

Review Article

Research Trends in Age-Friendly City Studies in Relation to Active Ageing and Subjective Well-Being

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The World Health Organization's (WHO) 'Age-Friendly City' (AFC) model has become more important in supporting active ageing and the subjective well-being (SWB), but still very little is known about how they interact. Based on the WHO AFC and active aging models, and the Ecological Model of Ageing, this systematic review analysed major trends and gaps in AFC research from 2007-2024. Using TreZ methodology and ATLAS.ti 8, this study reviewed 43 articles published in Scopus and Web of Science databases. Five major themes were identified: (i) age-friendliness, health & well-being; (ii) combining AFC and active aging; (iii) mobility/accessibility; (iv) comparative/socio-cultural dimensions; and (v) assessing/developments in AFC. Results indicate that the relationships between AFCs, active aging, and SWB are multifaceted, non-linear, and have increasing emphasis placed on emerging issues including innovative AFC assessments, digitalisation, and ethics. While there are advancements in much of the areas reviewed, mobility/accessibility is least researched. Future studies should focus on localised, comparative, longitudinal studies that examine both emerging issues and understudied areas. Findings will enable policy makers and planners to utilise evidence-based data to create sustainable and contextually sensitive planning strategies to meet the needs of an ageing population.

Keywords: Age-friendly cities and communities, active ageing, subjective well-being, older adults, Thematic review

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INTRODUCTION

Urban ageing is increasing at an alarming rate globally. Therefore, the World Health Organization's (WHO) Age-Friendly City (AFC) initiative has evolved into a policy priority. First introduced in 2007, the AFC agenda is based on two main principles -

active ageing and enhancing the subjective well-being (SWB) of older adults (World Health Organization, 2007). It is therefore necessary for researchers, planners and decision makers to understand the mechanisms of the AFC initiatives which are now critical rather than discretionary. According to the WHO, it is imperative to develop environments which enable the health and participation of older adults and to include social inclusion and community engagement as fundamental aspects of active ageing (Chung et al., 2021). For example, the WHO's Age-Friendly City Guide promotes active ageing and enhances the well-being of older adults' by outlining eight key areas of an age-friendly city: outdoor spaces and buildings, transportation, housing, social participation, respect and social inclusion, civic participation and employment, communication and information, and community and health care (World Health Organization, 2007). These recommendations align with the previous WHO Active Ageing Framework. In the Framework, WHO defines active ageing as "the process of optimising opportunities for health, participation, and security to enhance the quality of life as people age" (World Health Organization, 2002, p. 12). WHO also indicates that the AFC is not only a city for all, but "an inclusive and accessible community environment that optimizes opportunities for health, participation and security for all people, in order that quality of life and dignity are ensured as people age" (World Health Organization, 2015, p. 3).

Age-friendliness and active ageing can be regarded as theoretical concepts themselves (Han et al., 2022). The AFC agenda focuses on developing environments that allow older adults to continue engaging in meaningful activities and to address their social, physical, and health-related needs (Ide et al., 2022; Menezes et al., 2023). Similar to the AFC agenda, the concept of active ageing argues for the development of policies and practices that encourage the health and participation of older adults in society. Studies have established links between age-friendly environments and older adults' continued life satisfaction due to the ongoing nature of their activities and lifestyles (Gan et al., 2022; Ng et al., 2021; Tiraphat et al., 2021).

The AFC agenda is fundamentally based on the Ecological Model of Aging. The model provides a framework for analysing how different environmental influences can affect the behaviours and well-being of older adults (Zheng & Yang, 2019). Proposed by Lawton and Nahemow (1973), the ecological model emphasises the relationship between individuals, their living space, and their lifestyle choices and the need for supportive neighbourhood environments to improve the health and quality of life of older adults. This is demonstrated in studies examining how neighbourhood environments affect older adults' lifestyles and health (Oyeyemi et al., 2023; Zheng & Yang, 2019).

Studies have also demonstrated the role of community capacity in supporting active ageing and that social networks and relationships are important to the well-

being of older adults' (Kim et al., 2020). Community resources and individual agency are important to create environments that support active ageing. Subjective well-being refers to an individuals' self-assessments of their life, which includes both positive and negative emotions, as well as overall satisfaction with their life (Reyes-Rodríguez et al., 2021). Studies have demonstrated that active involvement in community activities leads to increased levels of SWB (Qiao et al., 2022). However, despite the large volume of research on age-friendly initiatives, there is a significant knowledge gap in determining how age-friendly initiatives impact the SWB of older adults.

Research has focused on evaluating the effectiveness of age-friendly interventions on active ageing (Chung et al., 2021). Minghetti et al. (2022), for example, demonstrate the correlation between regular physical activity and health-related quality of life, and Garrido et al. (2021) demonstrate that leisure activities such as walking provide double benefits of improving both physical and emotional health through the promotion of essential social interactions. Conversely, while physical infrastructure is important, it is insufficient; without transparency, public participation and strong institutional support, the social sustainability of the built environment will be threatened even if the necessary infrastructure exists (Ng et al., 2025). The digital domain is increasingly becoming an important area of research interest. For example, innovations such as multi-modal coaching and social activity modelling have proven to be successful in reducing social isolation (Dimitrov et al., 2019). As the number of digital programmes developed by communities to connect with older residents continues to grow, the impact of these digital programmes on active ageing requires further research.

The "one-size-fits-all" approaches for active ageing in urban planning and community development are an important omission from the regional context. Because of the large socio-economic differences between regions and the cultural context of the initiative, active ageing initiatives must be tailored based on the unique features of a specific region (Kim et al., 2020). In light of this, the differing success rates for the active ageing initiatives across the regions require localised approaches to create an environment where the needs of older adults are supported. As seen in Malaysia, this localisation is demonstrated through the integration of aged care services into statutory land-use planning and is representative of the increased role of spatial policy in supporting active and productive ageing (Ab Rahman et al., 2023).

In addition to the need for localisation, the ethics of active ageing and age-friendly initiatives have become increasingly relevant over the years. The discussions about ageism and social exclusion have highlighted the need for inclusive policies that provide older adults with empowerment as well as recognise the value and contributions made

by older adults (Pfaller & Schweda, 2019). Therefore, researchers and policymakers will be able to develop a more holistic framework that promotes active ageing and protects the dignity of older adults when they take into consideration the ethical aspects of active ageing.

Although the field of AFC has advanced, the existing literature provides a fragmented view of the relationship between age-friendly initiatives, active ageing, and SWB. Many studies have examined the components individually, but there is a need for a unified framework that examines how age-friendly environments support older adults' quality of life, within the Ecological Model of Ageing. This gap guides the study's research question: "What are the trends in age-friendly city studies in relation to active ageing and SWB discussed in journal publications from 2007 to 2024?"

