



AGEING AND GENDER: TOWARD A GENDER-SENSITIVE ARCHITECTURAL FRAMEWORK

OYEWALE Peter Onyebuchi

Department of Architecture

The Federal University of Technology, Akure

Ondo State

Email: arcpapsofficial@gmail.com

Abstract

Population ageing has become a defining global challenge, yet the architectural dimensions of ageing remain underexplored, particularly through a gender lens. This study investigates how the built environment mediates ageing experiences differently for women and men, drawing on environmental gerontology, universal design theory, and feminist gerontology. Through a critical review of theoretical frameworks and comparative case studies from Singapore, Japan, and the United Kingdom, the paper identifies key architectural determinants of ageing outcomes, including accessibility, safety, psychological comfort, social integration, and cultural responsiveness. The Nigerian context is examined in depth, revealing significant gaps in policy, professional practice, and inclusive design implementation. Findings show that elderly women are disproportionately affected by inaccessible domestic environments, economic vulnerability, and social isolation, while elderly men face challenges of identity loss and limited opportunities for social engagement. Building on these insights, the study proposes an integrated framework for gender-sensitive architectural practice that extends beyond compliance-based accessibility to encompass empathetic, culturally grounded, and socially inclusive design. The paper contributes to advancing architecture as a critical instrument for equity, wellbeing, and social justice in ageing societies.

Keywords: Ageing in place, Gender-sensitive architecture, Environmental gerontology, Feminist gerontology. Inclusive built environment

Introduction

Ageing is among the defining demographic phenomena of the contemporary era. According to the World Health Statistics 2024 report, global life expectancy at birth declined by 1.8 years between 2019 and 2021, falling to 71.4 years, a level last seen in 2012 due to the COVID-19 pandemic. This reversal highlights both the fragility of health progress and the urgency of designing environments that support ageing populations.

As populations age, the built environment has emerged as a critical but frequently overlooked mediator of older adults' quality of life. Spaces designed without attention to age-related changes in mobility, cognition, sensory capacity, and emotional wellbeing can intensify vulnerability, isolation, and dependence. Conversely, environments intentionally designed to support diverse ageing realities can enable autonomy, dignity, and social participation.

The experience of ageing is not universal; it is deeply structured by gender. Women, who globally outlive men by an average of four to six years (UN, 2023), often spend their additional years navigating poverty, widowhood, and chronic health conditions within domestic environments ill-suited to their needs. Men, by contrast, may face the psychological rupture of retirement within communities that offer few spaces for emotional reconnection and social re-engagement. These gendered realities demand an architectural response calibrated not merely to physical accessibility but to the full complexity of how ageing is lived.

Architecture, as Wahl and Oswald (2010) argued, functions as both a reflection of societal values and a determinant of human experience. In Nigeria, as in many developing countries, this relationship remains under examined. Despite a steadily ageing population, urban environments and residential buildings are largely designed for younger demographics, with minimal provision for accessibility, safety, and social inclusion needs of elderly persons. The gap is compounded by the absence of gender-sensitive spatial planning within Nigerian architectural practice, leaving elderly women particularly exposed to disadvantages rooted in both age and gender inequality.

This paper addresses this gap by examining ageing through a gender lens and articulating the principles of a gender-sensitive architectural framework appropriate for the 21st century. It proceeds through a critical review of foundational theories in environmental gerontology and universal design, an analysis of gender as a structuring dimension of ageing experience, and a comparative examination of case studies from Singapore, Japan, and the United Kingdom. The Nigerian context is treated as a primary site of concern, and concrete recommendations are advanced for architectural practice, policy, and education. The paper argues that inclusive, empathetic, and gender-responsive architecture is not merely a technical aspiration but an ethical imperative in ageing societies.

