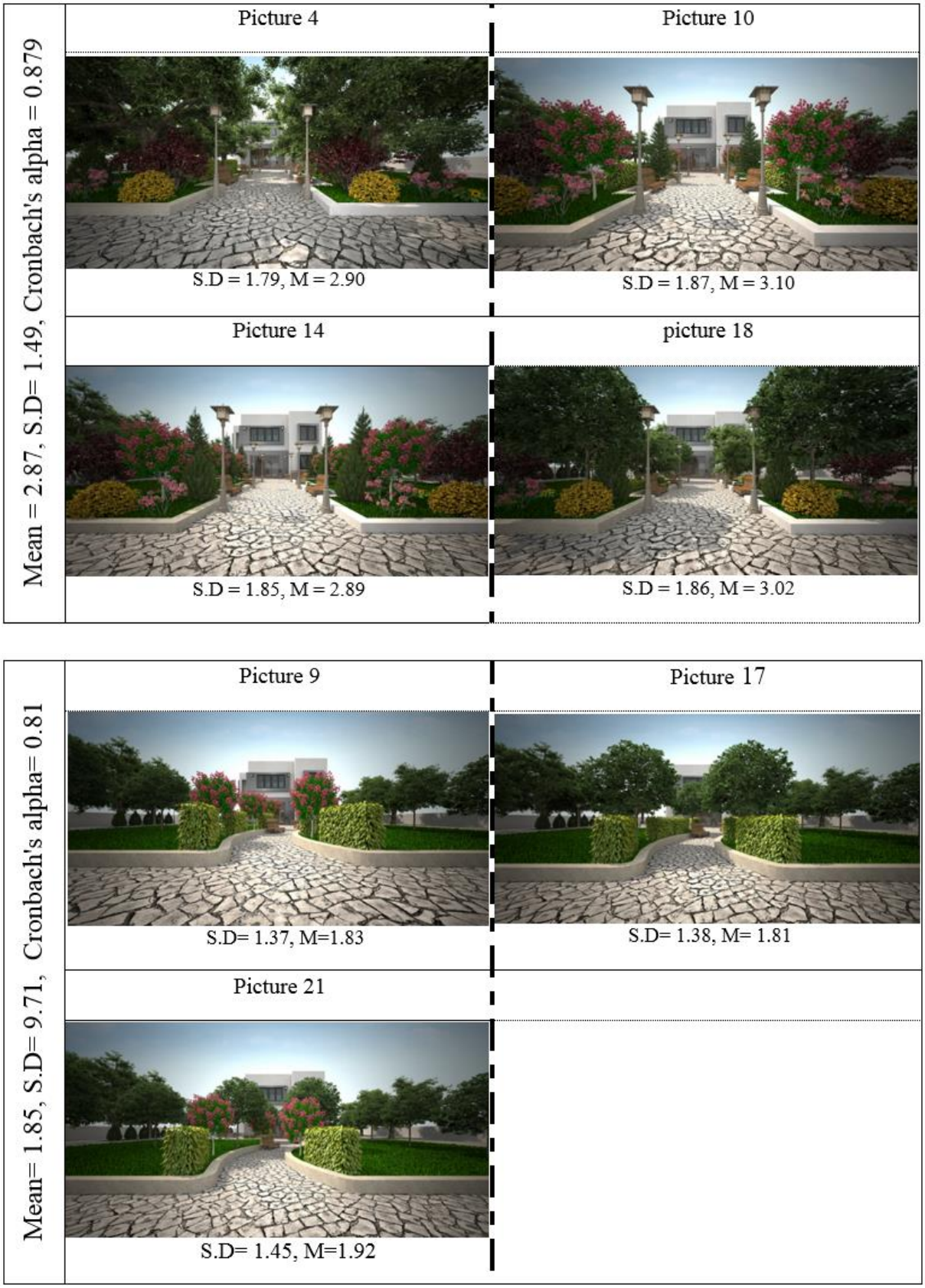


**Fig 2.** Spatial Composition of Images

### *Landscape Content Preferences*

Older adult has different opinions and preferences about the importance of content quality indices in landscape planning as the sense of comfort (average rating = 5.18) is in the first, and quality of access and physical activity (mean rating = 5.05), social interactions (mean rating = 4.17), liveliness (mean rating = 3.68), and aesthetic aspect of the landscapes are in the next rankings. It should also be noted that prioritization of landscape content quality index preferences by the Friedman test was meaningful at the 0.01 level.

