Review Article

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Global research landscape and science mapping of age-friendly communities: A bibliometric analysis on healthy aging and community resilience (2015–2025)

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Abstract

Background: The global demographic transition underscores the necessity for the development of Age-Friendly Communities (AFCs) aimed at promoting healthy ageing and enhancing community resilience. This study examines the intellectual framework surrounding AFC research from 2015 to 2025, to inform nursing scholarship and public health initiatives.
Methods: A comprehensive bibliometric analysis was performed on 245 peer-reviewed articles obtained from the Scopus database, covering the timeframe from 2015 to 2025. This targeted selection adhered to stringent inclusion criteria that emphasize the direct intersection of four key domains: "older adults," "community resilience," "healthy ageing," and "age-friendly communities." The analysis incorporated performance metrics, science mapping, and visualizations using the VOSviewer.
Results: Research output saw significant growth post-2020, with a CAGR of over 15%, driven by the United Nations Decade of Healthy Ageing. While the US, UK, Canada, and Australia (the 'QUAD' group) have historically led in research, East Asian nations, especially China and Japan, are experiencing the fastest growth. The focus in AFC research has shifted from the Built Environment and Policy Adoption to include Digital Inclusion, Community Resilience, and Health Equity. Notably, Nursing Science is gaining importance, with a focus on translational interventions such as intergenerational reminiscence programs and community care models.
Conclusion: The field of AFC research is progressing swiftly, with a shift towards data-driven and comprehensive analyses. The findings highlight an urgent need for nursing-led community interventions, especially those that incorporate intergenerational approaches and AFC principles, to address health disparities and enhance resilience among vulnerable older adults worldwide. This underscores the critical role of nursing as a leading discipline in addressing these important issues.

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Introduction

The 21st century has witnessed a significant demographic transformation characterised by an ageing population, which poses profound implications for health care systems, social policies, and the advancement of societies globally (Pamela Z. Cacchione, 2022; WHO, 2024). By the year 2050, it is projected that the number of individuals aged 60 and older will reach 2.1 billion, representing more than 20% of the global population (Navaneetham & Arunachalam, 2023; United Nations, 2015, 2024). The demographic transition presents both opportunities and challenges. Longer life expectancy is a result of advancements in medicine, improved living conditions, and social progress. However, the rapid growth of the elderly population raises concerns about health equity, social inclusion, and the need for sustainable environments to ensure a good quality of life (Hong, 2013; Khan et al., 2024; Ogugua et al., 2024; Scuteri & Nilsson, 2024). Addressing these complex challenges requires a robust response from the nursing profession, particularly gerontological and community health nurses, who are uniquely positioned to manage chronic conditions, promote active aging, and advocate for vulnerable older populations.

The United Nations' Decade of Healthy Ageing (2021–2030) is a global initiative that aligns with the Sustainable Development Goals (SDGs) to address the challenges and opportunities of an aging population. This initiative aims to enhance the lives of older people, their families, and communities by promoting a collaborative approach that involves governments, civil society, international agencies, and the private sector (The Lancet Healthy Longevity & The Decade of Healthy Ageing, 2024; United Nations, 2015, 2024). The Decade of Healthy Ageing emphasizes the importance of creating age-friendly environments and promoting healthy lifestyles to ensure that older adults can live with dignity and well-being. This initiative is closely linked to the SDGs, particularly those focusing on health, equality, and sustainable communities, and aims to integrate these goals into policies and practices for older populations (Amuthavalli Thiyagarajan et al., 2022; The Lancet Healthy Longevity, 2021). The concept of age-friendly communities (AFCs) centers on the understanding that the environment plays a crucial role in enabling older adults to age successfully. This approach is fundamentally intertwined with the core tenets of community health nursing. Nurses serve as frontline advocates and care coordinators, translating the broad goals of the UN Decade into tangible, nursing-led community interventions, such as intergenerational care models and culturally adapted health promotion, that foster independence and encourage active participation in community life (Li et al., 2024; Mullen et al., 2022).

While age-friendly communities offer numerous benefits, challenges persist in their implementation and evaluation. Transitioning to age-friendly environments requires moving from individual-level interventions to community-based approaches, which can be complex and resource-intensive (Annear & Hyde, 2025; Forsyth & Lyu, 2023; Jeste et al., 2016). Additionally, the diverse needs and preferences of older adults necessitate tailored interventions that consider cultural, social, and economic factors (Sixsmith et al., 2023). Here, nursing interventions are critical; community nurses assess local resources and implement tailored strategies that bridge the gap between clinical healthcare systems and daily community living. Despite these challenges, an increasing body of research highlights the potential of age-friendly communities to significantly improve the lives of older adults, making them a vital focus for nursing and public health initiatives.

Previous bibliometric studies have systematically mapped domains such as ageing in place, innovative environmental design, and the implementation of the World Health Organisation's framework (Jamshidi & Hashemi, 2024; Mao et al., 2025; Xiang et al., 2021), a distinct and critical gap remains in the current academic landscape. Existing global mappings lean heavily

into general public health, architecture, and urban planning, frequently overlooking the specific intersection of nursing science and systemic community resilience within AFCs. Consequently, a more systematic understanding of how nursing research trends are driving community resilience and translating AFC frameworks into direct care interventions remains necessary. Research on Age-Friendly Communities (AFCs) has increased, focusing on key characteristics, the World Health Organization's framework, and assessment methods (Xiang et al., 2021). A thematic analysis reveals four main themes: conceptualization, implementation, assessment, and challenges (Torku et al., 2021). Most studies originate from the US, Canada, the UK, and Hong Kong, highlighting a need for greater geographical diversity. The WHO's Global Network for AFCs supports initiatives for "active aging" and "healthy aging" (Keating, 2022; United Nations, 2024; Yon & Östlin, 2023), with implementation varying between urban and rural settings, highlighting the necessity for context-specific strategies (Sehrawat et al., 2024).

Bibliometric studies offer a systematic approach to mapping the scientific landscape, identifying research trends, and highlighting gaps in the literature. This method not only guides future research but also informs policy-making (Aghel et al., 2024; Hussain et al., 2023; Radzi et al., 2024). By analyzing publication data, bibliometric studies can reveal under-researched areas and emerging topics, including the integration of innovative technologies and personalized care in age-friendly environments (Donthu et al., 2021). This research aims to conduct a comprehensive bibliometric analysis of studies related to age-friendly communities and older adults through a nursing and community resilience lens. We will examine publication trends, citation patterns, author collaborations, and thematic developments to delineate the intellectual landscape of this field, identify research hotspots, and highlight emerging trends. Our methodology will incorporate established bibliometric techniques, including performance evaluation and science mapping, utilizing specialized software such as VOS viewer.

Our analysis will address four primary research questions: (1) How has the volume and impact of research on age-friendly communities and older adults evolved? (2) Which countries, institutions, and authors have demonstrated the highest levels of productivity and influence in this area? (3) What are the predominant research themes, and how have they shifted over the years? (4) Which methodological approaches are most commonly employed, and how are these approaches evolving?