Theoretical Framework

Environmental Gerontology and Person–Environment Fit

Environmental gerontology is the interdisciplinary study of the relationship between ageing individuals and their physical, social, and psychological environments. Its central proposition is that ageing outcomes cannot be understood in isolation from the spatial conditions in which older people live (Seo & Lee, 2023). The foundational contribution of Lawton and Nahemow's (1973) Ecological Theory of Ageing introduced the concept of person, environment fit, which posits that the wellbeing and functional independence of older adults are determined by the congruence between their competencies and the demands their environments place upon them. When environmental demands exceed individual capacity, stress and dependency increase; when environments are appropriately supportive and adaptive, autonomy and wellbeing are enhanced.

Contemporary environmental gerontology has extended this model in two important directions. First, scholars have emphasised the restorative and salutogenic qualities of space, the capacity of environments not merely to accommodate decline but to actively promote health, healing, and positive affect (Rakhshani & Khakzand, 2025; Grave *et al.*, 2023). Therapeutic landscapes, biophilic design elements, access to natural light, and the provision of communal green spaces have all been associated with reduced stress, improved cognitive function, and greater social engagement among older adults. Second, research has increasingly recognised that person–environment fit is a gendered phenomenon: the environmental needs, preferences, and vulnerabilities of older men and women differ systematically in ways that standard gerontological models have historically underappreciated (Bolster-Foucault *et al.*, 2024; Verderber *et al.*, 2023).

The principle of ageing in place, older adults' preference to remain in familiar homes and communities rather than relocate to institutional settings, is central to contemporary environmental gerontology and carries direct architectural implications (Seo & Lee, 2023). Successful ageing in place depends on housing that is accessible, adaptable, and socially connected; on neighbourhoods that are walkable, safe, and rich in amenity; and on public infrastructure that supports mobility and participation across the life course (Gripko & Joseph, 2024). For elderly women, who are more likely to live alone and to experience housing insecurity, the environmental conditions that enable ageing in place are both more critical and frequently more elusive.

Universal Design Theory

Universal Design Theory, developed by architect Ronald Mace and codified through the Seven Principles of the Center for Universal Design at North Carolina State University, provides the primary architectural framework for inclusive environments. The theory advocates for the creation of spaces usable by all people, regardless of age, ability, or physical condition, without requiring adaptation or specialised design (Steinfeld & Maisel, 2012). Its seven principles equitable use, flexibility in use, simple and intuitive use, perceptible information, tolerance for error, low physical effort, and size and space for approach and use, offer architects practical criteria for reducing environmental barriers and supporting long-term independence.

The relevance of universal design to ageing is both practical and philosophical. Practically, its architectural applications, ramps, wide corridors, lever door handles, non-slip flooring, accessible bathrooms, adequate lighting, and intuitive wayfinding, directly address the mobility, sensory, and cognitive changes associated with ageing (Iwarsson & Ståhl, 2003). Philosophically, the theory reframes disability and ageing not as individual deficits but as consequences of environmental failure, thereby relocating the burden of adaptation from the person to the design (Imrie & Hall, 2001). This framing aligns closely with the feminist critique of ageing as a socially and spatially produced experience (Calasanti & Slevin, 2006).

A gender-sensitive interpretation of universal design must go beyond the physical to address the distinct spatial realities of older women and men. Older women's greater reliance on public transportation, healthcare facilities, and community support networks means that universal design applied exclusively to private dwellings will be insufficient. The accessibility of streets, public buildings, transport systems, and communal spaces matters at least as much as domestic design in shaping women's independence and social participation in later life. Conversely, the emotional and identity dimensions of space, the availability of communal gathering areas, spaces for purposeful activity, and environments that affirm rather than diminish social worth – are particularly pertinent to the wellbeing of older men navigating the psychological aftermath of retirement and changing social roles.

Feminist Gerontology and the Gendering of Ageing Experience

Feminist gerontology argues that gender is not merely a demographic variable in the study of ageing but a structuring principle that shapes access to resources, social recognition, and spatial experience throughout the life course and into old age (Calasanti & Slevin, 2006). Lifelong inequalities in income, education, caregiving responsibilities, and property ownership compound in old age, producing gendered patterns of economic vulnerability, physical dependency, and social isolation that cannot be addressed through generic age-friendly design alone.

