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Research Article

Examining the relationship between design guidelines and user practices in the context of aging in place

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ABSTRACT

Aging in place policies, which have emerged as a global priority due to population aging, are primarily spatialized through normative design guidelines that provide universal physical standards. However, this approach tends to reduce the dwelling to a purely medicalized shelter, thereby marginalizing the dimension of sociocultural belonging. Addressing this problem, the present study aims to reveal the empirical discrepancies between normative standards and actual user practices. To this end, 10 normative guidelines and 43 field studies across 14 countries were analyzed using a thematic meta-synthesis method. The findings indicate that while themes of safety and accessibility demonstrate consistency across diverse contexts, vital culturally specific dimensions, such as familial care, privacy, balcony usage, and spatial memory, remain largely underrepresented within the evaluative scope of these guidelines. Relying solely on these guidelines in the design process, despite their legitimacy in ensuring minimum physical standards, leads to significant experiential deficiencies in the living environment. Ultimately, this study highlights the critical need for a complementary model that integrates physical metrics with sociocultural practices.

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INTRODUCTION

The global demographic shift [1, 2], coupled with the rapidly aging population in Türkiye, has positioned the "aging in place" strategy at the core of contemporary housing policies. This strategy situates housing not merely as a physical shelter, but as a space where older individuals can maintain their identity continuity without experiencing a sense of disruption. To spatialise this ideal, various accessibility-oriented normative documents have been developed, including the WHO Age-Friendly Cities Guide [3], American Association of Retired Persons (AARP) [4, 5], Aging in Place Design Guidelines for Independent Living in Multifamily Buildings [6], EVOLVE [7], the Irish Universal Design Guidelines [8], CABE-Housing LIN [9], The Ireland Smart Ageing Exchange (ISAX) [10], and national guidelines in Türkiye [11, 12]. While these guidelines serve as legitimate instruments for defining minimum physical requirements, international field research reveals that socio-cultural dimensions such as identity, sense of belong-

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ing, spatial memory, and cultural privacy often remain beyond the scope of these standards.

The objective of this study is not to assert the inherent insufficiency of these guidelines, but rather to highlight the conceptual mismatches that arise when they are considered self-sufficient, thereby discussing the need for a complementary framework. Within this context, the study investigates the discrepancies between design guidelines and user practices, questioning which vital dimensions of daily life fall beyond the reach of normative standards.

Literature Review

The theoretical framework of the study is grounded in three fundamental approaches within the environmental gerontology literature. These models reveal the decisive role of social, emotional, and cultural layers that extend beyond physical standards in shaping the aging in place experience.

The Ecological Competence Press Model developed by Lawton and Nahemow [13] suggests that as the physical capacities of aging individuals decline, the influence of environmental factors on behavior becomes more pronounced. According to this approach, a residence designed solely around medical requirements or one that fails to accommodate universal needs can easily turn into a restrictive environment that undermines the autonomy of the older adult. Golant's [14] Theory of Residential Normalcy argues that successfully aging at home depends on balancing two main elements. The first is residential comfort, representing a sense of belonging rooted in personal memories and spatial habits. The second is residential mastery, which embodies the feeling of independence. Normative guidelines typically prioritize the mastery dimension while leaving comfort in the background. This imbalance largely explains why standard design interventions occasionally provoke a sense of alienation among older adults. Meanwhile, Atchley's [15] Continuity Theory highlights that familiar environments reduce cognitive load and that habitual spatial practices are essential for maintaining independence. Such external continuity in the physical environment serves as both a practical and emotional necessity. Consequently, overly standardized spatial modifications can disrupt the personal coping strategies that an individual has cultivated over a lifetime.

When these three foundational theories of environmental gerontology are considered together, it becomes clear that the quality of the aging in place experience involves much more than accommodating basic bodily needs. It is profoundly shaped by the holistic, relational, and temporal bonds that individuals establish with their living environments.