This thematic review critically examines existing literature and emphasises the need for further research to guide policy and practice in age-friendly cities and community development since the introduction of the WHO's AFC concept in 2007 to promote active ageing and SWB. The next section describes the research methodology, followed by the presentation and discussion of both quantitative and qualitative results in Section 3. The final section concludes with the study's limitations, contributions, and suggestions for future research.

METHODOLOGY

The current study adopted a thematic review (TR) using ATLAS.ti 8 as the tool (Zairul, 2020, 2021a, 2021b; Zairul et al., 2023). This method is protected by copyright under the registration number CRLY2023W02032 (Zairul, 2023). TR was utilised because the methodology involves applying a thematic analysis procedure when conducting a literature review. Thematic analysis is a process of identifying patterns and constructing themes based on a thorough reading of the subject (Clarke & Braun, 2013).

The first step was to identify patterns and categories to understand the trends of AFC studies in relation to active ageing and SWB. The current research aimed to analyse and interpret the findings to make recommendations for future research in creating age-friendly environments to promote active ageing and ultimately enhance the well-being of older adults and the wider community. The selection of literature was performed according to six selection criteria, namely (i) publication from 2007 to 2024, (ii) have at least keyword(s) age-friendly city, active ageing and subjective well-being, (iii) published in the English language only, (iv) research articles, (v) final publication stage, and (vi) open access articles. The TR process follows the Thematic Review FlowZ (TreZ) steps in Figure 1.

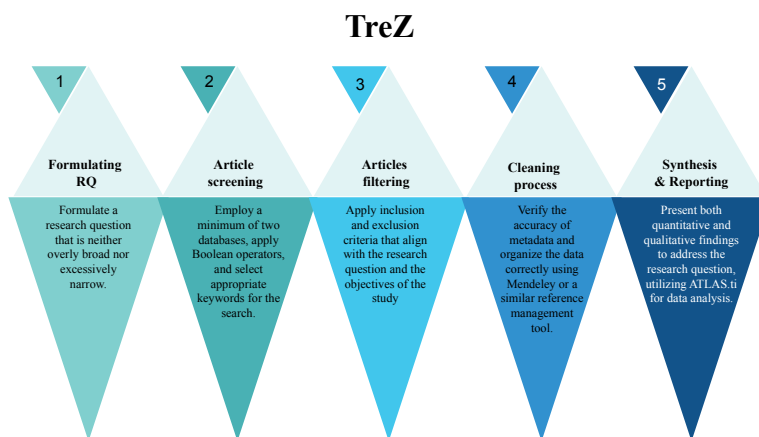


Figure 1. Thematic review FlowZ (TreZ) (Zairul, 2023)

The process began with formulating the research question and determining the focus and scope of the review. The thematic review examined trends in age-friendly city studies related to active ageing and the SWB of older individuals. To locate the appropriate research for this thematic review, a combination of keywords searches and database filters were used to access academic literature.

Table 1 outlines the article screening process by showing how to use specific keyword search strategies in two major databases, Scopus and Web of Science (WoS) to find the relevant research articles for the review’s topic.

Table 1
Search strings from Scopus and Web of Science (Author)

SCOPUS	TITLE-ABS-KEY (("age-friendly environment" OR "age-friendly cit*" OR "age-friendly communit*" OR "age-friendly neighbourhood" OR "elderly-friendly" OR "senior-friendly") AND ("active ageing" OR "active*" OR "active lifestyle" OR "physical activit*" OR "outdoor activit*" OR "social activit*" OR "social participation") AND ("subjective wellbeing" OR "subjective well-being" OR "life satisfaction" OR "quality of life")) AND (LIMIT-TO (OA , "all")) AND (LIMIT-TO (PUBSTAGE , "final")) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (LANGUAGE , "English"))	39 results
WoS	ALL (((("age-friendly environment" OR "age-friendly cit*" OR "age-friendly communit*" OR "age-friendly neighbourhood" OR "elderly-friendly" OR "senior-friendly") AND ("active ageing" OR "active*" OR "active lifestyle" OR "physical activit*" OR "outdoor activit*" OR "social activit*" OR "social participation") AND ("subjective wellbeing" OR "subjective well-being" OR "life satisfaction" OR "quality of life"))) and Article (Document Types) and English (Languages) and All Open Access (Open Access)	36 results

Both databases have been queried using a single, consistent keyword strategy based on a limited number of major theme-related keywords including age-friendly environments, active ageing, and subjective well-being. The search words were used in a variety of ways, and also with many alternative spellings to ensure that the search would be as complete as possible. Keywords include terms from articles in journals that use alternate terminology; for example, “senior-friendly”, “active lifestyle”, and “quality of life”. In addition, the search strings included terms associated with articles focused on physical activity and social participation, i.e., “physical activity” and “social participation”, since physical activity and social participation are essential elements of active ageing. Finally, the wildcard character was used, e.g., *cit* for city/cities, *activit* for activity/activities, so that both singular and plural versions of each word were captured and searches could find a wide variety of word phrases.

Scopus queries target titles, abstracts, and keywords (TITLE-ABS-KEY) to obtain the most relevant data and then filters the results by final-stage, open-access (OA) to ensure that the results will consist of the highest quality research that has been completely peer reviewed and is available without cost. The query was restricted to the English language to streamline the interpretation process and improve clarity. However, because the WoS uses a different refinement system than Scopus, the search string had to be slightly altered to extend the search to “ALL” fields. Cumulatively, the parameters selected produced 75 articles meeting the criteria, with 39 articles being found through Scopus and 36 articles being found through WoS, creating a large enough, yet manageable dataset for this study.

In the article filtering stage, journal articles were filtered using predefined inclusion and exclusion criteria. Articles that were irrelevant to the study’s themes or failed to meet methodological standards were excluded. These include articles that did not meet the

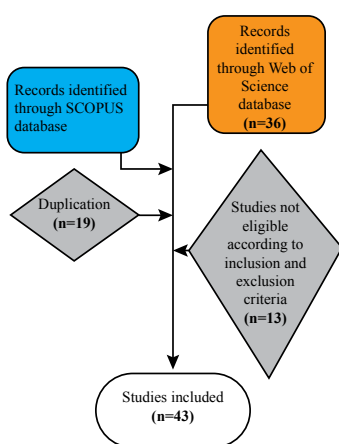


Figure 2. Inclusion and exclusion criteria in TreZ (Zairul, 2023)

document type, open access, publication stage and language requirements. In addition, exclusion criteria included studies that were limited to institution-based assessment only and those that were not related to evaluating environmental attributes. This led to the removal of 13 articles, reducing the pool of articles to 62. Subsequently, 19 duplicates were removed from the final corpus. As a result, a total of 43 studies were included in the study’s review. The inclusion and exclusion flowchart is shown in Figure 2.