Methods

We conducted a thorough literature search using the Scopus database, a leading resource owned by Elsevier that offers a comprehensive collection of peer-reviewed scientific literature across various disciplines. We chose to use Scopus for this research because of its extensive array of high-quality publications and its strong compatibility with advanced bibliometric analysis tools, such as VOS viewer. This analysis encompasses a crucial period from 2015 to 2025, enabling us to gain a comprehensive understanding of the field's key trends, advancements, and patterns over the ten years. By utilizing Scopus, we ensured that our findings are based on a rich and diverse body of research literature, ultimately enhancing the rigor and relevance of our analysis. This study used a search strategy with keywords: TITLE-ABS-KEY (("older adults") OR (elderly) OR ("older people") OR (seniors) OR ("aging population") OR ("aged 60 and over") AND ("community resilience") OR ("resilient communit*") OR ("resilience of older adults") OR ("aging resilience") OR (community) AND ("healthy aging") OR ("healthy ageing") OR ("successful aging") OR ("active aging") AND ("age-friendly communit*") OR ("age-friendly cit*") OR ("age-friendly environment*") OR ("aging-friendly communit*") OR ("age-friendly city") OR ("age-friendly cities") OR ("age-

friendly initiative*") OR ("age-friendly program*") OR ("age-friendly")) AND PUBYEAR > 2014 AND PUBYEAR < 2026.

Data Extraction and Coding

Data were systematically collected from each qualified publication, covering several key elements: the title of the study, the names of the authors, the year of publication, the name of the journal in which it appeared, and the country of affiliation of the first author. In addition to these fundamental details, bibliometric metrics were recorded, including citation counts, which indicate the paper's impact within the academic community, and author keywords that highlight the main themes of the research.

To ensure a rigorous and reliable data extraction process, two independent reviewers conducted the extraction. They used a standardized extraction form that has been previously validated to promote accuracy and consistency. This methodical approach minimized the potential for bias and errors. Any discrepancies or disagreements that arose during the review process were resolved through open discussion, which allowed for collaborative clarification and ensured that the data gathered was both comprehensive and reliable.

Before importing the dataset into VOSviewer for science mapping, we implemented a thorough data cleaning protocol. For instance, variations such as "healthy ageing" and "healthy ageing," along with "age-friendly city" and "age-friendly cities," were consolidated into standardised terms. This essential preprocessing step prevented the artificial splitting of network nodes, ensuring that the keyword co-occurrence frequencies and subsequent cluster analyses accurately represented the true thematic weight of the literature.

Bibliometric and Network Analysis

This study performed bibliometric analyses to examine annual publication trends in a specific research field. We assessed the number of articles published each year and evaluated the growth trajectory of these publications. Key contributors were identified by analyzing both the volume of their publications and their citation impact, which indicated the significance of their work. Additionally, we explored research collaborations by mapping co-authorship and international partnerships using VOS viewer (version 1.6.18), a tool for visualizing networks of researchers and institutions. We also performed a keyword co-occurrence analysis to identify thematic clusters and emerging research areas. Overall, our analysis provides an overview of the current state and evolving dynamics within this field.

Statistical Analysis

Descriptive statistics, including frequencies, percentages, means, and standard deviations (SD), were systematically calculated using Microsoft Excel 2021. These statistical metrics provided a comprehensive overview of the publication's characteristics, including the distribution of articles over time, author contributions, and citation counts. Furthermore, we assessed bibliometric indicators to evaluate the impact and reach of the publications quantitatively. By employing these tools, we were able to identify trends, highlight key patterns, and gain insights into the overall landscape of the research field. This detailed analysis not only enhances our understanding of the data but also informs future research directions.

Visualization

Visual representations of the findings were created to improve understanding of the data. Co-authorship networks illustrated connections among researchers, while keyword co-occurrence diagrams highlighted the relationships between key terms. Both types of visuals

were generated using the VOS viewer, applying a minimum threshold of five occurrences to ensure relevance. Trends over time and geographical distributions were depicted through trend charts and heatmaps, created with Microsoft Excel 2021. These visuals enhance the interpretation of the results and contribute to the overall narrative of the research findings.

Results

A total of 245 documents were identified, with journal articles constituting the majority at 76.7%. The other document types represent smaller shares: review documents account for 8.2% and serve as a significant secondary contributor, while book chapters comprise 6.9%. Conference papers make up 6.1%. Less common types, such as notes (0.8%), books (0.4%), editorials (0.4%), and short surveys (0.4%), each represent the smallest fractions of the total.

Figure 1: Documents by year from 2015 to 2025

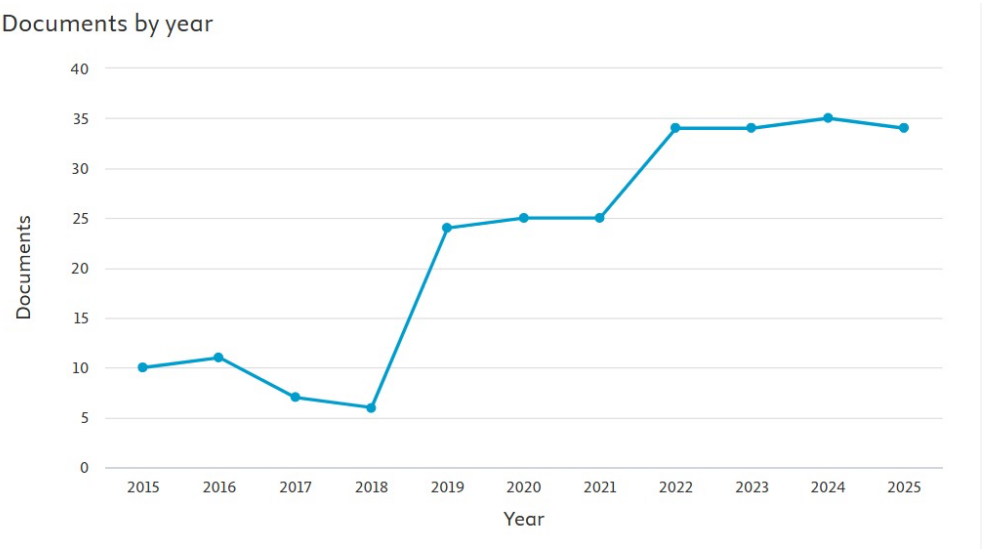


Figure 1: The data illustrate the total number of documents published annually from 2015 to 2025, revealing a clear, significant upward trend in publication volume over the decade. Initially, the output was low, with around 10 documents published per year from 2015 to 2017. The lowest point occurred in 2018, when only six documents were published. A dramatic surge began in 2019, when the number of publications quadrupled to 24 within a single year. This growth continued, stabilising around 25 documents in both 2020 and 2021. A significant increase took place in 2022, when the number of publications jumped to 34. The volume remained high, peaking at 35 documents in 2024. Overall, this represents a 3.5-fold increase in research output from the 2015 baseline to the peak in 2024, indicating a substantial and recent surge in research activity within the field.