METHODOLOGY

This study employs a thematic meta-synthesis method. This approach allows for the systematic integration of findings from numerous studies across diverse disciplines and contexts, thereby identifying common themes and points of divergence. The analysis process utilised two primary datasets. The first dataset consists of the ten normative design guidelines listed in the Introduction [3 through 12]; measurable physical standards, design categories and foundational assumptions were coded from these documents. These 10 guidelines were selected through purposive sampling. The inclusion criteria required that the documents be published by internationally or nationally recognized policy-making institutions, such as the World Health Organization (WHO) and the American Association of Retired Persons (AARP), focus explicitly on aging in place, universal design, or age-friendly housing, and hold prominence in the environmental gerontology literature. The dimensions that each guideline addresses or leaves out are summarised in the coding matrix in Table 1.

The second dataset comprises field studies on the housing practices and preferences of older adults. Its starting point was a systematic search of the Scopus and Web of Science databases, conducted on 26 March 2025 following the PRISMA protocol. Search terms were divided into two main categories: aging in place and old age, alongside housing and the living environment. Considering the terminological diversity within the literature, the search string was formulated to include synonymous terms as follows: ("Aging in place" OR "Environmental Gerontology") AND ("Housing" OR "home" OR "dwelling" OR "residence" OR "Age friendly housing"), and the search was limited to the 2020-2025 period in order to capture current trends. The initial query returned 518 records; abstract screening reduced these to 197 directly relevant studies, and 182 were retained for full-text analysis after duplicates and topically unrelated works had been removed. From these 182 full-text articles, a keyword co-occurrence network was generated in VOSviewer with a minimum occurrence threshold of two, revealing ten distinct thematic clusters, each representing a specific concept in the literature.

Addressing the core problematic of the study regarding user practices and guideline discrepancies, the cluster on housing preferences and elderly well-being was selected from these ten clusters as the primary object of analysis. This selected cluster was then expanded with additional Turkish-context field studies retrieved from DergiPark and the Council of Higher Education National Thesis Center (YOK), together with key sources traced retrospectively through snowballing, in order to represent the Turkish apartment context more fully. The resulting corpus comprised 43 field studies, and the overall selection process is shown in Figure 1.

The inclusion and exclusion criteria applied during the selection of these studies are presented in Table 2.

In methodological terms, the 43 studies span qualitative, quantitative, mixed-method, review, thesis and conceptual designs, conducted in Türkiye, the United Kingdom, Sweden, the Netherlands, the United States, Australia, Malaysia, Nigeria, Egypt, Belgium, South Korea, China,

Table 1. Coding matrix of the ten normative guidelines across analytical dimensions

Guideline (year, origin)	Physical / accessibility	Spatial layout / flexibility	Social / community	Cultural / identity	Economic / affordability
WHO Global Age-Friendly Cities (2007)	●	◐	●	○	●
AARP HomeFit (2010, USA)	●	◐	○	○	○
Aging in Place Design Guidelines, Multifamily Buildings (2016, USA)	●	●	◐	○	◐
EVOLVE (2010, UK)	●	●	◐	○	○
Universal Design Guidelines for Homes in Ireland (2016)	●	●	○	○	○
CABE / Housing LIN, Homes for our Old Age (2009, UK)	●	●	●	○	○
ISAX, Housing for Older People (2016, Ireland)	●	◐	◐	○	◐
HAPPI (2009, UK)	●	●	●	○	◐
Ministry of Family and Social Services, Age-Friendly Housing Guide (2025, Türkiye)	●	◐	○	○	○
TMMOB, Accessible Environment Design (2008, Türkiye)	●	◐	○	○	○

● explicitly addressed ◐ partially or indirectly addressed ○ largely absent. Physical and accessibility standards are consistently addressed, whereas cultural / identity dimensions and household-level economic affordability remain largely underrepresented across the guidelines.

Slovenia and Poland. Their distribution by research design is summarised in Table 3.