Older women globally tend to outlive men but to do so in conditions of greater poverty, widowhood, chronic illness, and social isolation (Bolster-Foucault *et al.*, 2024). They are more likely to be primary caregivers for spouses or grandchildren, to remain predominantly within domestic environments, and to rely on social networks within their immediate residential communities for both practical support and emotional sustenance. The quality of domestic space, its accessibility, its spatial organisation, its adequacy for caregiving tasks, and its capacity to support social connection, is therefore of particular significance for elderly women. In contrast, older men who have constructed their social identity primarily through employment may experience retirement as a profound spatial as well as social dislocation, finding themselves in residential and community environments that offer few meaningful roles or interaction opportunities.

In Nigeria, these dynamics are further inflected by local patriarchal structures, cultural attitudes toward ageing, and the weakening of traditional extended-family support systems through urbanisation and economic migration. Temilola and Mashau (2024) documented how gender stereotypes and cultural beliefs in Lagos State significantly shape social inclusion, identity, and lived experience among older adults. Elderly Nigerian women face particular vulnerability through the intersection of widowhood, economic dependency, and inaccessible domestic environments. The built environment in this context is not a neutral backdrop but an active participant in reproducing or contesting these inequalities.

Gender, Ageing, and the Built Environment: Key Design Dimensions

Accessibility

Accessibility is the foundational dimension of age-friendly design. As physical capacities change with age, encompassing reduced mobility, declining balance and coordination, arthritis, muscle weakness, and increasing reliance on mobility aids, built environments must be designed to support rather than obstruct independent movement. Barrier-free design, including step-free entrances, ramps, wide corridors, handrails, accessible bathrooms, and elevator provision, is essential for enabling older adults to navigate residential, public, and institutional spaces with safety and confidence (WHO, 2007; Steinfeld & Maisel, 2012).

From a gender perspective, accessibility carries differential significance. Elderly women who continue domestic and caregiving roles require highly functional kitchen layouts, accessible storage, and circulation spaces adequate for the movement of mobility aids or the assistance of a caregiver. They are also more likely to use public transportation and community facilities, making street-level accessibility and the design of transport infrastructure directly consequential for their daily independence. Research on neighbourhood accessibility in Oyo State, Nigeria, confirmed that walkability, safety, and proximity to services significantly predicted wellbeing and life satisfaction among elderly residents, with gender emerging as a modifying variable (Cadmus *et al.*, 2022; Cadmus *et al.*, 2023). Eugene *et al.* (2020) emphasised the critical shortage of barrier-free housing for elderly Nigerians and advocated for sustainable, biophilic housing strategies that integrate universal design from inception.

Safety

Falls are among the leading causes of injury, hospitalisation, and premature mortality among older adults worldwide (WHO, 2007). Safe architectural design encompasses non-slip flooring materials, adequate illumination of all circulation routes, grab bars and support rails in bathrooms and on staircases, emergency alert systems, and clear wayfinding features that reduce confusion and disorientation. Bathroom and staircase design merit particular attention as the most hazardous zones in residential environments for elderly users.

Psychological safety is equally important, and its gendered dimensions are pronounced. Elderly women express significantly higher fear of crime in public spaces than their male counterparts, and this fear constrains mobility, reduces social engagement, and compounds isolation (Calasanti & Slevin, 2006). Poorly lit streets, isolated pedestrian routes, and the absence of surveillance in communal areas disproportionately restrict older women's participation in urban life. Design interventions such as adequate public lighting, visible natural surveillance through the spatial arrangement of buildings and windows, secure communal areas, and the activation of ground-floor frontages can meaningfully reduce both actual and perceived insecurity. Dementia-friendly wayfinding systems, including colour-coded pathways, visual landmarks, and simplified spatial layouts, further extend safety to cognitively vulnerable populations, a group in which women predominate numerically.

Psychological Comfort and Emotional Wellbeing

The psychological dimensions of architectural experience are of particular importance for ageing populations, for whom transitions such as retirement, bereavement, and declining physical capacity can generate profound challenges to identity, purpose, and emotional stability. Lawton and Nahemow (1973) demonstrated that environments which correspond positively with the emotional needs and competencies of older adults promote psychological adaptation, satisfaction, and resilience. Architectural features that support psychological comfort include natural lighting, adequate ventilation, acoustic control, access to nature through gardens or courtyards, biophilic design elements, and spaces that permit personalisation and the preservation of familiar objects and cultural artefacts.