Table 1. Top 20 Articles with the Highest Total Citation Scores

Rank	Years	Authors	Title	Source	Cited by
1	2020	Rudnicka, Ewa; Napierała,Paulina; Podfigurna, Agnieszka; Męczekalski, Błażej; Smolarcz yk, Roman; Grymowicz, Monika.	*The World Health Organization (WHO) approach to healthy ageing*	Maturitas, 13 9, pp. 6–11	1056

Rank	Years	Authors	Title	Source	Cited by
2	2015	M., Sander, Miriam; B., Oxlund, Bjarke; A.P., Jespersen, Astrid Pernille; A., Krasnik, Allan; E.L., Mortensen, Erik Lykke; R.G.J., Westendorp, Rudi Gerardus Johannes; L.J., Rasmussen, L. J.	The Challenges of human population ageing	Age and Ageing, 44 (2), pp. 185–187	207
3	2022	J., Gong, Jinquan; G., Wang, Gewei; Y., Wang, Yafeng; X., Chen, Xinxin; Y., Chen, Yanfeng; Q., Meng, Qinqin; P., Yang, Peng; Y., Yao, Yao; Y., Zhao, Yaohui	Nowcasting and forecasting the care needs of the older population in China: analysis of data from the China Health and Retirement Longitudinal Study (CHARLS)	The Lancet Public Health, 7(12), pp. e1005–e1013	198
4	2022	S., Dogra, Shilpa; D.W., Dunstan, David W.; T., Sugiyama, Takemi; A., Stathi, Afroditi; P.A., Gardiner, Paul A.; N., Owen, Neville	Active Aging and Public Health: Evidence, Implications, and Opportunities	Annual Review of Public Health, 43, pp. 439 - 459	179
5	2016	D.V., Jeste, Dilip V.; D.G., Blazer, Dan German; K.C., Buckwalter, Kathleen Coen; K.L., Cassidy, Keri Leigh; L., Fishman, Len; L.P., Gwyther, Lisa P.; S.M., Levin, Saul M.; C.J., Phillipson, Chris J.; R.R., Rao, Ramesh R.; E., Schmeding, Ellen	Age-Friendly Communities Initiative: Public Health Approach to Promoting Successful Aging	American Journal of Geriatric Psychiatry, 24 (12), pp. 1158 - 1170	118
6	2016	S., Ronzi, Sara; D.P., Pope, Daniel P.; L.C., Orton, Lois Catherine; N.G., Bruce, Nigel G. A.C., King, Abby C.	Using photovoice methods to explore older people's perceptions of respect and social inclusion in cities: Opportunities, challenges and solutions	SSM - Population Health, 2, pp. 732 - 745	97
7	2020	D.K., King, Diane K.; A.W., Banchoff, Ann W.; S., Solomonov, Smadar; O.B., Natan, Ofir Ben; J., Hua, Jenna; P.A., Gardiner, Paul A.; L.G., Rosas, Lisa Goldman; P., Rodríguez Espinosa, Patricia; S.J., Winter, Sandra Jane	Employing participatory citizen science methods to promote age-friendly environments worldwide	International Journal of Environmental Research and Public Health, 17 (5).	95

Rank	Years	Authors	Title	Source	Cited by
8	2020	Dikken, Jeroen,. van den Hoven, Rudy F. M., van Staalduinen, Willeke H., Hulsebosch-Janssen, Loes M. T., van Hoof, Joost	How older people experience the age-friendliness of their city: Development of the age-friendly cities and communities questionnaire	International Journal of Environmental Research and Public Health, 17(18), pp. 1–24, 6867	71
9	2019	Alidoust, Sara., Bosman, Caryl., Holden, Gordon.	Planning for healthy ageing: How the use of third places contributes to the social health of older populations	Ageing and Society, 39(7), pp. 1459–1484	62
10	2020	M.T., Davern, Melanie T.; R., Winterton, Rachel; K., Brasher, Kathleen; G., Woolcock, Geoffrey	How can the lived environment support healthy ageing? A spatial indicators framework for the assessment of age-friendly communities	International Journal of Environmental Research and Public Health, 17 (20), pp. 1 - 21	59
11	2023	J., Lee, Jihei; T.H., Tan, T. H.	Neighborhood Walkability or Third Places? Determinants of Social Support and Loneliness among Older Adults	Journal of Planning Education and Research, 43 (2), pp. 250 - 253	58
12	2019	R.A., Merchant, Reshma Aziz; C.T., Tsoi, Chris Tung; W.M., Tan, Weng Mooi; W., Lau, W.; S., Sandrasageran, Surein; H., Arai, Hidenori	Community-Based Peer-Led Intervention for Healthy Ageing and Evaluation of the 'HAPPY' Program	Journal of Nutrition, Health and Aging, 25 (4), pp. 520 - 527	56
13	2020	A.M.L., Au, Alma M. L.; D.W., Lai, Daniel W.L.; H., Yip, Homing; S.C., Chan, Stephen C.Y.; S.M.K., Lai, Simon Man Kin; H.S., Chaudhury, Habib Sadat; A.E., Scharlach, Andrew E.; G.W., Leeson, George W.	Sense of Community Mediating Between Age-Friendly Characteristics and Life Satisfaction of Community-Dwelling Older Adults	Frontiers in Psychology, 11	54
14	2020	A., de Biasi, Anne; M.M., Wolfe, Megan M.; J., Carmody, Jane; T.T., Fulmer, Terry T.; J.M., Auerbach, John M.	Creating an Age-Friendly Public Health System	Innovation in Aging, 4 (1)	54

Rank	Years	Authors	Title	Source	Cited by
15	2017	M.W., Wong, Moses W.; R.H.Y., Yu, Ruby H.Y.; J.L., Woo, Jean L.F.	Effects of perceived neighbourhood environments on self-rated health among community-dwelling older Chinese	International Journal of Environmental Research and Public Health, 14 (6)	48
16	2023	F., Hu, Fangli; J., Wen, Jun; I., Phau, Ian; T., Ying, Tianyu; J., Aston, Joshua; W., Wang, Wei	The role of tourism in healthy aging: An interdisciplinary literature review and conceptual model	Journal of Hospitality and Tourism Management, 56, pp. 356 – 366.	47
17	2020	D., Sánchez-González, Diego; F.R., Rojo-Perez, Fermina R.; V., Rodríguez-Rodríguez, Vicente; G., Fernández-Mayoralas, Gloria	Environmental and psychosocial interventions in age-friendly communities and active ageing: A systematic review	International Journal of Environmental Research and Public Health, 17 (22),	47
18	2019	N.K., Dalmer, Nicole K.	A logic of choice: Problematizing the documentary reality of Canadian aging in place policies	Journal of Aging Studies, 48.	47
19	2016	M.M.M., Lai, Mingming M. M.; S.Y., Lein, Shi Ying; S.H., Lau, Siok Hwa; M.L., Lai, Ming Ling	Modeling Age-Friendly Environment, Active Aging, and Social Connectedness in an Emerging Asian Economy	Journal of Aging Research	47
20	2020	Y.J., Choi, Yeon Jin	Age-Friendly Features in Home and Community and the Self-Reported Health and Functional Limitation of Older Adults: The Role of Supportive Environments	Journal of Urban Health, 97 (4), pp. 471 - 485	45

Figure 2: The distribution of document types from 2015 to 2025.