In the cleaning phase, the accuracy of metadata was verified and the data was organised using Mendeley as the reference management tool. This process allowed all sources to be systematically recorded and cross-checked. Lastly, both qualitative and quantitative techniques were applied during the synthesis and reporting phase. ATLAS.ti 8 was used to identify and organise recurring themes and patterns across the selected studies, thereby supporting consistent interpretation of the findings in relation to the study's guiding question on AFC research, active ageing, and SWB among older adults.

Overall, the TreZ method provided a systematic framework for identifying relevant journal articles and analysing research trends in AFC studies since the introduction of the AFC concept in 2007. The following section presents and discusses the quantitative and qualitative results.

RESULTS AND DISCUSSIONS

This section presents the key findings of the thematic review, focusing on patterns and trends in age-friendly research in relation to active ageing and SWB. The review is structured into quantitative and qualitative analyses.

Quantitative Analysis

The quantitative analysis begins with the analysis of the publication frequency by year. The number of AFC studies from 2007 to 2024 is presented in Figure 3. Despite the introduction of the Active Ageing Framework in 2002 and the AFC concept in 2007 by the WHO, there has been no research examining the relationships between the age-friendly environment and its impact on active ageing and well-being between 2007 and 2011.

The publication of two studies in 2012 and 2017 represented a nascent period for research in this area, suggesting that the concepts of age-friendly cities and their integration with active ageing and subjective well-being were still emerging in scholarly discussions. There was however, increased attention paid to age-friendly cities, etc., starting in 2018, and peaking in 2021. The increasing amount of research is most likely due to growing awareness of population ageing and the worldwide demand for urban environments that support active ageing and SWB. It is possible that the peak in 2021 is related to the larger amount of interest in AFC, etc., and the COVID-19 pandemic. The surge in research, which resulted from policy initiatives and the urgent nature of the pandemic, indicates a serious review of the role age-friendly cities have in addressing the needs of active ageing and SWB.

The five studies published per year between 2022 and 2024 may demonstrate a saturation of the topic, or alternatively, a concept migration, where researchers are including AFC and SWB topics within other thematic topics. Additionally, several other factors may be contributing to the declining trend of the research. The field of study

is rapidly shifting towards complex and longitudinal assessments, and thus inherently extends the time between when data collection occurs and when a study is published, causing some of the most recent studies to be in the peer-review process.

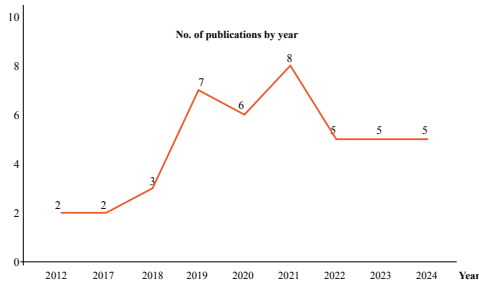


Figure 3. Number of publications by year

Table 2 reveals a distinct geographical coverage of the studies, with Asia-Pacific region leading the publication. Among the Asia-Pacific countries, China contributed the highest scholarship with 15 journal articles, significantly outpacing regional peers. Taiwan follows with four studies that focused on relationships between social and physical aspects of the environment and the

health of older adults published in the country since 2007. On the other hand, Australia contributed three journal articles highlighting the influences of the environment on health and mobility and the role of digitalisation in creating an age-friendly environment.

Other Asian countries, that is, India and Singapore contributed two studies each. The journal articles published in Singapore focused on active and healthy ageing, and another study evaluated the impact of a community-led healthy ageing initiative. Similarly, the study in India evaluated neighbourhood support for active ageing, with one spatial study examining the life satisfaction of older adults in rural India. North America, Europe, and Africa conducted limited research activity on the topic as each country in the respective region contributed only one study, suggesting a more limited but still present interest in age-friendly city initiatives. Africa's journal article highlighted a budding interest in age-friendly research in this region, likely driven by emerging urbanisation and demographics shifts. Also, there has been interest in comparative studies. Two regional studies were conducted in four Association of Southeast Asian Nations (ASEAN) countries, namely, Malaysia, Myanmar, Thailand, and Vietnam, with one study involving their dialogue partner (Japan) to compare age-friendliness in the respective country and the factors influencing active ageing. Overall, the map underscored a global but uneven distribution of research, with Asia leading efforts to understand and implement age-friendly frameworks that integrate with active ageing.

Another noteworthy finding relates to the development status of the countries. Studies focusing on countries/regions in the Global South (eg. China, India and ASEAN countries) match or even surpass studies from the Global North (eg. Australia, USA and Europe), contradicting the common notion that most age-friendly community studies have been conducted in the Global North (Han et al., 2022). Studies in the Global South mainly focus on assessing the age-friendliness of the environment and its relationship

to age-friendly environments and the well-being of older persons in urban, and, to a lesser extent, in rural areas. Conversely, studies in the Global North have included more contemporary aspects, such as introducing new indicators and measurement tools for AFC, including digitalisation elements and the rights of older persons.

Table 2
Number of articles by study location

Country	Frequency*
Australia	3
Bosnia and Herzegovina	1
Canada	1
Finland	1
India	2
Italy	1
Japan	1
Malaysia	2
Myanmar	2
Nigeria	1
People’s Republic of China (including Hong Kong)	15
Portugal	1
Singapore	2
South Korea	1
Spain	1
Taiwan	4
Thailand	2
The Netherlands	1
Turkey	1
United Kingdom	4
United States of America	1
Vietnam	2
Totals	50

*Notes: The frequency represents the number of country occurrences, not the total number of articles. Multinational studies were counted separately for each country in which they were conducted. Hence, the sum of frequency does not correspond to the 43 articles included in this review.

A total of five themes were identified through an iterative comparison process for similarities and differences from reviewed research articles, each reflecting crucial aspects of active ageing and SWB. The five themes were (i) Age-friendly Environment, Health, and Well-Being, (ii) Integration of Age-Friendly and Active Ageing Frameworks, (iii) Mobility and Accessibility in Age-friendly Communities, (iv) Comparative and Socio-Cultural Dimensions of Age-friendly Cities, and (v) Assessment and Contemporary Development in Age-friendly Cities. Some journal articles can be related to more than

one theme. The list of articles allocated to their respective themes is outlined in **Table 3**. The analysis of each theme will be further discussed in the qualitative findings.