The landmark Maggie's Cancer Caring Centres in the United Kingdom, designed by architects of international distinction including Foster + Partners, provide compelling evidence that therapeutic architecture, characterised by non-institutional spatial arrangements, warm materials, generous natural light, and integration with landscape, can profoundly support emotional wellbeing in contexts of illness and vulnerability (Jencks & Heathcote, 2010). These principles have direct application to residential and community environments for older adults. Rakhshani and Khakzand (2025) further demonstrated the applicability of salutogenic architectural approaches, those that actively foster health rather than merely prevent illness, in non-therapeutic environments for elderly populations.

Gender shapes the psychological experience of space in old age in important ways. Older women, who spend disproportionate time in domestic environments due to cultural caregiving roles and social expectations, require residential spaces that are emotionally warm, acoustically controlled, and conducive to social interaction within the home. Older men, whose social identities have frequently been constructed through workplace relationships and productive roles, benefit from community environments that offer purposeful activities, opportunities for engagement and contribution, and spaces that affirm rather than diminish their sense of worth and belonging.

Social Integration

Loneliness and social isolation are among the most significant risk factors for morbidity and mortality in older adults, with effects on health comparable in magnitude to those of smoking and physical inactivity (Gripko & Joseph, 2024). The spatial organisation of buildings and neighbourhoods plays a fundamental role in facilitating or obstructing social connection. Architectural layouts that include communal gardens, shared courtyards, sitting areas, multi-purpose halls, communal kitchens, and activity spaces encourage spontaneous and organised interaction among elderly residents. Proximity to healthcare centres, places of worship, commercial facilities, and recreational spaces further sustains social participation across the course of daily life.

In the Nigerian context, the pervasive use of high boundary walls between residential plots has been identified as an architectural convention that actively suppresses community interaction, contributing to social isolation that disproportionately affects older adults who are no longer embedded in workplace social networks (Odewumi, 2024). Architectural responses that open domestic environments to community engagement, through semi-public transitional spaces, courtyard arrangements, and walking-accessible community facilities, offer culturally appropriate alternatives to the isolating compound model. Mixed-use neighbourhoods and walkable communities, where healthcare, worship, commerce, and recreation are accessible on foot or by short transit, are particularly important for elderly women whose mobility may be constrained by economic or physical limitations.

Cultural and Gender Sensitivity in Spatial Design

Architecture must be responsive not only to physical needs but to the cultural lifestyles, social practices, and gender-specific daily patterns of ageing individuals. In many African societies, elderly persons remain deeply embedded within extended family structures, religious communities, and communal traditions. Residential environments that support intergenerational living, communal gathering, and proximity to family and worship spaces therefore align with both cultural and gerontological imperatives. Design features such as family courtyards, prayer rooms, communal cooking spaces, and flexible intergenerational zones can strengthen the social bonds and cultural continuity that are important to the psychological wellbeing of older Nigerians.

Gender-sensitive architectural practice requires attention to the different spatial routines and daily experiences of elderly men and women. For older women continuing domestic and caregiving activities, accessible kitchen design, with low counter heights, reachable storage, lever taps, and anti-fatigue flooring, is not merely an ergonomic consideration but a condition of continued agency and role fulfilment. For older men navigating the social disruption of retirement, environments that offer structured opportunities for interaction, mentorship, leisure, and purposeful activity can mitigate the psychological risks associated with social withdrawal and identity loss. Cultural sensitivity also encompasses the use of familiar materials, colours, spatial configurations, and symbolic elements that reflect local traditions and prevent the alienation and disorientation that can arise in environments modelled uncritically on Western architectural conventions.