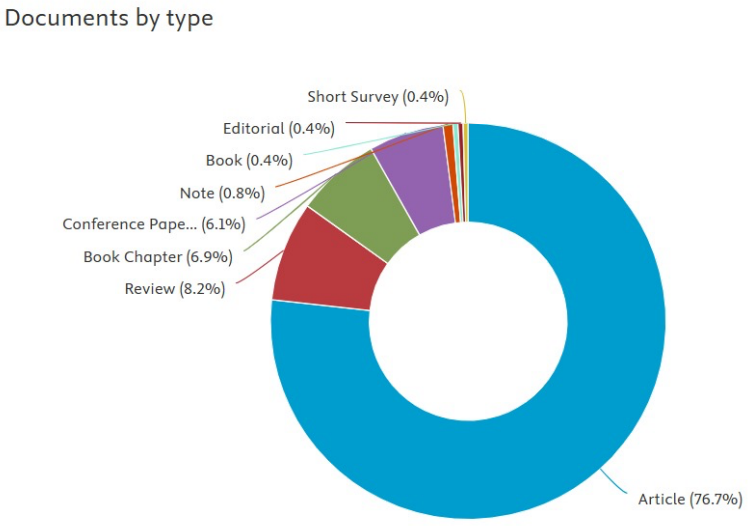


Figure 2 illustrates the distribution of documents by type. The data set is overwhelmingly dominated by Articles, which make up a substantial 76.7% of all documents. This suggests that the collection primarily comprises original research papers published in academic journals. The remaining document types represent a small portion of the total. The following are the most common types: Review Papers at 8.2%, followed by Book Chapters at 6.9%, and Conference Papers at 6.1%. Other, less common document types include Notes at 0.8%, while Books, Editorials, and Short Surveys each account for a negligible 0.4%.

Figure 3: The Document by subject from 2015 to 2025.

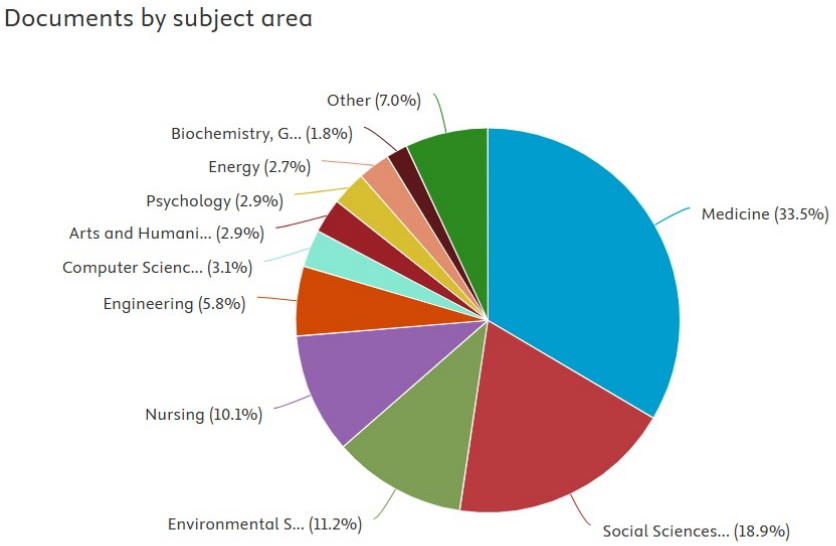


Figure 3 illustrates that Medicine is the most dominant area in the document distribution, making up 33.5%, which indicates a primary emphasis on medical research. The following categories are the most significant: Social Sciences, at 18.9%, and Environmental Science, at 11.2%. Notably, Nursing accounts for 10.1%, highlighting a considerable amount of research related to nursing. Together, these four categories represent over 73% of the total documents.

Other fields, such as Engineering (5.8%) and Computer Science (3.1%), have a smaller share, underscoring a strong focus on health as well as social and environmental issues.

Figure 4. Document per year by source

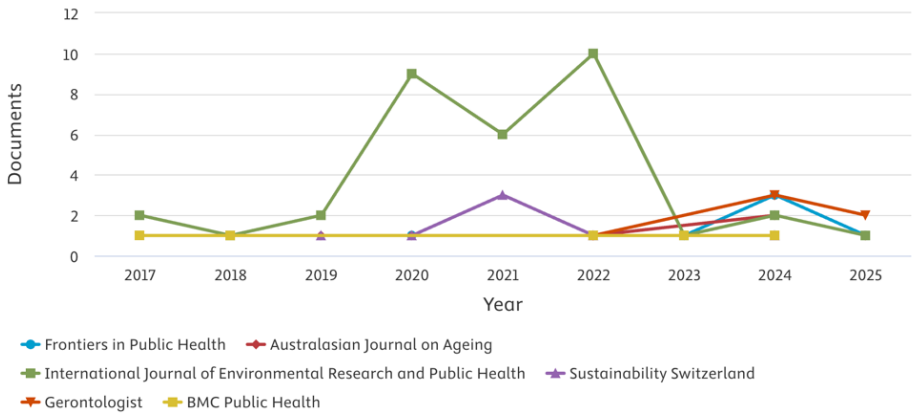


Figure 4 presents the annual publication numbers of six journals related to public health, aging, and environmental health from 2017 to 2025. The International Journal of Environmental Research and Public Health (green line) exhibited significant fluctuations, peaking at nine publications in 2020 and reaching ten in 2022, but then declined sharply to just one publication by 2025. Sustainability Switzerland (purple line) peaked at three publications in 2021 but had minimal output in the surrounding years. The other journals, Frontiers in Public Health (blue), Australasian Journal on Aging (red), The Gerontologist (orange), and BMC Public Health (yellow) generally publish one or two articles annually. Notably, in 2024, both the Australasian Journal on Aging and The Gerontologist produced three publications each. By 2025, all journals had either reached or were nearing their minimum output, indicating a possible decline in publication rates. This data offers insights into the trends in public health and gerontology research.

Discussion

Evolution of Research Output: Volume and Impact

A bibliometric analysis of research on Age-Friendly Communities (AFCs) and healthy aging from 2015 to 2025 demonstrates a significant increase in academic interest, reflecting the evolution of the field and its alignment with relevant policies. Initially, annual publications ranged from 10 to 11 articles from 2015 to 2017, followed by a slight decline to a low of 6 articles in 2018. However, a substantial increase began in 2019, resulting in a rapid fourfold surge (to 24 articles) in just one year. This upward trajectory culminated in a peak of 35 articles in 2024, reflecting an overall 3.5-fold growth from the 2015 baseline. This surge in research activity is primarily driven by the UN's Decade of Healthy Ageing (2021-2030). Recent studies have emphasized the significant and accelerating demographic transition toward an aging global population (Navaneetham & Arunachalam, 2023; WHO, 2024). The research community has organized its efforts strategically to address this pressing issue (Amuthavalli Thiyagarajan et al., 2022; Pamela Z. Cacchione, 2022; United Nations, 2015).