The data were analysed through the six-phase reflexive thematic analysis approach, applied inductively. The first author became familiar with the studies, generated initial codes from the recurring patterns and context-specific divergences across the corpus, and grouped these codes into candidate themes. The candidate themes were then reviewed, refined and named in iterative discussion with the supervising author. Rather than relying on inter-coder reliability scores, which are not appropriate for reflexive thematic analysis, interpretive differences were

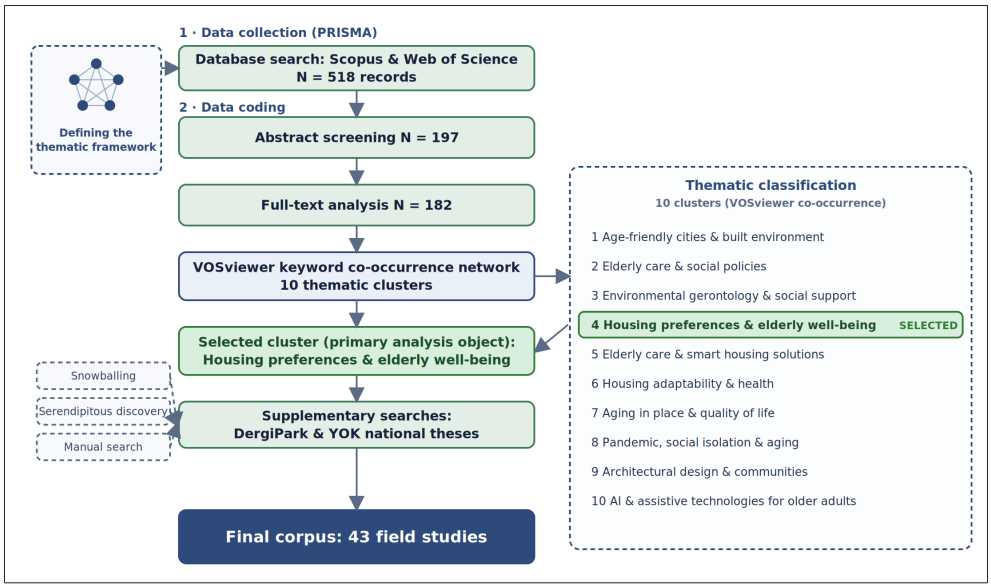


Figure 1. Study selection and thematic clustering process: PRISMA-based database search, VOSviewer keyword co-occurrence network, selection of the housing-preferences cluster, and supplementary searches in DergiPark and the YOK national thesis center.

Table 2. Inclusion and exclusion criteria applied in the literature search

Parameter	Inclusion criteria	Exclusion criteria
Publication type	Peer-reviewed journal articles and graduate theses	Editorials, commentaries, conference abstracts and non-academic reports
Language	English and Turkish	Studies published in other languages
Time span	2020-2025 for the systematic search; seminal theoretical and methodological works, and key empirical sources reached through snowballing, retained regardless of year	Empirical studies published before 2020, except foundational theoretical works and key empirical sources reached through snowballing
Databases	Scopus and Web of Science (international core); YOK National Thesis Center and DergiPark (Turkish context)	Records available only outside indexed scholarly sources
Thematic scope	Aging in place and age-friendly housing addressed at the dwelling and residential-environment scale	Studies addressing aging solely from a medical, clinical or biological perspective
Relevance	Studies reporting older adults' housing practices, preferences or experiences	Duplicate records and topically unrelated studies

resolved through discussion until interpretive consensus was reached. Since the two datasets rest on different methodological foundations, they were not directly compared. Instead, the thematic matrix in Table 1 was used to analyse the conceptual mismatches and the differing focus areas between the physical metrics of the guidelines and the lived practices evident in the field data.

FINDINGS

This section presents the analytical outcomes derived from the 43 field studies. The findings are structured along two primary axes. The first axis explores the prominent lived themes that emerge directly from the field. The second axis focuses on the points of divergence where normative guidelines fall beyond their functional scope and consequently fail to align with user expectations.