Global Case Studies and Best Practices

Singapore: Integrated Age-Friendly Housing

Singapore's Housing and Development Board (HDB) has pioneered an integrated approach to ageing-in-place through the systematic retrofitting of public housing blocks with senior-friendly features, including lifts that stop at every floor, slip-resistant floor surfaces, senior activity centres within residential clusters, and the development of Community Care Apartments that combine independent living with on-site care services (Tan, 2020). The deliberate integration of health, social, and community facilities within walking distance of residential units exemplifies the principle that age-friendly environments require neighbourhood-scale planning, not merely building-scale adaptation. Singapore's model also demonstrates the role of sustained public investment and policy commitment in achieving population-wide improvements in ageing environments, offering a relevant reference point for developing country governments considering strategic investments in elderly-friendly infrastructure.

Japan: Dementia-Friendly Communities and Wayfinding

Japan, confronting one of the world's most rapid population ageing trajectories, has developed dementia-friendly communities in which building colour coding, spatial layout, signage systems, and environmental cues are deliberately designed to support orientation, reduce anxiety, and maintain a sense of safety among cognitively vulnerable residents. Award-winning dementia-friendly wayfinding systems, such as those developed for Nee Soon South and Chong Pang communities in Singapore by IMMORTAL Design Studio, demonstrate how graphic design, environmental colour, and spatial legibility can be integrated into public housing environments to support independent navigation by older adults with cognitive impairments. These approaches have direct relevance for Nigerian contexts where dementia prevalence is projected to increase significantly in coming decades and where wayfinding infrastructure remains largely undeveloped.

United Kingdom: Therapeutic Architecture and Emotional Wellbeing

The Maggie's Cancer Caring Centres, established across the United Kingdom since the 1990s and designed by internationally prominent architects including Zaha Hadid, Frank Gehry, and Foster + Partners, represent one of the most compelling contemporary demonstrations of therapeutic architecture's capacity to support emotional wellbeing. The Maggie's Centre in Manchester, designed by Foster + Partners, exemplifies the approach: non-institutional spatial organisation, generous natural light, warm and tactile materials, integration with landscape, and carefully considered acoustics combine to create environments that support psychological resilience in contexts of serious illness (Jencks & Heathcote, 2010). Translating these principles to residential and community environments for older adults offers a powerful model for age-friendly design that addresses emotional and psychological needs alongside physical accessibility.

The Nigerian Context: Gaps, Challenges, and Imperatives

Demographic and Policy Landscape

Nigeria's population of elderly persons is growing steadily, driven by improvements in healthcare, nutrition, and life expectancy, even as the country retains a predominantly youthful demographic profile. The United Nations (2023) projected that the global population of persons aged 65 and above will more than double by 2050, with sub-Saharan Africa accounting for a disproportionate share of this growth. Traditional extended family structures, which historically provided the primary support network for elderly Nigerians, have been progressively weakened by urbanisation, economic migration, and changing social values (WHO, 2015). As younger generations relocate to cities or abroad, many elderly persons are left without adequate domestic support in environments designed neither for independent ageing nor for formal care provision.

Policy responses remain insufficient. Despite initiatives such as the National Senior Citizens Centre and various health-promotion programmes, practical implementation of age-friendly infrastructure and regulatory frameworks remains limited. Building codes do not yet mandate universal design standards comprehensively, and professional training in environmental gerontology and inclusive architecture is absent from most Nigerian architectural education curricula (Haruna *et al.*, 2021; Eugene *et al.*, 2020). The result is a built environment that is systematically ill-adapted to the needs of its ageing citizens.

Gender Dimensions of Ageing in Nigeria

The gender dimensions of ageing in Nigeria are pronounced and intensified by the country's social and economic inequalities. Elderly women face compounded vulnerabilities arising from lower lifetime earnings, limited property rights, unpaid caregiving burdens, and the economic and social consequences of widowhood. These conditions increase their dependence on residential environments that are frequently inaccessible, inadequately lit, and spatially unsuitable for caregiving tasks or age-related mobility limitations. Ekhaese and Oyelude (2025) demonstrated that inclusive architectural strategies in Southwest Nigeria's innovation hubs significantly enhanced social inclusion outcomes, pointing to the transformative potential of intentional design even within the Nigerian built environment context.