### *Landscape Spatial Preferences*

As can be seen in Table 6, older adult has different opinions and preferences about the importance of visual quality indices in landscape planning as prospect (mean rating = 3.22) comes first, and mystery (mean = 2.87), complexity (Mean rating = 2.48) and refuge come in the next rankings. It is also worth noting that prioritizing the preferences of visual quality indices by the older adult in the Friedman test was meaningful at 0.01 level.

The study found that the *refuge* dimension was the least preferred spatial quality among older adults in nursing home landscapes. This low preference is linked to discomfort with isolation, security concerns, and a strong desire for open, socially engaging environments. Older adults favored openness and visual stimulation (e.g., "prospect" and "complexity") over enclosed or hidden spaces. As a result, design strategies should emphasize open, well-lit, and socially accessible areas while minimizing secluded or shadowed corners. Where shelter is needed, it should be visually open and integrated into communal spaces to maintain comfort and connection.

The photo-simulated questionnaire, which evaluated 24 images categorized under four spatial quality dimensions, demonstrated that older adults exhibited the strongest emotional responses to environments characterized by openness and expansive views. Image 16, classified under the "prospect" dimension, received the highest mean rating (4.47), indicating a clear preference for landscapes offering broad, unobstructed visual access. Within the "complexity" category, Image 10 achieved the highest score (mean = 3.10), suggesting that diverse and visually rich settings featuring varied plant arrangements were positively regarded, as long as they did not compromise ease of access and safety. The "mystery" category showed moderate appeal, with Image 21 rated highest (mean = 1.92), implying some interest in environments that incorporate partially hidden elements or layered vegetation that stimulate curiosity. In contrast, the "refuge" dimension was the least preferred, with its top image (Image 15) receiving a comparatively low rating (mean = 2.5), indicating a general aversion to enclosed or secluded settings. Collectively, these results suggest that older adults favor landscape environments that are visually open, stimulating, and navigable, while spaces that convey concealment or seclusion are less emotionally resonant.

**Table 5.** Friedman Test for Landscape Content

| | | Average rating | Range | K2 | D.F | Sig. |
|---|---|---|---|---|---|---|
| Landscape Content Quality Indicators | Sense of comfort | 5.18 | 1 | 580.415 | 6 | 0.000 |
| | Physical activities | 5.05 | 2 | | | |
| | Social interaction | 4.17 | 3 | | | |
| | Liveliness | 3.68 | 4 | | | |
| | Landscape Aesthetics | 3.08 | 5 | | | |
| | Landscape diversity | 1.80 | 6 | | | |

**Table 6.** Friedman Test for Spatial Quality

| | | Average rating | Range | K2 | D.F | Sig. |
|---|---|---|---|---|---|---|
| Landscape Content Quality Indicators | Prospect | 3.22 | 1 | 34.108 | 3 | 0.000 |
| | Mystery | 2.87 | 2 | | | |
| | Complexity | 2.48 | 3 | | | |
| | Refuge | 1.43 | 4 | | | |

## DISCUSSION

### *Age and Preference*

Age significantly influences older adults' perceptions and preferences regarding landscape design in nursing homes. The study found a marked distinction between the preferences of individuals aged 51–70 years and those aged 70 years and above.