Prominent Themes Emerging from Field Research

Analyzing the 43 field studies yielded nine primary themes. Themes regarding safety and accessibility [16-26], spatial adaptability [27-31], social connection and belonging [32-39], and independence and control [40-46] consistently recur across various geographies. Conversely, themes centered on identity and continuity [47, 48], family-based care [49], and outdoor spaces or housing typologies [50] become highly distinct within specific cultural contexts. While economic constraints [51, 52] emerge as a universal barrier, smart home technologies attract increasing attention [53, 54]. A striking observation is how the same theme varies depending on the context. For instance, safety is defined through physical accessibility deficits in Türkiye [16, 18], through intergenerational priority differentiation in Malaysia [55], and through psychosocial control mechanisms in the United States [40]. Representative references and findings related to these themes are summarized in Table 4 [16-57].

Divergences Between Guidelines and Field Practices

Regarding sociocultural practices, which constitute the first of the four main axes of divergence identified in the study, Western centric guidelines assuming individual autonomy become dysfunctional in Nigeria [49], where care is shared intergenerationally, and in Malaysia [55], where open plan layouts conflict with cultural privacy. In Türkiye, the fact that the balcony, considered secondary by the guidelines, is actually a primary social interface [50] further supports this situation.

Examining typological constraints as the second axis reveals that patterns such as level access entrances or ground

Table 3. Classification of the 43 reviewed field studies by research design

Research design	No.	References
Qualitative empirical (interviews, case studies)	15	[17], [19], [20], [28], [37], [38], [39], [40], [42], [43], [44], [47], [52], [56], [57]
Quantitative empirical (surveys, modelling, regression)	15	[22], [27], [29], [30], [32], [34], [35], [36], [48], [49], [51], [53], [54], [55], [58]
Mixed-method studies	3	[31], [33], [41]
Systematic and scoping reviews	3	[26], [45], [46]
Graduate theses (master's and doctoral)	5	[16], [18], [21], [23], [50]
Conceptual and framework studies	2	[24], [25]
Total	43	

Table 4. Prominent themes from field studies (43 sources, 14 countries; representative examples)

Theme	Reference / Country	Key Finding
SAFETY/ ACCESSIBILITY	[16]-[18]-Türkiye [17]-Australia	Infrastructure deficits and insecure tenancy are the primary barriers to housing adaptations.
SPATIAL ADAPTABILITY	[27]-USA [28]-USA [29]-Netherlands	Adaptations are mostly reactive; being "stuck in place" is common in housing that fails to meet standards.
SOCIAL CONNECTION/ BELONGING	[33]-Sweden [31]-Slovenia [37]-Netherlands	The home is the carrier of identity and life history; maintaining social connections requires supported environments.
INDEPENDENCE/ CONTROL	[40]-USA [41]-South Korea [45]-Multi Country	Standard renovations can induce alienation; genuine independence cannot be achieved without addressing caregiver needs.
IDENTITY/ CONTINUITY	[47]-Netherlands [56]-Türkiye	Spatial continuity established through belongings and memories supports independence and emotional wellbeing.
FAMILY BASED CARE	[49]-Nigeria [41]-South Korea	Aging in place cannot be sustained without designs that accommodate family care networks and caregiver privacy.
OUTDOOR SPACE/ TYPOLOGY	[50]-Türkiye [57]-Australia	The balcony transforms into the primary social interface; multi story typologies are incompatible with universal standards.
ECONOMIC BARRIER	[51]-Belgium [52]-Sweden [27]-USA	Adaptation costs represent a universal barrier regardless of geography; the economic dimension remains outside the guidelines.
TECHNOLOGY	[54]-United Kingdom [53]-Malaysia	Interest in telecare and smart home technologies increases significantly after the age of 65.

floor bathrooms proposed by standards born of a specific geography, like the Universal Design Guidelines for Homes in Ireland [8] and EVOLVE [7], are inherently incompatible with the multi-story Turkish apartment morphology [16]. Indeed, it is evident that the incompatibility of such standardized spatial interventions with the local fabric triggers phenomena like being "stuck in place" in the United States [28] and social isolation in Australia [57].

