

The role of environmental factors in reading urban spaces from the perspective of the elderly

Case study: Hamadan People's Park

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Detailed abstract

Introduction

Population ageing is a major challenge for urban planning and landscape architecture. Changes in physical capacity, sensory perception, mobility, and psychosocial needs mean that public space can either support older adults' independence or intensify exclusion. Because older people may have more time for optional and social activities, accessible parks are important settings for walking, recreation, contact with nature, interaction, and collective memory. Nevertheless, many parks do not adequately respond to age-related limitations.

This issue is particularly relevant in Hamadan, identified in the article as Iran's seventh-oldest province demographically. Mardom Park is a principal recreational space surrounded by commercial, cultural, educational, and healthcare uses. Yet physical barriers, unclear routes, unsuitable facilities, weak lighting, and insufficient social spaces may constrain older adults' use.

The study treats spatial readability as more than visual legibility or wayfinding. For older adults, it emerges through objective and subjective conditions. The objective dimension comprises function, environmental quality, and accessibility; the subjective dimension includes perception, social identity, collective memory, security, and place attachment. The research evaluated these components in Mardom Park and tested whether both dimensions contribute to readability, aiming to inform age-responsive improvement strategies.

Materials and Methods

The research adopted a survey-based case-study design supported by documentary and field methods. Documentary sources established the theoretical foundations concerning ageing, park use, readability, accessibility, interaction, security, memory, and attachment. Fieldwork combined questionnaires, interviews, observation, and informal conversations to identify environmental conditions and problems encountered by older users.

The case study was the approximately 13,965 m² Mardom Park in western Hamadan. Questionnaires were completed over one week at different times. The sample comprised 350 older users, determined using Cochran's formula, with varied social and occupational characteristics. Women and men each constituted 50%; mean age was 61 years; 92% lived nearby and 8% came from elsewhere.

The instrument assessed objective indicators under three groups: functional factors, including urban furniture, signs, welfare facilities, and activity diversity; environmental factors, including natural elements, surface-water drainage, and shade trees; and accessibility factors, including entrances, ramps or sloping surfaces, spatial geometry, route dimensions, access quality, and paving. Subjective indicators were organized into perceptual factors, social identity, security, collective memories, and place attachment. Responses were analyzed in SPSS through descriptive comparisons and one-sample t-tests. For the second hypothesis, the reported three-point scale assigned 1 to dissatisfaction, 2 to relative satisfaction, and 3 to complete satisfaction; the one-sample tests used a reference value of 2.

Findings

Field observations revealed assets and substantial deficiencies. Seats were often uncomfortable and poorly positioned. Information signs were scarce, while toilets, drinking fountains, ablution facilities, and older-adult spaces were inadequate or difficult to locate. Vegetation, shade trees, green space, and water were valued; however, the watercourse was poorly maintained, dry, and obstructed by waste. Inadequate drainage caused water to accumulate along paths.

Accessibility problems included a difficult stepped entrance, ambiguous circulation routes, narrow secondary paths, worn or climatically unsuitable paving, and design that did not adequately respond to the site's varied topography. Some older adults consequently entered through flatter green areas rather than the formal entrance. In the subjective domain, an informal gathering place had been created by older users themselves but lacked facilities and four-season usability. Older people generally sought quiet, secluded areas away from crowded zones. The park contained a limited number of landmarks, while partially undefined edges reduced readability in some locations. Social and recreational activities supported identity, but the presence of high-risk individuals in certain areas discouraged older users.

The first one-sample t-test indicated that the mean score for objective factors was 1.73, significantly below the reference value of 2, $t(29) = -2.28$, $p = .030$, mean difference = -0.26, with a reported 95% confidence interval from -0.50 to -0.02. The study interpreted this result as supporting the relevance of

functional, environmental, and accessibility factors to readability while simultaneously showing that existing conditions remained below the ideal level. Among functional indicators, activity diversity received the highest complete-effect response (48.1%), whereas urban furniture received only 3.3% and was rated ineffective by 51%. Natural elements obtained the highest complete-effect response among environmental indicators (46.6%). Surface-water drainage was weakest, with 70% reporting no effect and only 3.3% complete effect. Within accessibility, sloping surfaces in place of stairs ranked highest (40.7% complete effect); appropriate path width and length ranked lowest (6.7%), with 66.7% reporting no effect.

For subjective factors, the mean score was 1.53, also significantly below the reference value, $t(29) = -4.76$, $p < .001$, mean difference = -0.46, with a reported 95% confidence interval from -0.66 to -0.26. The article regarded this as confirmation that perception, social identity, security, collective memory, and attachment influence readability, although current performance was below the desired level. Quietness and seclusion had the strongest complete-effect response among perceptual indicators (35.1%), while the gathering node received 0% and was rated ineffective by 73.3%. Spaces for social interaction led the social-identity indicators (40.9%), whereas collective rituals received 0% and 73% no effect. Visibility was the leading security indicator (29.9%); lighting was comparatively weak, with only 12.8% complete effect and 68.9% no effect. Collective spaces were strongest for collective memory (35.6%), while religious ceremonies received 0% and 85.6% no effect. Diverse activities were most influential for place attachment (34.3% in the findings table), followed by opportunities to meet friends (25.9%).

Discussion and Conclusion

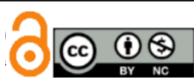
The results demonstrate that age-friendly readability is relational: it depends on the fit between bodily capacities, spatial configuration, environmental comfort, social opportunity, and perceived security. A route may be geometrically understandable yet remain practically unreadable when its paving is slippery, its width is insufficient, or it lacks places to rest. Similarly, a visually attractive park may fail older users when lighting, surveillance, gathering spaces, or activity choices are inadequate. Readability should therefore be understood as an embodied and socially produced experience rather than a purely visual property.

The prominence of natural elements confirms the importance of vegetation, shade, water, and environmental comfort for psychological restoration and prolonged presence. However, natural assets require maintenance; a neglected watercourse or poor drainage can transform an amenity into a barrier. The strong preference for sloping surfaces over stairs emphasizes universal and topography-sensitive access. The findings also show that social interaction is not secondary to physical design. Collective spaces, meeting opportunities, diverse activities, and visible, secure settings help older adults maintain identity, create memories, and develop attachment to place.

Accordingly, improvement priorities for Mardom Park include comfortable age-appropriate seating at regular intervals; clear signs and recognizable landmarks; accessible and legible welfare facilities; continuous, sufficiently wide, non-slip routes; ramps or gentle slopes instead of stairs; effective drainage; and careful use and maintenance of vegetation, shade, and water. These physical measures should be integrated with well-lit, visible, socially supervised spaces, quiet retreats, adaptable four-season gathering areas, and varied individual and collective activities. Such interventions can increase confidence, duration of stay, social participation, and independent use.

The study concludes that both objective and subjective environmental factors significantly structure older adults' reading of urban parks, while the below-reference mean scores expose deficiencies in the existing setting. Its principal contribution is an integrated framework linking function, ecology, accessibility, perception, identity, memory, security, and attachment. Because the research examined one park and reports a locally specific sample, broader generalization requires comparative studies in other parks, seasons, and cities. Future research could also examine differences by age subgroup, physical ability, residence, and time of use, and could combine post-occupancy evaluation with behavioral mapping and objective accessibility measurements.

Keywords: Older adults; Urban parks; Spatial readability; Environmental factors; Accessibility; Place attachment; Mardom Park; Hamadan



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