Table 3

The tabulation of authors' discussion by themes

	Theme 1: Age-Friendly Environment, Health and Well-Being)	Theme 2: Integration of Age-Friendly and Active Ageing Frameworks	Theme 3 Mobility and Accessibility in Age-Friendly Communities	Theme 4: Comparative and Socio- Cultural Dimension of Age-Friendly Environment	Theme 5: Assessment and Contemporary Development in Age-Friendly Cities
Adlakha et al. (2020)	-	-	/	-	-
Aksoy & Korkmaz- Yaylagul (2019)	-	-	-	-	/
Au et al. (2017)	/	-	-	/	-
Au et al. (2020)	-	/	-	-	-
Cinderby et al. (2018)	-	-	/	-	-
Davern et al. (2020)	-	-	-	-	/
Dongre & Deshmukh (2012)	/	-	-	/	-
Emirhafizović & Šadić (2018)	/	-	-	-	-
Emler & Moceri (2012)	/	-	-	-	-
Feng et al. (2024)	/	-	-	/	-
Flores et al. (2019)	/	-	-	-	/
Gan, Wister, et al. (2022)	/	-	-	-	-
Gan, Cheng, et al. (2022)	-	/	-	-	-
Garner & Holland (2020)	-	-	-	-	/
Gong et al. (2019)	-	-	-	-	/
Hsu (2020)	-	/	-	/	-
Hsu & Bai (2021)	/	-	-	-	-
Ide et al. (2022)	-	-	-	-	/
Jiang et al. (2023)	/	-	-	-	-
Kim & Yoo (2024)	-	/	/	-	-

	Theme 1: Age-Friendly Environment, Health and Well-Being)	Theme 2: Integration of Age-Friendly and Active Ageing Frameworks	Theme 3 Mobility and Accessibility in Age-Friendly Communities	Theme 4: Comparative and Socio- Cultural Dimension of Age-Friendly Environment	Theme 5: Assessment and Contemporary Development in Age-Friendly Cities
Lucifora & Villar (2024)	-	/	-	-	-
Ma et al. (2023)	-	-	/	-	-
Menezes et al. (2023)	-	/	-	-	-
Merchant et al. (2021)	/	-	-	-	-
Ng et al. (2021)	-	/	-	-	-
Oyeyemi et al. (2023)	-	/	-	-	-
Paiva et al. (2019)	/	-	-	-	-
Pedell et al. (2021)	-	-	-	-	/
Portegijs et al. (2017)	-	-	/	-	-
Sait & Jivraj (2022)	/	-	-	-	-
Sun et al. (2018)	/	-	-	-	-
Tan et al. (2019)	/	-	-	/	-
Tiraphat et al. (2020)	/	-	-	/	-
Tiraphat et al. (2021)	-	/	-	/	-
van Hoof et al. (2024)	-	-	-	-	/
Wang et al. (2021)	-	/	/	-	-
Wu et al. (2022)	-	/	-	/	-
Xia et al. (2024)	/	-	-	/	-
Yu et al. (2021)	/	-	-	/	-
Zhang et al. (2021)	/	-	-	-	-
Zhang & Yang (2023)	-	-	-	-	/
Zheng & Yang (2019)	-	/	-	/	-
Zheng et al. (2019)	-	/	-	-	-

To clarify the presentation of the themes, the five identified themes were systematically coded using a deductive approach within the ATLAS.ti 8 software. These coded themes responded to the research questions: What are the trends in AFC studies in relation to active ageing and SWB discussed in publications from 2007 to 2024? and served as the basis for the study’s discussions. Analysis reveals that trends in AFC studies are not linear; rather, they represent a multi-faceted convergence of physical, social and cultural elements – alongside with innovative interventions – that collectively bolster active ageing and SWB. The findings, mapping the five distinct, yet intertwined themes emerged from this review are synthesised in Figure 4.

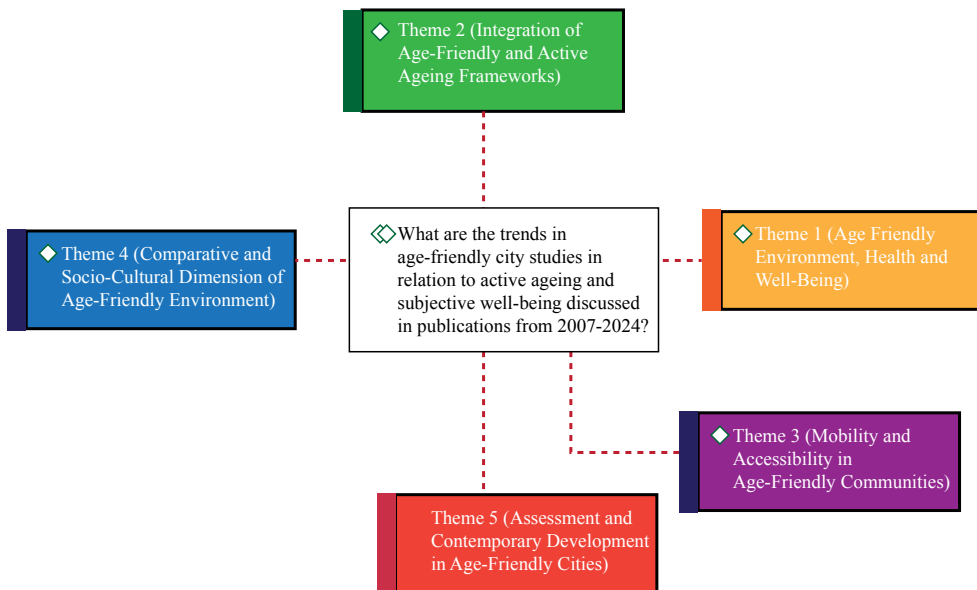


Figure 4. Five synthesised themes generated using ATLAS.ti 8 software to address the research question.

Quantitative data confirms an upward trend in academic output post-2018 and the 2020 COVID-19 pandemic can be identified as likely the impetus for the acceleration of the research trajectory. The Global South has been dominant in the production of publications, contrary to many research opinions, and this is particularly evident in the Asia Pacific region; this indicates an urgent need at the regional level to address the demographic shift occurring. The five major themes identified reflect the multifaceted nature of the AFC apparatus designed to support the concept of active ageing and SWB.

Qualitative Analysis

While each of the five thematic areas illustrated below provides an overview of a single thematic area of focus in terms of research, the five thematic areas collectively demonstrate the interdisciplinary nature of the research conducted in terms of how many of the studies reviewed frequently spanned several areas of research simultaneously.

Theme 1: Age-Friendly Environment, Health, and Well-Being

Theme 1, representing 18 articles (Figure 5), represents the most researched of the five themes. Theme 1 demonstrates the core of the Ecological Model of Ageing's examination of the relationship between age-friendly communities and geriatric health, through the study of how AFC affect ageing populations' health. The discussion surrounding Theme 1 explores the complex relationships between the built environment and social environment, and how access to resources, active social participation and available support systems – individually and/or as interconnected variables – facilitate active ageing in various rural and urban contexts.