An analysis of published documents reveals that journal articles account for 76.7% of the total output, indicating a focus on generating evidence-based knowledge and testing hypotheses. Review articles, at 8.2%, highlight the field's maturity as they inform clinical guidelines and public health policies (Torku et al., 2021). The concentration of publications in journals like the International Journal of Environmental Research and Public Health, with

peaks in 2020 and 2022, reflects the interdisciplinary nature of Aging and Health research, particularly in environmental and public health contexts.

The findings have significant academic and policy implications due to the high citation counts of key articles relevant to policy-making and nursing practice. Notably, Rudnicka et al. (2020) highlight the World Health Organization's approach to healthy aging, while Jeste et al. (2016) emphasize the Aging and Health Initiative as a public health strategy (Jeste et al., 2016; (Rudnicka et al., 2020). This growth in research supports the development of innovative community-based care models aligned with global healthy aging objectives (Pamela Z. Cacchione, 2022). The sustained research activity since 2022 indicates that the Aging and Health agenda has become a permanent, high-priority element in global health scholarship, ensuring ongoing translational impact in the decade ahead.

Figure 5: The Document by country or territory from 2015 to 2025.

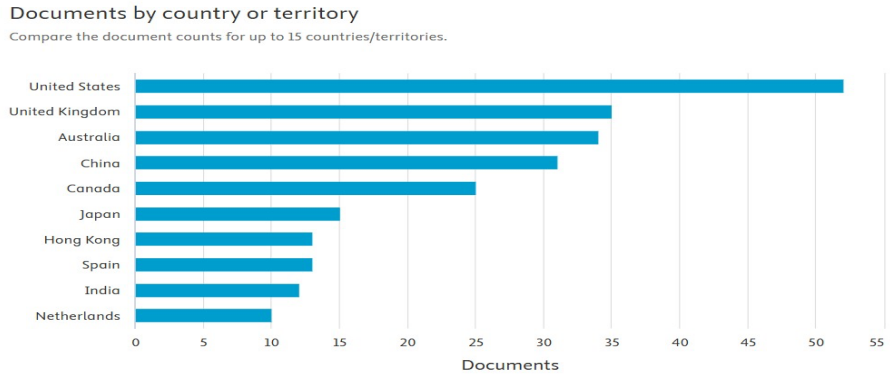


Figure 5 illustrates the number of documents published by country or territory, highlighting the publication output of the top ten nations. The United States is the clear leader, with over 50 papers, underscoring its dominant role in research and publication within this dataset. Following the United States are the United Kingdom and Australia, both with similar and high levels of output, each publishing in the mid-30s. China ranks fourth, contributing slightly over 30 documents.

There is a notable decrease in output after the top four countries, with Canada following in fifth place at approximately 25 documents. The remaining countries, Japan, Hong Kong, Spain, and India, each cluster between about 12 and 15 papers. The Netherlands has the lowest documented output among this group, with around 10 papers. Overall, the chart highlights a significant concentration of research output in a few English-speaking Western nations, with the United States producing substantially more documents than any other country in this dataset.

Figure 6: The Document by the author from 2015 to 2025.

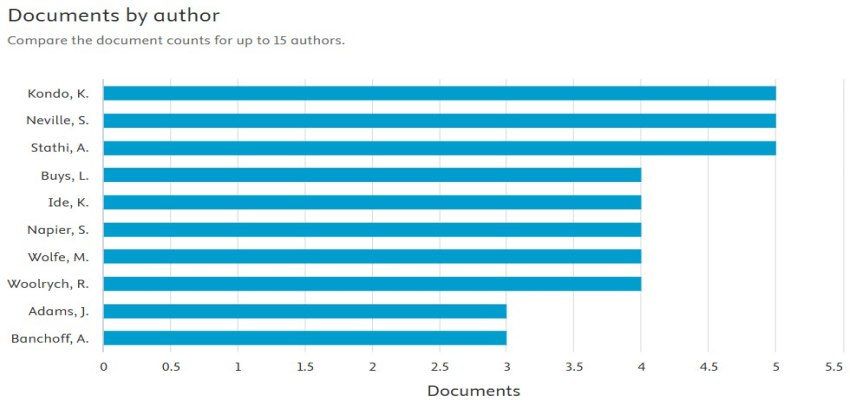


Figure 6 presents the document counts for the top ten authors in the dataset. The most prolific authors, Kondo, K., Neville, S., and Stathi, A., each contributed five documents, indicating a small group of highly productive researchers. The next tier consists of Buys, L., Ide, K., Napier, S., Wolfe, M., and Woolrych, R., with each contributing four documents. Lastly, Adams, J., and Banchoff, A., each contributed three documents. Overall, publication activity is dominated by a few authors, with eight contributors having four or five documents.

Figure 7: The Document by affiliation from 2016 to 2025.

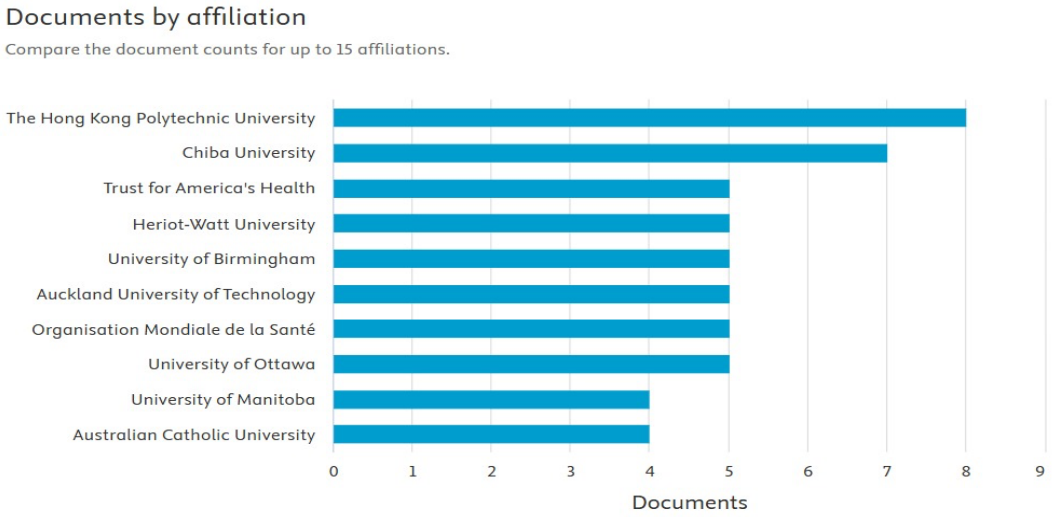


Figure 7 displays the document counts by affiliation for the top ten institutions. The Hong Kong Polytechnic University leads with eight documents, followed closely by Chiba University, which has seven. Several institutions, including Trust for America's Health, Heriot-Watt University, and the University of Ottawa, each contributed five documents. The institutions with the fewest contributions are the University of Manitoba and the Australian Catholic University, each with four documents. Overall, this data highlights the significant presence of research from prominent East Asian universities and various health organizations.