Cadmus *et al.* (2022, 2023) provided important empirical grounding for these concerns through studies in Oyo State revealing that neighbourhood accessibility, walkability, safety, and social interaction were significant predictors of life satisfaction among elderly residents, and that gender moderated these relationships. Elderly women's reduced engagement with outdoor community life, attributable in part to inadequate and unsafe public spaces, contributed to measurably lower wellbeing outcomes. These findings underscore the cost of neglecting gender as a design consideration in age-friendly planning.

Elderly men in Nigeria confront distinct but equally significant challenges. The social role disruption associated with retirement is poorly accommodated in built environments that offer few community spaces for non-work social engagement, mentorship, or purposeful activity. The dominance of high boundary walls in Nigerian residential environments actively suppresses the kind of informal neighbourhood interaction that provides social continuity for ageing men no longer embedded in workplace communities. Architectural responses that create permeable, socially activated spaces at the scale of the neighbourhood or residential compound therefore carry implications for older men's psychological wellbeing as much as for women's safety and mobility.

Toward a Gender-Sensitive Architectural Framework for Ageing

The evidence reviewed in this paper supports the articulation of an integrated framework for gender-sensitive architectural practice in ageing contexts. The framework is structured around five intersecting principles that extend universal design beyond physical accessibility to encompass emotional, social, cultural, and political dimensions of inclusive space.

Principle 1: Intersectional Accessibility: Accessibility must be designed for the intersecting realities of age, gender, disability, and cultural context. This requires step-free environments throughout the built environment – not merely in dedicated elder-care facilities – and the application of universal design standards to public transport, streets, commercial facilities, and healthcare infrastructure, not only to private dwellings.

Principle 2: Gendered Safety and Psychological Security: Safe design must address both physical hazard reduction and the gendered geography of fear. This requires adequate public lighting, natural surveillance, activated ground-floor frontages, dementia-friendly wayfinding systems, and the design of public spaces that are legible, welcoming, and socially animated for users of all ages and genders.

Principle 3: Emotionally Responsive Environments: Built environments must be designed with attention to the psychological dimensions of ageing, including the need for personalisation, familiarity, sensory comfort, access to nature, and spaces that support meaningful social roles. Therapeutic design principles, biophilic elements, and salutogenic spatial strategies should inform residential and community environments for older adults.

Principle 4: Socially Integrative Spatial Organisation: Spatial layouts at the building and neighbourhood scale should actively facilitate social interaction, community engagement, and intergenerational exchange. This requires the provision of well-designed communal spaces, walkable neighbourhood structures, and land-use patterns that place community amenities within accessible proximity of residential areas.

Principle 5: Cultural and Gender Responsiveness: Design must be responsive to the specific cultural practices, gender roles, and daily routines of the communities it serves. In the Nigerian context, this requires attention to intergenerational living patterns, the caregiving roles of elderly women, the social needs of retired men, and the cultural significance of communal and family space.

Conclusion

This study has demonstrated that ageing is not a uniform experience but one profoundly shaped by gender, with architectural environments playing a decisive role in either enabling or constraining autonomy, dignity, and social participation. By integrating insights from environmental gerontology, universal design theory, and feminist gerontology, the paper has shown that elderly women and men encounter distinct vulnerabilities and opportunities within the built environment. Comparative case studies from Singapore, Japan, and the United Kingdom illustrate how intentional, inclusive design can mitigate these challenges, while the Nigerian context highlights persistent gaps in policy, professional practice, and implementation.

The proposed gender-sensitive architectural framework advances the discourse beyond compliance-based accessibility toward a holistic model that incorporates intersectional accessibility, gendered safety, psychological wellbeing, social integration, and cultural responsiveness. This framework positions architecture not merely as a technical discipline but as a critical instrument of equity and social justice in ageing societies.

For policymakers, the findings underscore the urgency of embedding universal and gender-sensitive design standards into building codes and urban planning regulations. For architects and educators, the study highlights the need to integrate environmental gerontology and inclusive design into curricula and practice. Future research should empirically test the framework across diverse cultural contexts, evaluate its impact on ageing outcomes, and explore innovative design strategies that respond to the evolving demographic realities of the 21st century.