Theme 1 emphasises the role of social determinants as a fundamental component. For example, Au et al. (2017) demonstrated the significance of social networks when studying social participation in the densely populated Hong Kong, China. Their research showed that social interaction in AFC enhances life satisfaction and emotional well-being in both younger and older populations. In addition, Dongre & Deshmukh (2012) and Xia et al. (2024) expanded upon this by showing social inclusion and social cohesion contributed equally to improving the life satisfaction of older adults in rural settings in India and China, respectively. Moreover, Paiva et al. (2019) demonstrated the social determinants in the Portuguese context, and that older adults' perceptions of social inclusion enhance their well-being. In general, these studies emphasise the importance of social participation and community support in creating age-friendly communities that positively contribute to the mental and emotional well-being of older adults regardless of their geographic location.

Physical determinants of health, including infrastructure, safety, and accessibility, are also important components of developing age-friendly communities. For example, Gong et al. (2019) discussed the importance of waterfront urban public spaces and found that environment quality, functional usage and social culture all significantly impacted the satisfaction and engagement of elderly individuals using these public spaces. Sun et al. (2018), similarly provided evidence suggesting that the design and arrangement of residential environments have a direct positive impact on older adults' perception of community and well-being, by demonstrating the relationship between housing type and perceived age-friendliness. In addition, Tan et al. (2019) demonstrated that providing older adults with access to inclusive urban parks/green spaces that cater to the specific needs of this group can improve their social interactions and physical activity. These findings demonstrate that physical elements are just as important as social elements in defining the lifestyles and quality of life of the ageing population.

Recognising the strength of integrating both hard and soft elements, some scholars adopt a holistic lens. Emirhafizović and Šadić (2018), for example, argued that well-designed physical accessibility and cultural sensitivity boost older adults' social

participation in Sarajevo. Flores et al. (2019) further demonstrated that cities with accessible public spaces, community support and health services significantly enhance the quality of life for older adults. Also, Hsu and Bai (2021) highlighted the importance of the built and social age-friendliness of a city, as well as income security to support the cognitive function of older adults. These studies indicate that the most effective age-friendly environments integrate both physical and social elements to create physically accessible and socially inclusive spaces in order to ensure that older adults can maintain their autonomy, social engagement, and overall well-being.

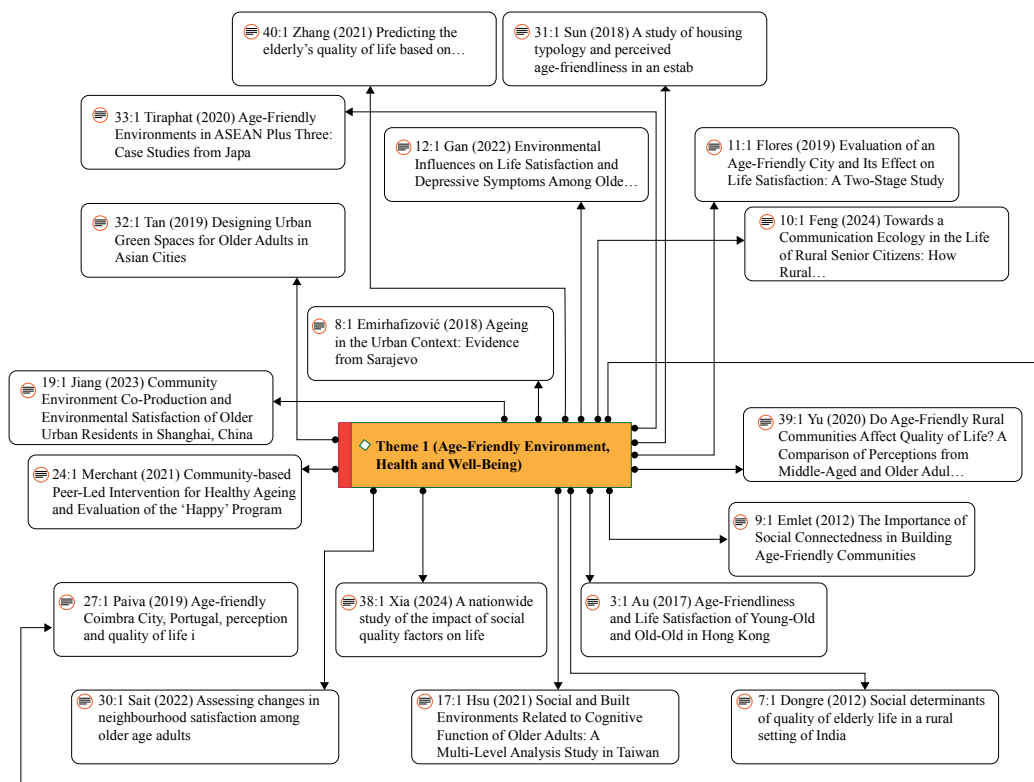


Figure 5. Network view of literature evidence on Theme 1 (Age-friendly Environment, Health, and Well-Being), generated using ATLAS.ti 8 software

Theme 2: Integration of Age-Friendly and Active Ageing Frameworks

In addition to the common studies that examine the individual relationship between environment, health, active lifestyle, and well-being, emerging studies also explore the intricate relationships between environment, activeness, and well-being holistically. The WHO's active ageing framework promotes the idea that older adults should have opportunities for health, participation, and security (World Health Organization, 2002), all of which contribute to maintaining the quality of life in older age. Accordingly, age-friendly environments emphasise a design that removes barriers and fosters engagement.

The network diagram in Figure 6 illustrates the 13 journal articles on integrating age-friendly environments and active living. The list reveals the gained traction in the past five years, indicating increasing interest in the complexity of the relationships, especially the impact of the COVID-19 pandemic on the activity status of older adults and their well-being (Kim & Yoo, 2024; Lucifora & Villar, 2024; Merchant et al., 2021; Tiraphat et al., 2021; van Hoof et al., 2024).

Several studies highlight the direct and indirect relationships between environment, activeness and well-being, mainly examining social determinants as the mediator or moderator. Gan, Wister, et al. (2022) focused on the role of socio-behavioural attributes and loneliness as mediators between the environment and the long-term effect on the mental well-being of older adults. They found that a large proportion of the effect of the socio-behavioural attributes on mental well-being was explained by loneliness. This suggests the complexity of the relationships between environment and well-being, which requires a multi-dimensional approach. In addition, Au et al. (2020) expanded on the relationship by finding that among the eight age-friendly domains in the WHO's AFC concept, social participation and community and health services are associated with the life satisfaction of older adults, and the relationship is mediated by a sense of community. Ng et al. (2021) provided further evidence by examining the relationship between personal and external resources and life satisfaction, with internal and external continuity as the mediator, and that the relationship is moderated by gender.