Geographic, Institutional, and Author Contributions

The research landscape of Aging-Friendly Communities (AFCs) is primarily dominated by a few leading countries, particularly the United States, the United Kingdom, Canada, and Australia, often referred to as the 'QUAD' group. These nations lead in both publication numbers and citations due to substantial government funding for aging studies and robust academic frameworks that connect public health policy with urban planning. This strong foundation has shaped evaluation models and measurement tools used in global research.

Between 2020 and 2025, countries in East Asia, particularly China and Japan, have experienced a significant increase in research output, driven by the urgent issue of rapid population aging. China has emerged as a leader in research volume, with a focus on urban AFCs and innovative technologies. European contributions remain strong, particularly from Germany and the Scandinavian countries, which produce noteworthy research on social care models and the integration of technology aimed at promoting independence and autonomy.

Research productivity is primarily concentrated in major universities that have specialized gerontology centers or schools of public health that emphasize community collaboration and engagement. Notable examples include research institutions in the QUAD nations that concentrate on rural AFC models and health disparities, as well as major metropolitan areas that serve as living laboratories for AFC implementation. Collaborations

are essential, and network analyses reveal strong connections within countries, such as consortia of U.S. universities, along with an increase in transcontinental partnerships, especially between North American and Asian research teams engaged in comparative policy studies and culturally adapted interventions (Hsu et al., 2023).

The contributions of individual authors highlight the interdisciplinary nature of the field, with leading figures coming from diverse backgrounds, including public health, gerontology, sociology, and urban planning. These influential authors act as intellectual hubs, recognized for their high citation counts and significant roles in collaboration networks, as indicated by their betweenness centrality. This metric reflects their importance in synthesizing perspectives and advancing multi-site studies, which are essential for generating globally relevant knowledge (Rowe et al., 2020). Furthermore, nursing scholars play a crucial role in ensuring that research findings are person-centered, practical for community implementation, and ethically sound.

Dominant Research Themes and Thematic Shifts

A systematic analysis of keywords and co-word associations reveals the intellectual development of the Age-Friendly Cities (AFC) field, which progresses through distinct thematic phases corresponding to evolving global challenges.

- **Early Phase (2015–2018): Infrastructure and Awareness**

The initial studies predominantly concentrated on assessing existing community conditions in relation to the WHO's eight domains, with primary themes focused on the physical environment and official policy processes: (1) Built Environment: The emphasis was on quantifying aspects like accessibility, transportation efficiency (including public transit usage and walkability evaluations), and structural adaptations for aging in place. Urban planning metrics played a key role in this theme. (2) Policy Adoption: The analysis examined the bureaucratic and political processes involved in joining the WHO Global Network of Age-Friendly Cities and Communities, as well as evaluating initial community awareness and stakeholder involvement. (3) Physical Health Outcomes: Research connecting AFC characteristics to specific physical health outcomes, such as a decrease in falls or an increase in physical activity, provided the foundational evidence supporting the public health significance of the initiative (Kim, M., Lee & Wang, 2021).

- **Transitional Phase (2019–2022): Social Inclusion and Technology**

During this period, the field matured by incorporating more intricate social determinants of health and addressing systemic matters, frequently in response to technological progress and early indications of social division: (1) Social Participation and Isolation: There was a notable shift toward comprehending and quantifying social capital, loneliness, and the success of intergenerational programs as vital aspects of community wellness. (2) Digital Inclusion: The identification of themes related to technology, smart homes, telehealth, and bridging the "digital divide" emerged as essential components of contemporary AFCs, acknowledging that technology influences access to social and health services. (3) Resilience and Preparedness: There has been a growing emphasis on a community's ability to withstand and recover from shocks, which has been significantly heightened by the pandemic, prompting researchers to explore acute vulnerabilities.

- **Current Phase (2023–2025): Equity and Systemic Resilience**

The ongoing research is marked by a focus on systemic equity, moving past merely listing domains to analyzing their interrelations, resource distribution, and varying impacts: (1) Community Resilience (Dominant Theme): This theme is rapidly expanding, focusing on how AFC frameworks including robust social networks, effective communication channels, and responsive local services contribute to sustained well-being and health outcomes amid and

following crises. This area is particularly pertinent to nursing practice, which emphasizes community sustainability and emergency preparedness. (2) Health Equity and Intersectionality: Studies increasingly examine how AFC initiatives affect marginalized subgroups (e.g., low-income older adults, racial and ethnic minorities, LGBTQ+ elders), bringing attention to disparities in access to age-friendly resources and the necessity for customized interventions (Walker & Smith, 2023). This demands an advanced analysis of social standing and resource distribution. (3) Integrated Care Systems (ICS): This theme focuses on the confluence of AFCs with official health and social care structures, stressing the importance of seamless transitions between hospitals, primary care, and community support systems. It highlights the necessity for preventative, holistic, and integrated care delivery. Crucially, as reflected in our author collaboration networks, nursing scholars are increasingly acting as 'intellectual hubs' within these integrated systems. By bridging clinical gerontology, public health, and the social sciences, nurse leaders synthesize diverse interdisciplinary perspectives. This unique positioning allows them to translate broad AFC frameworks into practical, person-centered interventions that effectively navigate complex community care networks.

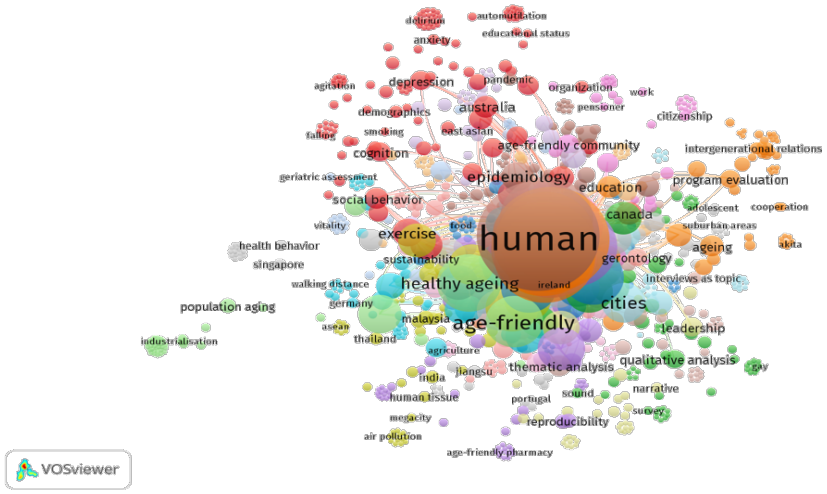
Methodological Approaches and Their Evolution

The methodological landscape of Age-Friendly City (AFC) research has undergone significant evolution, reflecting shifts in the thematic focus of the field. Initially, the approach shifted from primarily descriptive methods to more analytical, multi-site, and data-driven strategies.