Considering economic barriers as a third dimension, adaptation costs pose a fundamental constraint in Belgium [51], the Netherlands [29], and for low-income older women in Sweden [52]. While this situation is documented as the "unpreparedness paradox" [27] in the United States, guidelines tend to address this economic dimension only indirectly, if at all.

Finally, on the axis of identity and memory, standard interventions have been found to cause spatial alienation [40] and the disruption of object arrangements that serve as cognitive bridges [47]. In accordance with the model of Lawton and Nahemow [13], the significance of this relational bond progressively increases alongside declining physical competence. All these conceptual and practical differences are summarized in Table 5 [13-58].

Table 5. Focal points of normative standards and the out-of-scope dimensions reflected in field data

Category	Measured	Unmeasured	Reference
Accessibility	Door width, ramp slope	Sense of belonging, spatial memory, continuity	[33],[47]
Safety	Non slip flooring, grab bars	Feeling of trust, perception of control, psychological safety	[40],[56]
Outdoor Space	Balcony size, garden access	Social interface practice, enclosure habit	[50],[57]
Spatial Layout	Number of rooms, open plan layout	Cultural privacy, additional space for family care	[49],[55]
Adaptation	Renovation checklist	Economic affordability, unpreparedness paradox	[27],[29],[51]
Social Environment	Presence of common areas, distance to services	Collective living, community belonging, intergenerational bond	[13],[58]
User	Homogeneous older adult category	Gender, income, generation, and culture based differentiations	[49],[52],[55]

Limitations

Several limitations should be acknowledged. First, the systematic search was confined to the Scopus and Web of Science databases, supplemented by the YOK National Thesis Center and DergiPark; relevant studies indexed elsewhere, or written in languages other than English and Turkish, may therefore have been omitted. Second, restricting the systematic search to the 2020-2025 period, although intended to capture current trends, may have excluded earlier empirical work, a constraint only partly mitigated by retaining foundational theoretical sources through snowballing. Third, the reviewed studies are methodologically heterogeneous, encompassing qualitative interviews, surveys, mixed-method designs, reviews and graduate theses; differences in their design and depth limit the direct comparability of their findings. Fourth, the selection of ten guidelines reflects internationally and nationally prominent documents but is not exhaustive, and other regional standards may address some of the dimensions identified here as underrepresented. Finally, thematic meta-synthesis is interpretive by nature; although coding and theme generation were conducted systematically and reviewed with the supervising author, they inevitably reflect the researchers' analytical lens. These limitations suggest caution in generalizing the findings and point to the value of future primary, context-specific fieldwork in the Turkish apartment setting.

CONCLUSION

The thematic meta-synthesis of ten normative guidelines and 43 field studies has revealed the vital deficiency created by treating these guidelines as singularly sufficient in design practice. Sociocultural dimensions such as identity, belonging, cultural norms, and economic capacity remain largely underrepresented and insufficiently operationalised.

Building on the four axes of divergence detailed above, the analysis points to three overarching conclusions. First is