These studies demonstrate that environments that foster social participation and physical mobility contribute to active ageing and SWB, taking preventive and place-based interventions via active ageing. While current research has effectively highlighted the benefits of integrating these frameworks, there remains a need for more studies that examine the relationship between the environment, active ageing, and well-being. Future research should focus on identifying specific environmental factors that most significantly impact active engagement and well-being, allowing for more refined and effective urban planning and policy for ageing populations.

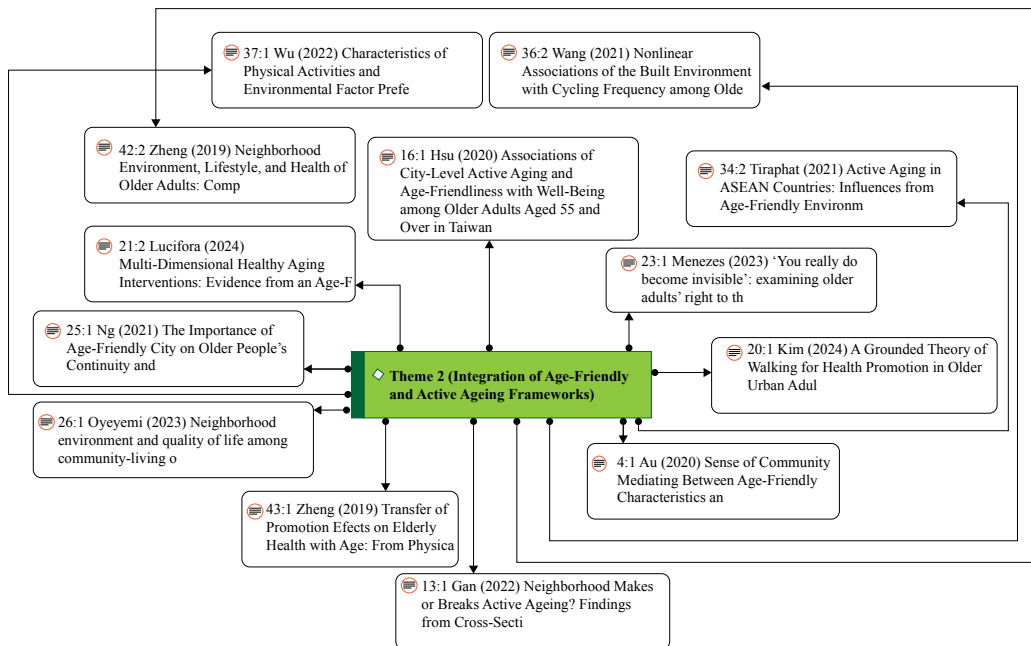


Figure 6. Network view of literature evidence on Theme 2 (Integration of Age-Friendly and Active Ageing Framework), generated using ATLAS.ti 8 software

Theme 3: Mobility and Accessibility in Age-Friendly Communities

Theme 3, which was the least represented with six journal articles (see Figure 7), examines the significance of mobility and accessibility in supporting active ageing and overall well-being of older adults. Journal articles representing Theme 3 all stressed that the physical environment and accessibility of an area influence older adults' ability to be physically active, maintain social connections, and have autonomy.

Adlakha et al. (2020) stated that designing neighbourhood is about much more than just physical planning. Rather, it is about developing neighbourhoods that are physically and socially accessible, so older adults can continue to participate in daily activities and social interactions, thereby contributing to active ageing. Furthermore, the authors of Ma et al. (2023) demonstrated that enhancing mobility outside of the home enables older adults to engage in both social and physical activities; ultimately resulting in greater overall satisfaction with their lives. Kim and Yoo (2024) also supported the concept of mobility through their research into the effect of well-kept, accessible urban environments on the physical health of older adults; specifically, improved walkability. Cinderby et al. (2018) expanded upon the idea of mobility and accessibility through their advocacy for shifting methodologies away from a top-down approach and toward a bottom-up approach of co-creating with older adults to address the unique mobility challenges that affect them. Together, these studies clearly demonstrate the necessity of mobility and accessibility to

facilitate active ageing. Through the development of walkable, accessible, and responsive urban environments that meet the needs of older adults, cities have the capacity to greatly improve the well-being of their ageing populations.

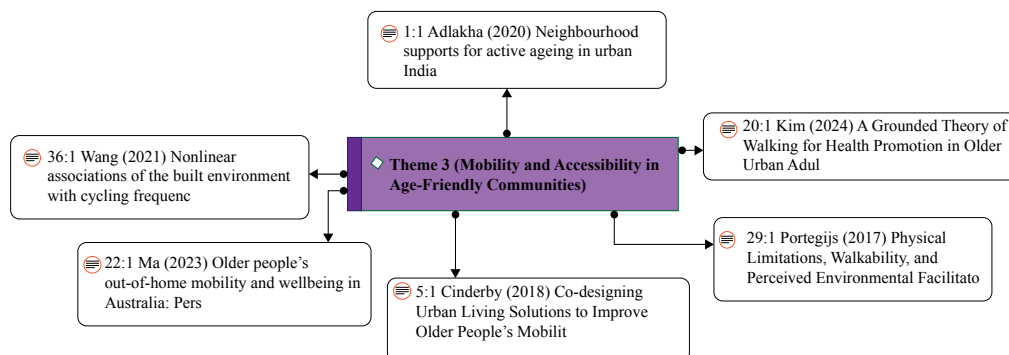


Figure 7. Network view of literature evidence on Theme 3 (Mobility and Accessibility in Age-Friendly Communities), generated using ATLAS.ti 8 software

Theme 4: Comparative and Socio-Cultural Dimension of Age-Friendly Environment

Theme 4, encompassing 13 journal articles, is outlined in **Figure 8**. The theme explores how AFC initiatives are adapted across different cultural, socio-economic, and geographic contexts. A total of three journal articles were cross-countries comparative studies (i.e., Tan et al., 2019; Tiraphat et al., 2020, 2021). Tiraphat et al. (2020, 2021) examined variations in age-friendly practices across ASEAN countries (i.e., Malaysia, Myanmar, Thailand, and Vietnam) and their dialogue partner, Japan, to compare the age-friendliness of the environments and predictors of active ageing in each country. On the other hand, Tan et al. (2019) compared the attributes of urban green spaces to the self-reported health of older adults in Hong Kong, China, and Taiwan. Findings from these cross-country studies provide valuable comparative insights and encourage regional and global discourse.