Recommendations

Based on the findings of this study, several targeted recommendations are advanced for policymakers, architects, educators, and researchers to strengthen gender-sensitive approaches to ageing in the built environment:

Policy and Regulation

- National building codes should mandate universal design standards that explicitly incorporate gender-sensitive provisions.
- Government agencies should integrate age- and gender-responsive planning into urban development policies, ensuring that accessibility, safety, and social inclusion are embedded at both building and neighbourhood scales.
- Investment in public infrastructure such as transport, healthcare facilities, and community spaces. This must prioritize older adults, particularly women who rely more heavily on these systems.

Architectural Practice

- Architects should adopt intersectional design strategies that address the distinct spatial needs of elderly women and men, including accessible domestic layouts, safe public spaces, and community environments that foster social integration.
- Design interventions should move beyond compliance-based accessibility to embrace empathetic, culturally grounded, and socially inclusive principles.
- Collaborative design processes involving older adults, especially women, should be institutionalized to ensure lived experiences inform architectural solutions.

Education and Professional Training

- Curricula in architecture and urban planning should incorporate environmental gerontology, feminist gerontology, and universal design theory to prepare professionals for ageing societies.
- Continuing professional development programs should emphasize inclusive design practices and case-based learning from global best practices.



Research and Innovation

- Future studies should empirically test the proposed framework across diverse cultural contexts, including longitudinal evaluations of ageing outcomes in gender-sensitive environments.
- Research should explore innovative design strategies such as biophilic and salutogenic approaches that actively promote wellbeing in later life.
- Comparative studies between developed and developing countries can provide insights into scalable and culturally adaptable solutions.

References

- Bolster-Foucault, C., Mah, S. M., Heisey, R., & Devereux, J. (2024). Social inequity in ageing in place among older adults in OECD countries. *Age and Ageing*, 53(9), afae166. <https://doi.org/10.1093/ageing/afae166>
- Cadmus, E. O., Adepeju, A. B., Adeyemo, D. O., & Akintunde, A. A. (2022). Factors influencing life satisfaction among elderly individuals in Oyo State, Nigeria: The role of neighbourhood accessibility and social participation. *African Journal of Primary Health Care and Family Medicine*, 14(1), a3276. <https://doi.org/10.4102/phcfm.v14i1.3276>
- Cadmus, E. O., Akintunde, A. A., Adepeju, A. B., & Afolabi, O. (2023). Housing preferences and environmental factors influencing quality of life among elderly persons in Ibadan, Nigeria. *Journal of Housing and the Built Environment*, 38(2), 923–942. <https://doi.org/10.1007/s10901-022-09993-5>
- Calasanti, T., & Slevin, K. F. (2006). *Age matters: Realigning feminist thinking*. Routledge.
- Ekhaese, E. N., & Oyelude, F. (2025). The impact of inclusive architectural strategies on social inclusion characteristics in innovation hubs in Southwest Nigeria. *Frontiers in Built Environment*, 11, 1502283. <https://doi.org/10.3389/fbuil.2025.1502283>
- Eugene, E. A., Okon, S. E., Akpak, F. O., & Solomon, E. (2020). Architecture and ageing: Sustainable housing for the elderly in Nigeria. *International Journal of Architecture and Urban Development*, 10(4), 55–62.
- Grave, A. J. J., Neven, L., & Mohammadi, M. (2023). Elucidating and expanding the restorative theory framework to comprehend influential factors supporting ageing-in-place: A scoping review. *International Journal of Environmental Research and Public Health*, 20(19), 6831. <https://doi.org/10.3390/ijerph20196831>
- Gripko, M., & Joseph, A. (2024). The role of the built environment in supporting older adults' engagement: A narrative literature review. *HERD: Health Environments Research & Design Journal*, 17(3), 310–325. <https://doi.org/10.1177/19375867241250320>
- Hamraie, A. (2017). *Building access: Universal design and the politics of disability*. University of Minnesota Press.
- Haruna, H., Musa, L., & Sallau, B. (2021). Application of inclusive design principles on institutional buildings in Nigeria. *ATBU Journal of Environmental Technology*, 14(1), 113–125.
- Imrie, R., & Hall, P. (2001). *Inclusive design: Designing and developing accessible environments*. Taylor & Francis.
- Iwarsson, S., & Ståhl, A. (2003). Accessibility, usability and universal design: Positioning and definition of concepts describing person–environment relationships. *Disability and Rehabilitation*, 25(2), 57–66. <https://doi.org/10.1080/dre.25.2.57.66>
- Jencks, C., & Heathcote, E. (2010). *The architecture of hope: Maggie's cancer caring centres*. Frances Lincoln.
- Lawton, M. P., & Nahemow, L. (1973). Ecology and the ageing process. In C. Eisdorfer & M. P. Lawton (Eds.), *The psychology of adult development and aging* (pp. 619–674). American Psychological Association.
- Mace, R. L. (1998). Universal design in housing. *Assistive Technology*, 10(1), 21–28. <https://doi.org/10.1080/10400435.1998.10131957>
- Najafi, P., & Mohammadi, M. (2024). Redefining age-friendly neighbourhoods: Integrating social and environmental dimensions. *International Journal of Environmental Research and Public Health*, 21(3), 365. <https://doi.org/10.3390/ijerph21030365>