In the early years (2015–2018), qualitative methods dominated the research, providing essential insights into implementation challenges. Key methods included: (2) Case Studies: Detailed narratives describing the implementation processes and outcomes in specific cities or towns. (2) Qualitative Data: Focus groups and semi-structured interviews were the primary techniques for gathering firsthand insights from older residents and community stakeholders (Lee & Park, 2020). These methods generated rich contextual information, which is crucial for foundational understanding and model refinement.

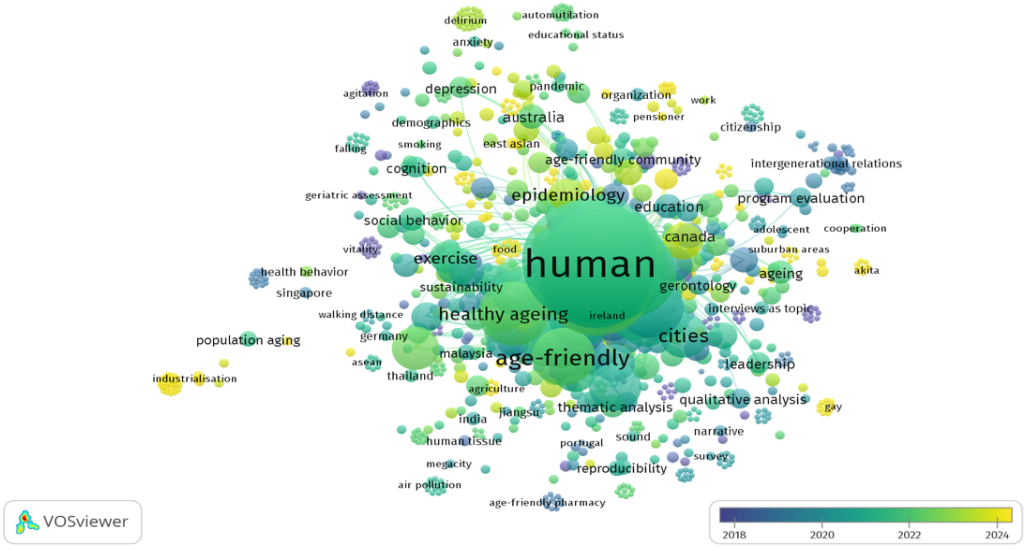
During the transitional and current phases (2019–2025), there has been a notable increase in the use of advanced quantitative and mixed-methods designs, which are essential for establishing generalizability and causal relationships. Key developments include: (1) Quantitative Surveys and Measurement: Researchers have focused on developing and validating standardized, psychometrically reliable tools to assess age-friendly characteristics, such as the AFC-Survey, AFCI, and indices of social capital. This progress enables large-scale comparative studies, establishes benchmarks, and provides evidence for resource allocation. (2) Mixed Methods: The integration of qualitative data (which provides contextual richness and understanding of mechanisms) with quantitative data (which enhances generalizability and assesses impact) has become standard for comprehensive evaluations of intervention effectiveness. (3) Data-Driven Mapping: The use of Geographic Information Systems (GIS) has become essential for illustrating walkability, service accessibility, and assessing the spatial distribution of age-friendly resources relative to population density. This technique allows researchers to identify "cold spots" in terms of age-friendliness, highlighting areas that require targeted policy interventions. (4) Scientometrics and Big Data Analytics: There is an increasing application of bibliometric techniques, alongside computational methods and machine learning tools (including topic modeling and natural language processing). These tools analyze large datasets, such as electronic health records, community service usage data, and publicly available datasets. This level of methodological sophistication is necessary for creating predictive models related to healthy aging pathways and community risk assessments (Petersen et al., 2024).

Figure 8: VOS viewer Keyword Co-Occurrence Network.



This figure 8 co-occurrence map illustrates the main research themes present in academic literature, with the size of each sphere representing the frequency of the corresponding terms. The central theme, "human," is closely connected to two major clusters: Epidemiology and Age-Friendly Environments. The first cluster, depicted by a large orange sphere, focuses on Epidemiology, highlighting the psychological and social factors that affect health in the aging population. Key terms in this cluster include "depression," "anxiety," "agitation," "smoking," and studies specific to "Australia," which emphasize mental health outcomes and associated risk factors. The second cluster centers on Healthy Aging and Age-Friendly Environments. It emphasizes "cities" while exploring practical, environmental, and behavioral aspects of longevity. This cluster connects concepts such as "exercise," "social behavior," "sustainability," and "walking distance," all of which are relevant to nursing practice and community planning for older adults. A smaller third cluster is associated with "qualitative analysis," indicating in-depth studies in gerontology and education. Overall, the map reflects the intersection of health sciences, social sciences, and environmental planning in aging research.

Figure 9: VOS viewer: The overlay map.



This figure 9 co-occurrence map highlights key research themes from 2018 to 2024 in the fields of aging and community studies. The central theme is "human," linked to two major clusters: Epidemiology and Age-Friendly. The Epidemiology cluster (large orange sphere) emphasizes psychological and social health factors in older adults, focusing on terms like "depression," "anxiety," and risk factors such as "smoking." This reflects established studies on mental health outcomes. The Age-Friendly cluster (notable for its yellow/green coloring) focuses on Healthy Ageing, particularly in urban environments. It explores themes such as "exercise," "social behavior," and "sustainability," which are relevant to nursing practice and community planning. Emerging themes, such as leadership, qualitative analysis, and program evaluation, indicate a contemporary shift toward applied research and community-based solutions, which bridge health science, social science, and environmental planning.

Figure 10: Density Visualization of Keyword Co-Occurrence.