According to Zhang and Yang (2023) the most essential form of inclusion and protection of the elderly is through tailored urban policies that take into consideration the specific demographics and cultures of the population. Feng et al. (2024) and Hsu (2020) extended this argument when they state that the “age-friendly” policy needs to be localised to account for cultural differences so that comparisons across global contexts can be made. The application and development of age-friendly policies depend on a number of socio-demographics including age (Au et al., 2017; Hsu, 2020; Zheng & Yang, 2019) and gender (Dongre & Deshmukh, 2012; Ng et al., 2021; Wu et al., 2022) and therefore need to be designed to accommodate the diverse needs of older populations.

Although the AFC concept was developed to respond to the challenges associated with ageing and urbanisation, researchers have become increasingly interested in conducting age-friendly research in the rural context due to the disparity that exists between urban

and rural areas (Yu et al., 2021). Under Theme 4 category of this review, it was found that all five journal articles referenced were conducted in the two countries with the largest population, with four articles from China and one from India. Dongre and Deshmukh (2012) showed that in rural India, community support and access to services are crucial for improving well-being and that the focus on the relationship between environment, social determinants and life satisfaction is reflected in the study by Feng et al. (2024), in which the authors indicated that rural public spaces affect community engagement. In addition, Xia et al. (2024) investigated the social quality factors affecting the life satisfaction of older adults in China.

In addition to these two studies conducted in rural China, the other two determined the physical activity preferences of older adults based on environmental factors (Wu et al., 2022) and the impact of age-friendliness on the quality of life of the elderly (Yu et al., 2021). These studies indicated that age friendly initiatives will require consideration of the unique needs of both rural and urban populations since each presents a unique set of challenges and opportunities for creating active ageing environments.

Moreover, the effectiveness of age-friendly policies may depend on whether the policies are implemented at a city or individual level. Hsu (2020) identified some interesting findings regarding the relationship between active ageing status, and life satisfaction and health-related quality of life (HRQoL) of individuals. Specifically, the authors reported that individuals' active ageing status had a greater impact on life satisfaction and HRQoL than did the type of city. Additionally, active ageing and AFC were not significantly related to individuals' well-being and HRQoL. Essentially, Hsu (2020) findings suggested that if older adults are willing to engage in active ageing activities, they can achieve higher levels of life satisfaction and well-being, regardless of the physical space in which they live. Therefore, the author implied that a multi-tiered approach, incorporating both macro-level city design and micro-level individual needs, is necessary for promoting successful age-friendly initiatives.

In general, these studies show that older adults and their living spaces are heterogeneous, and a one-size-fits-all approach is insufficient. Instead, flexible policies that address the differences are crucial for success. Further comparative studies are needed to refine and tailor age-friendly frameworks to meet the diverse needs of ageing populations globally.

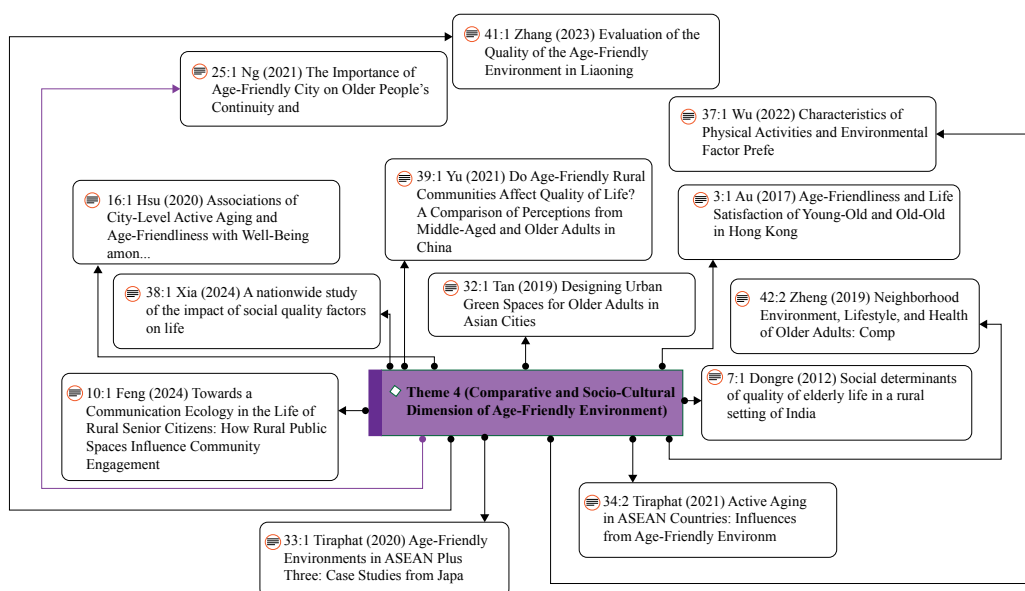


Figure 8. Network view of literature evidence on Theme 4 (Comparative and Socio-Cultural Dimensions of Age-Friendly Environment), generated using ATLAS.ti 8 software

Theme 5: Assessment and Contemporary Development in Age-Friendly Cities

Theme 5 focused on the progressive development of AFC studies, with a strong emphasis on the use of innovative methods to assess age-friendly initiatives and their effectiveness and adaptability to evolving needs (see Figure 9). The theme, with 10 journal articles discussed emerging topics such as digitalisation and the ethical dimension of ageing, particularly following the global health crisis of the COVID-19 pandemic. The articles highlighted the need for continuous assessment to ensure that age-friendly assessment criteria and policies remain relevant and adaptable to the latest developments while addressing the evolving needs of older adults.

Flores et al. (2019) argued that although the eight age-friendly domains proposed by WHO are adequate, they are particularly the social domain, need to be revisited to include contextual aspects and take a life-cycle perspective. Their argument is supported by various studies that aimed to develop and validate indicators and tools for assessing age-friendliness to ensure the tools remain relevant and capture the multifaceted needs of the ageing population. For example, Davern et al. (2020) addressed the critiques of WHO's age-friendly domain by proposing a measurable framework of spatial indicators to evaluate local lived environments. The spatial indicators emphasised the need for minimal resource requirements in local assessments that can be applied within various administrative levels - from local neighbourhoods and suburbs to cities and potentially be expanded to national and international contexts in the future.

Research has been conducted to continue to improve our understanding of how we can assess the age-friendliness of a city through the use of indicators to measure the success of age-friendly initiatives; Ide et al. (2022), identify a number of these indicators including those related to social participation and happiness. They indicate that both social participation and happiness are important components of well-being in older people, and that social participation could be used as a tool for assessing the effectiveness of community level age-friendly strategies and policies.