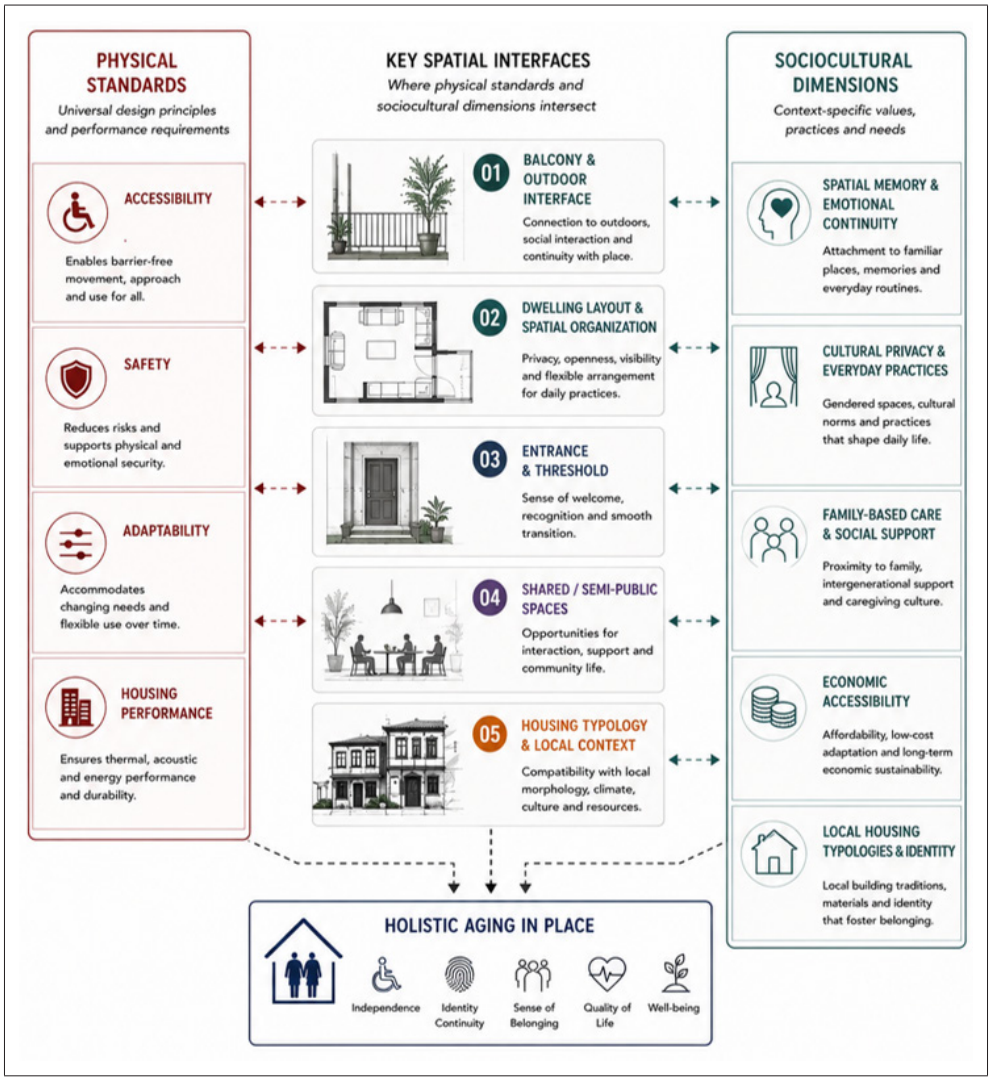


Figure 2. The integrative complementary model.

the focal divergence between metric standards and socio-emotional needs. Second is the dysfunctionality of universal standards when confronted with local housing morphologies and cultural practices. Third is the contradiction with reality caused by the assumption of a homogeneous user, which ignores the multiple and intersectional disadvantages individuals possess. Accordingly, the study proposes a complementary framework that integrates universal physical metrics with context specific sociocultural criteria. Normative standards should be positioned not as an ultimate solution, but as a necessary yet insufficient starting point. In this regard, the framework must be expanded to encompass a perception of psychological safety that goes beyond mere physical security. It should account for the cultural interaction between universal standards and local housing morphologies, such as the balcony and the traditional sofa (central hall) space. Furthermore, it must include emotional continuity criteria that support independence by preserving the spatial memory of the individual. Thus, aging in place will evolve from a simple process of physical adaptation into a holistic life strategy where the individual can sustain their identity and social bonds.