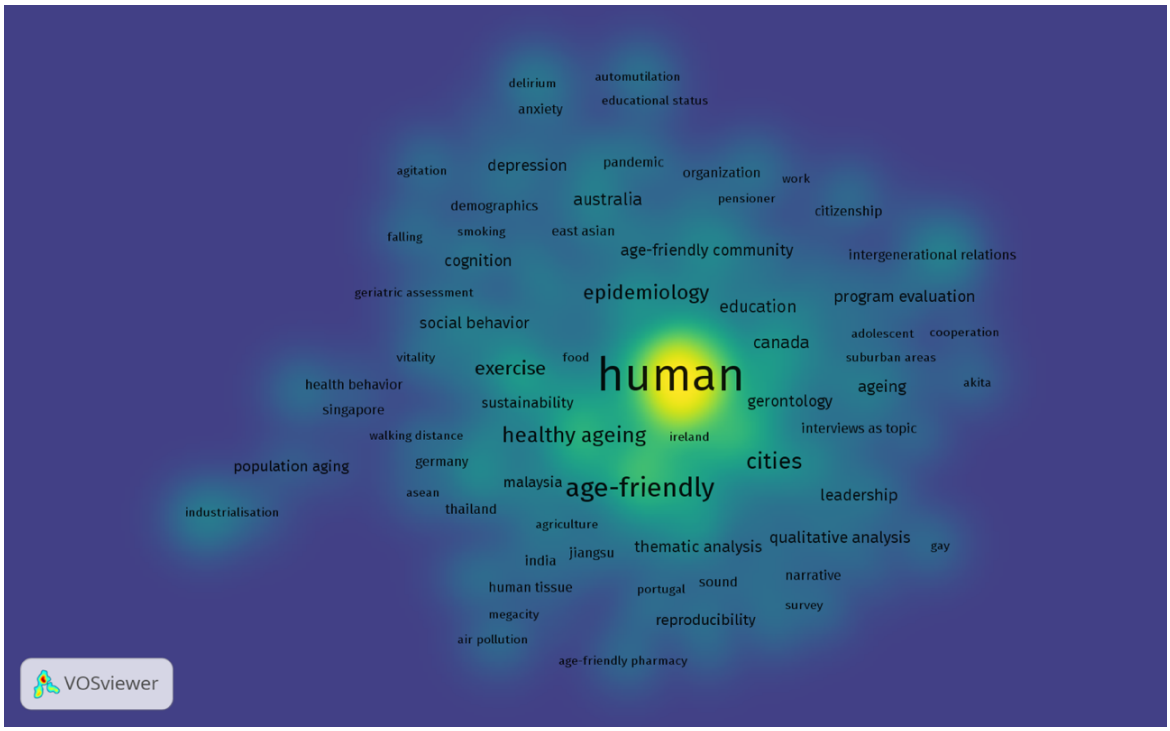


Figure 10 displays a density map based on term co-occurrence, visually representing the key areas of focus and intensity within academic literature on aging. The bright yellow regions indicate the highest concentration of research, highlighting the most frequently and strongly connected themes.

The map underscores the centrality of humans as the primary subject of study. From this center, three main high-density clusters emerge. The most intense cluster centers on Healthy Aging and Age-Friendly Cities, encompassing essential concepts related to functionality and the environment, such as exercise, social behavior, sustainability, and walking distance. This suggests a strong research emphasis on creating supportive environments and promoting behavioral health for older adults, which is particularly relevant for community nursing. A second significant but slightly less intense density area is the Epidemiology cluster, which is connected to clinical and psychological terms like depression, anxiety, and cognition. This focus addresses the mental health and clinical risk factors associated with aging. The third, less centralized density area is located in the lower-right portion of the map and revolves around Qualitative Analysis and Thematic Analysis. This highlights a growing methodological

sophistication in the field, indicating a shift from large-scale quantitative studies to include more in-depth, narrative-based research. Overall, the map clearly indicates that practical, community-oriented solutions for healthy aging are driving the contemporary research agenda.

Implications for Nursing Practice, Education, and Policy

The findings of this bibliometric analysis provide valuable insights for the nursing profession as it navigates the complexities of an ageing population.

In both clinical and community practice, geriatric and public health nurses can utilise the identified high-density research clusters, such as "social behaviour," "exercise," and "healthy ageing", to design targeted, evidence-based interventions. For instance, implementing structured intergenerational reminiscence programs within community settings directly addresses critical themes highlighted in recent literature, including social isolation, cognitive health, and community resilience. By focusing on sustained, community-level engagement rather than episodic individual care, nurses can significantly improve holistic patient outcomes and foster strong social support networks.

In nursing education, the trend toward data-driven, mixed-methods studies indicates a pressing need to update academic curricula. Future nursing professionals must be trained not only in clinical gerontology but also in community assessment tools, mapping of health resources, and implementation science to evaluate and design Age-Friendly Communities (AFC) effectively.

At the policy level, the bibliometric data emphasise the need for context-specific strategies rather than one-size-fits-all models. Nurse leaders and policymakers can use these global trends to advocate for incorporating local knowledge and cultural philosophies into formal regional health regulations. By ensuring that AFC initiatives respect and integrate indigenous communal values and local regulatory frameworks, nurses can help develop sustainable, culturally relevant health policies that enhance the resilience of vulnerable older adult populations.

Limitations

This bibliometric analysis provides a detailed overview of the intellectual framework; however, it has several limitations related to its methodology. First, data were collected from specific commercial databases, such as Scopus. While these platforms are comprehensive, they favor English-language publications and high-impact journals. As a result, important "grey literature" (such as policy reports and local government documents), regionally published reports, and research from non-Western areas, when published in their original languages, may be underrepresented. This can lead to biases related to language and geography in global assessments.

Secondly, the reliance on keywords, titles, and abstracts to classify themes common in co-word analysis may overlook the nuanced content found in complete articles, particularly when it comes to unexpected outcomes or subtle policy contexts. Thirdly, the quality and design of primary studies are crucial for evidence-based policy; however, they cannot be assessed solely through bibliometric indicators, such as citation counts or journal prestige. These metrics often reflect a study's overall popularity or the age of the publication, rather than its true methodological rigor. For instance, a highly cited paper may be a foundational yet methodologically simple conceptual model.

Furthermore, the ten-year scope (2015–2025) provides a limited perspective. It may miss significant earlier contributions that paved the way for the mainstream acceptance of the AFC concept or any lag effects in policy implementation. Lastly, the analysis does not address

the practical gap in translation, the disparity between publishing significant findings and their actual application in municipalities and healthcare systems.

Conclusion

A bibliometric study of the Age-Friendly Community (AFC) research landscape from 2015 to 2025 reveals that this field is undergoing rapid evolution. It is moving beyond its conceptual foundations and policy establishment to a stage marked by advanced, data-informed, and resilience-oriented research. Initially, research in this area was dominated by the 'QUAD' group, but this is now being balanced by increasing contributions from East Asian countries. This shift indicates a global change in research priorities, reflecting the urgent nature of demographic changes.

The thematic progression in this research is particularly noteworthy. It has shifted from focusing on concrete aspects, such as the built environment, to addressing more systemic and abstract issues like digital inclusion, social equity, and community resilience. This demonstrates the integration of AFC concepts into the broader context of social determinants of health.

For the nursing field, these insights underscore the significance of translational research and leadership within community contexts. Nurses operate at the intersection of formal healthcare and community support systems, so future research must prioritize the development and evaluation of community interventions led by nurses that apply AFC principles. Specifically, the bibliometric data suggests an urgent need for more robust research addressing digital health equity for rural elders, alongside the development of culturally adapted intergenerational care models. This focus can help strengthen resilience and reduce health disparities among older adults at risk.

Ethical Approval

Ethical approval was not required for this study, as it did not involve human participants

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Author Contributions

SKD developed the research design, collected and analyzed the bibliometric data, and prepared the initial manuscript draft. MN managed the research process, ensured data validation, and completed the manuscript for submission. SL and OO provided essential oversight throughout the study, offering conceptual support and reviewing the analytical framework. All authors reviewed the results, contributed to the final manuscript, and approved the submitted version.

Informed Consent

Informed consent was not necessary because the study did not involve human subjects.

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