While the younger elderly cohort (51–70) tends to value liveliness and activity-oriented landscapes, associating vibrant environments with enhanced life satisfaction and mental stimulation (Samadi-Todar et al., 2025), those aged over 70 prioritize comfort and social interaction, preferring environments that foster emotional support and companionship (Suragarn et al., 2021).

This divergence aligns with developmental theories of aging, where individuals gradually shift their focus from growth and exploration to maintenance and meaning-making. The older group's emphasis on comfort is further supported by their higher ratings for landscape features like shaded seating, calming views, and accessible pathways—elements that contribute to both psychological security and physical ease (Sjögren et al., 2022).

Interestingly, although prior literature suggests that older adults generally prefer simple, uniform environments (Yang et al., 2023), this study reveals a notable preference for complexity among those over 70. This may indicate a need for visual stimulation and mental engagement, even in later life, provided that complexity does not impede navigation or induce confusion. This finding reflects Kaplan and Kaplan's (1989) assertion that complex environments, when coherent and legible, support curiosity and reflection in natural settings.

### *Income and Design Implications*

Income level was found to significantly Income level was found to significantly shape preferences for landscape content and visual quality indicators. Participants with moderate monthly income (500–1000 USD) expressed stronger preferences for liveliness and comfort, suggesting a nuanced expectation for both aesthetic quality and usability in outdoor spaces (Morren & Grinstein, 2016). These individuals often seek environments that offer emotional respite and visual richness while remaining functional.

Such preferences have design implications: mid-income residents are likely to benefit from cost-effective yet enriching features like colorful seasonal flowers, shaded benches, and organized walking paths. These elements deliver high perceptual value without necessitating substantial financial investment.

This supports Carter et al. (2001) and Jadidi et al. (2015), who note that financial stability influences older adults' expectations of environmental quality, which in turn impacts their overall quality of life. Higher-income individuals may expect more elaborate landscaping or therapeutic amenities, while lower-income residents prioritize basic needs such as comfort, safety, and accessibility.

Designers and administrators of nursing homes must therefore stratify design strategies to meet the varying needs across income levels. Inclusive design should ensure that even the most basic outdoor environments are aesthetically pleasing, socially engaging, and emotionally comforting for all residents, regardless of their economic background.

### *Content–Spatial Relationship*

The relationship between landscape content (e.g., green space, facilities, accessibility) and spatial composition (e.g., complexity, mystery, prospect, and refuge) is a central finding of the study. A significant correlation was identified between open landscapes (prospect) and a heightened sense of comfort, aligning with Marzban et al.'s (2022) findings on the psychological calming effects of open, green views. Openness facilitates emotional relaxation and supports mental well-being by reducing visual confinement and promoting a sense of freedom.

The spatial indicator mystery—involving features that partially conceal and invite exploration—was associated with liveliness and social interaction. (Kaplan, 1993) argues that mystery fosters reflection and curiosity, qualities that appear to positively affect older adults' emotional engagement in this study. Similarly, complexity, defined by the diversity and richness of landscape elements (Tveit et al., 2006), was found to enhance comfort and social connection, though it was inversely related to accessibility. Hence, complex environments should be designed carefully to balance visual interest with functional clarity.

Conversely, refuge—spaces offering seclusion or concealment—was the least preferred spatial attribute, suggesting that older adults value safety and visibility over isolation. This contrasts with Hildebrand's (1991) notion of refuge as a desirable observation point. The present study suggests that, for nursing home residents, visual openness and passive surveillance are preferable, as they reduce anxiety and foster social awareness.

Overall, this intricate interplay between spatial and content-related design elements highlights the need

for integrative design strategies that harmonize physical form with experiential quality.

### *Relevance to Therapeutic Design*

The findings have profound implications for therapeutic landscape design in institutional elderly care. Therapeutic design seeks to support residents' mental, emotional, and physical health by creating restorative and engaging environments (Suragarn et al., 2021). In this study, older adults consistently emphasized the importance of comfort, social interaction, and visual stimulation, which are foundational components of therapeutic environments.