The integrative complementary model presented in Figure 2 visualizes the dynamic interaction between universal physical standards and context-specific sociocultural dimensions. Rather than rejecting normative physical standards such as accessibility and safety, the model adopts them as a mandatory baseline. However, it argues that this baseline must be integrated with sociocultural layers including spatial memory, cultural privacy, and local housing morphologies. These two distinct dimensions are bridged through key spatial interfaces such as balconies, dwelling layouts, thresholds, and shared spaces. The synthesis of physical metrics and lived experiences at these interfaces transforms the dwelling from a purely medicalized shelter into a holistic aging in place outcome, thereby securing the older adult's independence, identity continuity, and sense of belonging.

Building on this logic, Table 6 specifies how the universal physical standards can be integrated with the sociocultural dimensions revealed by the field studies, namely sociocultural practices, emotional continuity, family-based care, economic affordability and local housing typologies, alongside safety and perceived control. For each dimension the framework pairs the normative physical standard with its complementary sociocultural criterion and an integrated, actionable design criterion.

The proposed framework can be translated into design and policy decisions through the following steps:

1. Guideline standards should be treated as a mandatory physical baseline rather than a comprehensive solution.
2. At the start of each project, local sociocultural dimensions including privacy norms, balcony and semi open space use, family care arrangements, affordability, and apartment typology must be evaluated alongside standard physical accessibility checklists.
3. Each relevant sociocultural dimension should be translated into a concrete design intervention using the integrated design criteria outlined in Table 6.
4. When adapting an existing home, the spatial memory and familiar object arrangements of the resident should be actively preserved, and physical modifications must be paired with clear cost and financing pathways.

Table 6. Complementary framework: Integrating normative physical standards with context-specific sociocultural dimensions

Integration dimension	Normative physical standard (what guidelines measure)	Complementary sociocultural criterion (what field practice adds)	Integrated design criterion
Sociocultural practices	Open-plan layout, room dimensions	Cultural privacy gradients; the balcony as a primary social interface	Provide privacy-graded layouts and treat balconies and semi-open spaces as social rooms
Emotional continuity	Accessibility fittings, interior finishes	Spatial memory, continuity of personal object arrangements, identity and belonging	Preserve familiar layouts and personal object placements when adapting interiors
Family-based care	Number of rooms, bathroom access	Intergenerational co-residence; caregiver presence and privacy	Include adaptable rooms that accommodate co-residing carers and caregiver privacy
Economic affordability	Renovation and modification checklist	Adaptation cost, the unpreparedness paradox, tenure security	Couple modification guidance with cost estimates and financing pathways
Local housing typologies	Level-access entrance, ground-floor bathroom	Multi-storey apartment morphology, vertical living, lift dependence	Adapt standards to the apartment typology through in-unit and shared-core solutions
Safety and perceived control	Non-slip flooring, grab bars, ramp slope	Psychological safety, perceived control and trust	Pair physical safety fittings with arrangements that preserve the resident's sense of mastery

5. Policymakers should embed these sociocultural criteria and affordability provisions into national housing guidelines and home modification grant schemes. This ensures that the complementary layer becomes an integral part of the normative baseline itself.

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AUTHORSHIP CONTRIBUTIONS

Concept: Setenay Karaarslan and Nazlı Ferah Akıncı, Design: Setenay Karaarslan and Nazlı Ferah Akıncı, Supervision: Nazlı Ferah Akıncı, Data: Setenay Karaarslan, Analysis: Setenay Karaarslan, Literature search: Setenay Karaarslan, Writing: Setenay Karaarslan and Nazlı Ferah Akıncı, Critical revision: Nazlı Ferah Akıncı and Setenay Karaarslan.

DATA AVAILABILITY STATEMENT

The published publication includes all graphics and data collected or developed during the study.

STATEMENT ON THE USE OF ARTIFICIAL INTELLIGENCE

The authors declared that artificial intelligence tools were used to support the production of the figures.

CONFLICT OF INTEREST

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

ETHICS

There are no ethical issues with the publication of this manuscript.

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