The way researchers are conducting evaluations of AFC initiatives has shifted from being based on cross sectional studies to using cluster based, longitudinal and dynamic approaches. An example of this shift is shown by van Hoof et al. (2024); who used the Age Friendly Cities and Communities Questionnaire (AFCCQ) to follow four different personas of older people over time in the Netherlands. van Hoof et al. (2024) indicated that by using this type of methodology it was possible to evaluate the impact of policies on populations of older people over a longer period than previously possible and to develop more targeted and inclusive policies. Similarly, Zhang and Yang (2023), used a framework of urban-scale indicators to map the temporal evolution of age-friendliness in a number of cities in Liaoning province, China between 2010 and 2021. Zhang and Yang (2023) confirmed the importance of longitudinal data in this area of research.

This thematic collection will also highlight current research into new areas such as the digital and ethics aspects of the urban environment. Research into digitalisation of the urban environment includes Pedell et al. (2021); who proposed a hybrid comprehensive planning approach which addresses the digital, social, and physical realms of the urban environment. Pedell et al. (2021) indicate that the co-design process is a basic right of older people, but that their digitally-enabled participation in the design of environments can enhance social engagement and improve health outcomes.

Menezes et al. (2023); examined the concept of ‘the right to the city’, indicating that active participation is necessary to prevent the exclusion of older adults from public spaces. The rights-based perspective taken by Menezes et al. (2023) aligns with the perspectives taken by Davern et al. (2020) and Pedell et al. (2021); all of whom suggest that there is a need to move from developing plans that address their physical needs of older adults to plans that enable older adults to engage actively in society. The emerging themes identified in this thematic collection require continued investigation.

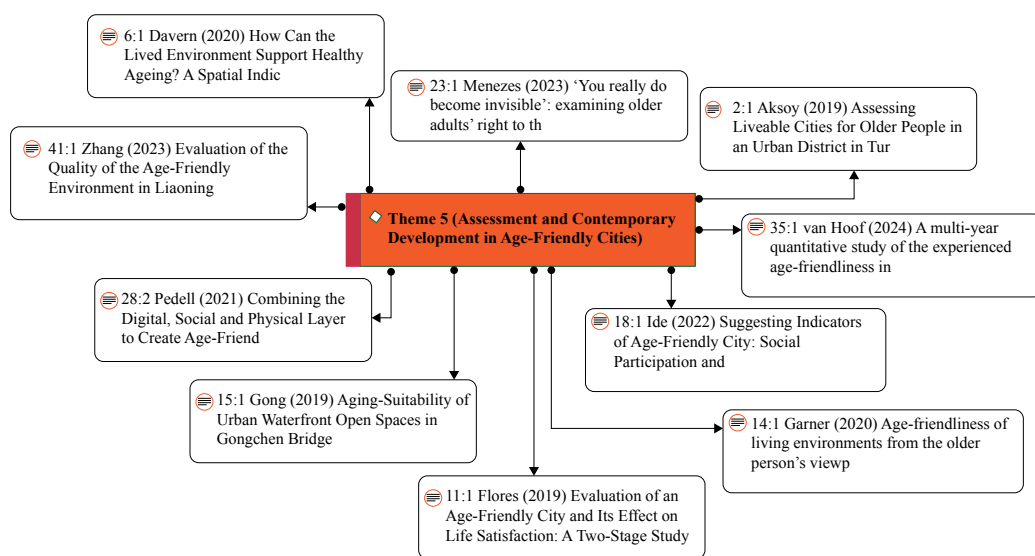


Figure 9. Network view of literature evidence on Theme 5 (Assessment and Contemporary Development in Age-Friendly Cities), generated using ATLAS.ti 8 software

In summary, the qualitative analysis, through the five interconnected themes, demonstrates that AFC initiatives influence active ageing, health and the well-being of older adults across various contexts and geographical regions, such as built and social environments, mobility and accessibility. The results also highlight the need for continuous evaluation and development of age-friendly initiatives to address the current and future demographic and urban challenges.

CONCLUSION

Building on the extensive AFC research, this thematic review examined trends in AFC studies on active ageing and subjective well-being from 2007 to 2024, using the WHO's AFC and active ageing frameworks and the Ecological Model of Ageing as guides. This study employed the TreZ method, whereby a total of 43 journal articles were screened and analysed via the ATLAS.ti 8 software. The quantitative results indicated that the number of publications increased post-2018, particularly during the COVID-19 pandemic, with countries in Asia Pacific region dominating journal articles publications and higher outputs from the Global South than the Global North. On the other hand, the qualitative analysis identified five main themes that are multifaceted and nonexclusive - (i) Age-Friendly Environment, Health, and Well-Being, (ii) Integration of Age-Friendly and Active Ageing Frameworks, (iii) Mobility and Accessibility in Age-Friendly Communities, (iv) Comparative and Socio-Cultural Dimensions of Age-Friendly Cities, and (v) Assessment and Contemporary Development in Age-Friendly Cities. Theme (i) is most studied, while theme (v) is the least studied.

Nonetheless, several limitations should be acknowledged concerning the current review paper. First, although a structured and comprehensive literature search was conducted, some valuable articles may have been missed. This can be due to the databases and keywords used. Future searches may include other databases. In addition, the exclusion criteria, such as only English language and open-access articles, may also result in limited searches. Despite these limitations, this paper offers valuable insights for future research and practitioners by providing a structured synthesis of AFC research trends and by enhancing understanding of these relationships. Future work should explore localised, comparative, and longitudinal studies that integrate understudied areas and emerging issues such as digitalisation and ethics.

Research Contributions

This paper contributes to several aspects. First, the paper presents an overview of the research trends focusing on the two significant works by WHO, the Age-friendly City concept and the Active Ageing Framework, guided by the Ecological Model of Aging. In addition, the findings presented in thematic forms provide a structured overview of the past research, particularly in areas understudied, such as mobility and accessibility. The authors also emphasise the limitations of previous research which prevents an in-depth understanding of how active ageing, subjective well-being, and age-friendly initiatives interact. As such, future research should develop all-encompassing frameworks that combine these elements along with addressing issues such as, but not limited to, digitalisation, regional inequality, and ethics of ageing. Future studies will need to be tailored to the needs of the ageing population on a global scale and incorporate localised approaches and longitudinal assessments.

Practical Contributions

This authors' paper provides practical insights for policymakers – especially those who are part of the urban planning realm – regarding the effects of an age-friendly environment on the social and physical involvement of older adults and consequently their well-being. The themes found within this paper demonstrate the complexity of the relationship between the environment and the well-being of community as it ages; as such, there can no longer be a one-size-fits-all solution to support the ageing population of a community. To create effective interventions, the authors argue that there needs to be collaboration among government agencies, disciplines, and society, and most importantly, that older adults need to be treated as partners in the decision-making process versus being viewed as passive recipients of services.

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