Therapeutic landscapes should incorporate:

- Open vistas (prospect) to foster psychological relaxation (Kaplan & Kaplan, 1989),
- Mystery and complexity to stimulate cognitive engagement and support reflective behaviors,
- Comfortable and shaded seating to promote extended outdoor use (Sullivan & Asselin, 2013),
- Non-slip paths and accessible furniture for safety and inclusivity (Samadi-Todar et al., 2025),
- Spaces for social interaction, such as plazas, gazebos, and open-air dining areas to reduce loneliness.

Moreover, physical activity spaces should meet age-specific standards, supporting light movement, safety, and confidence in usage (Blane et al., 2008). The study confirmed that when green spaces include sport or walking equipment adapted to older adults, engagement increases, which in turn supports mental well-being (Heyn et al., 2004; Samadi-Todar & Hami, 2025).

Lastly, the integration of therapeutic design should not occur in isolation but be guided by socio-demographic profiling, as preferences vary significantly across age and income groups. By aligning therapeutic landscapes with the psychological and physical needs of residents, designers can create environments that not only ameliorate distress and isolation but also foster autonomy, dignity, and joy in later life.

## CONCLUSION

The findings of this study indicate that older adults exhibit diverse preferences concerning the key components of landscape content in nursing home environments. Foremost among their expectations is the creation of a comfortable and relaxing atmosphere. Additional priorities include ease of access, safety, opportunities for physical activity, spaces that foster social interaction, a lively and cheerful ambiance, aesthetic appeal, and, lastly, landscape diversity. These results suggest that older adults value environments that are secure, promote social engagement, and provide visual and experiential variety. Furthermore, their visual preferences are shaped by elements such as openness (prospect), mystery, complexity, and, to a lesser extent, refuge—spaces that offer concealment while still allowing observation.

The study also highlights a meaningful connection between the perceived quality of landscape content and visual quality preferences. For example, older adults associate the liveliness of green spaces with open landscapes, which are also perceived as tranquil and visually pleasing. Notably, an inverse relationship was observed between spatial complexity and access quality, suggesting that more accessible environments tend to be less visually complex. Preferences for open and mysterious landscapes were closely linked to enhanced social interaction. The presence of secure and clearly defined spaces was also found to support increased physical activity. Additionally, older adults showed a preference for diverse landscapes enriched by elements of mystery. Socio-demographic factors, such as age and income, significantly influenced these preferences; for instance, individuals over 70 prioritized comforts, while those with middle income levels favored peaceful and green environments. Consequently, the study underscores the importance of tailoring landscape design in nursing homes to align with the specific characteristics and needs of their elderly residents. These findings can be of interest to landscape architects and urban designers to create appropriate spaces based on the preferences of older adults in nursing homes. Future studies could explore the longitudinal effects of spatial design on the well-being of elderly individuals. Investigating how different environmental layouts and design features influence physical health, cognitive function, and emotional well-being over extended periods would provide valuable insights. Such research could help inform the development of age-friendly spaces that promote sustained quality of life and independence among older adults.

## LIMITATION

A notable limitation of this study lies in its dependence on simulated imagery to assess landscape preferences, rather than incorporating direct, real-world interactions with outdoor environments. While the use of digitally modified photographs created with 3DMax allows for standardized visual stimuli and controlled comparisons, it may not effectively reflect

the full sensory and emotional experiences that natural settings evoke in older adults. Furthermore, the reliance on photo-based questionnaires may hinder the ability of participants with cognitive impairments or visual limitations—conditions prevalent in aging populations—to fully engage with and interpret the visuals. Another limitation is the focus on a single case study location, Khooban Nursing Home, which reduces the applicability of the findings across diverse cultural and environmental contexts. Additionally, the study's cross-sectional design restricts insights into how landscape preferences might evolve over time or how they influence residents' long-term psychological well-being.

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