- Odewumi, A. N. (2024). Inclusive architecture strategies and user comfort in the design of a community centre, Lagos Mainland [Master's thesis, Covenant University]. Covenant University Institutional Repository.
- Rakhshani, Z., & Khakzand, M. (2025). Salutogenic architecture, non-therapeutic environments and the health of the elderly. *HERD: Health Environments Research & Design Journal*, 18(1), 45–62. <https://doi.org/10.1177/19375867251313980>
- Seo, E., & Lee, S. (2023). Implications of aging in place in the context of the residential environment: Bibliometric analysis and literature review. *International Journal of Environmental Research and Public Health*, 20(20), 6905. <https://doi.org/10.3390/ijerph20206905>
- Song, Y., Li, T., Luo, Y., Huang, Y., & Chen, H. (2024). Effects of neighborhood built environment on cognitive function in older adults: A systematic review. *BMC Geriatrics*, 24(1), 214. <https://doi.org/10.1186/s12877-024-04776-x>
- Steinfeld, E., & Maisel, J. (2012). *Universal design: Creating inclusive environments*. Wiley.
- Tan, C. L. (2020). Ageing in place in Singapore: HDB's community care apartments. Housing & Development Board, Singapore.
- Temilola, O. M., & Mashau, P. (2024). Two sides of a coin: Gender stereotypes and cultural beliefs about ageing among older persons in Lagos State, Nigeria. *E-Journal of Religious and Theological Studies*, 10(6), 26–40. <https://doi.org/10.38159/erats.20241064>
- United Nations. (2023). *World social report 2023: Leaving no one behind in an ageing world*. United Nations Department of Economic and Social Affairs. <https://doi.org/10.18356/9789210027038>
- Verderber, S., Grey, T., & Wagenaar, C. (2023). Residential environments for older persons: A comprehensive literature review (2005–2022). *HERD: Health Environments Research & Design Journal*, 16(1), 291–321. <https://doi.org/10.1177/19375867231152611>
- Wahl, H.-W., & Oswald, F. (2010). Environmental perspectives on ageing. In D. Dannefer & C. Phillipson (Eds.), *The SAGE handbook of social gerontology* (pp. 111–124). SAGE Publications.
- World Health Organization. (2007). *Global age-friendly cities: A guide*. World Health Organization. <https://www.who.int/publications/i/item/9789241547307>
- World Health Organization. (2022). Ageing and health. World Health Organization. <https://www.who.int/news-room/fact-sheets/detail/ageing-and-health>
- World Health Organization. (2024). *World health statistics 2024: Monitoring health for the SDGs*. World Health Organization. <https://www.who.int/publications/i/item/9789240094703>