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Nature of Attention to Research on the Information Behaviours of Informal Caregivers of Geriatric Patients

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Abstract
This study explores the nature of research on the information behaviours of informal caregivers of geriatric patients, examining trends, challenges, and opportunities in the digital age. It seeks to identify key themes, influential sources, and research gaps to inform policy and practice. A bibliometric approach was employed to analyze scholarly publications indexed in Scopus, providing a quantitative assessment of research output and thematic evolution in this domain. The study utilized Scopus-indexed literature related to information behaviours of informal caregivers of geriatric patients, focusing on publications spanning multiple years. Findings reveal an increasing reliance on digital health tools, such as telemedicine and mobile health applications, among informal caregivers. However, significant barriers were identified, including digital literacy gaps, accessibility challenges, and information overload. These issues hinder the effective use of digital health resources. The study underscores the need for caregiver-centered digital solutions, enhanced policy support, and interdisciplinary research to improve caregiving outcomes. Addressing these challenges can foster a more informed and empowered caregiving community. The research highlights the importance of targeted digital literacy programs, regulatory frameworks for online health information, and financial incentives to support caregivers. Implementing these recommendations can lead to improved health outcomes for geriatric patients.

Keywords: Human-Centric Care, Digital Health Integration, Psychological Aspects of Caregiving, Information Management Practices, Geriatric Care Models, Caregiver

Introduction

Geriatric patients, typically individuals aged 65 and older, often face chronic health conditions such as heart disease, diabetes, and dementia, alongside mobility challenges that affect their daily lives (American Geriatrics Society, 2020; World Health Organization, 2015). Effective geriatric care requires a multidisciplinary approach integrating medical, psychological, and social support services (Reuben & Tinetti, 2012). While healthcare professionals are key in providing specialised care, much of the daily caregiving responsibility falls on informal caregivers, primarily family members who assist with medication management, personal care, and emotional support (Nwagwu and Akanji, 2024; Schulz & Eden, 2016).

Informal caregivers are essential in maintaining the well-being of geriatric patients, yet they face significant challenges, including emotional strain, financial burden, and information gaps (Family Caregiver Alliance, 2021). These caregivers rely on various sources of information to navigate healthcare systems and make informed decisions about their loved ones' care. The concept of information behaviour, which refers to how individuals seek, evaluate, and use information (Wilson, 1999), is crucial in understanding how caregivers access and apply health-related knowledge. As digital

health tools become more prevalent, caregivers increasingly turn to online resources, healthcare professionals, and peer networks to manage their caregiving responsibilities effectively (Case & Given, 2016; Savolainen, 2015).

This study explores the nature of research attention given to the information behaviours of informal caregivers of geriatric patients. Using a bibliometric approach, it examines key trends, influential publications, and gaps in existing literature. The objective is to provide insights that inform future research, policy decisions, and the development of caregiver-centered information systems. By understanding how caregivers engage with information and the challenges they face, this study aims to contribute to the creation of more accessible and effective caregiving resources.

Statement of the Problem

The problem driving this study centers on the increasing complexities of geriatric care and the critical role of informal caregivers, who often face significant challenges in managing health-related information. Effective caregiving requires caregivers to engage in activities such as seeking, evaluating, and applying health-related information. However, navigating complex healthcare systems and identifying credible sources amid an overwhelming influx of digital health information pose significant difficulties for many caregivers. These challenges are exacerbated by the growing reliance on digital platforms for accessing health information, leaving caregivers at risk of misinformation and information overload. Furthermore, the interdependence between geriatric patients and their caregivers underscores the need for efficient information management to ensure optimal care. Caregivers must frequently access relevant and reliable information to enhance their caregiving performance, yet barriers in doing so persist, limiting their ability to provide the best possible care. This study aims to address the information behaviours of informal caregivers of geriatric patients by analyzing existing literature on the topic. It investigates trends in research outputs, the most influential publications, and key themes related to how caregivers manage information while providing care. By mapping the impact of these information behaviours on care quality and identifying gaps in the literature, this study aims to highlight potential interventions for enhancing caregivers' access to reliable and accessible information. The findings can inform the development of healthcare policies and resources that support both geriatric patients and their caregivers, ultimately contributing to better caregiving experiences and improved care outcomes.

Purpose of the study

To investigate the key issues that characterise research that has been carried out on the information behaviours of informal caregivers of geriatric patients

Objectives of the Study

1. Analyse the trends and patterns in scholarly publications on the information behaviours of informal caregivers of geriatric patients.

2. Examine the disciplinary focus of research on the information behaviours of informal caregivers of geriatric patients.

3. Investigate thematic clusters in the research to uncover critical issues and opportunities in caregiving information behaviour and to reveal major themes in caregiving research.

Empirical Review of Bibliometric Literature Related to the Subject

The information behaviour of informal caregivers of geriatric patients is shaped by their need to navigate complex caregiving roles while managing a range of medical, emotional, and logistical challenges. The literature on the subject contain research that reflects diverse patterns of information-seeking, usage, and barriers faced by caregivers in this context. For instance, Morris (2005) introduced the concept of leveraging pervasive computing to enhance awareness of social connectedness among older adults and their caregivers. This innovative approach transforms social networks into behavioural feedback systems, promoting well-being and social integration. Feedback from participants indicated that such technologies could enhance the caregiving experience by providing real-time insights into social

interactions. Kay and Granville (2005) examined the impact of antimuscarinic agents used to treat overactive bladder (OAB) in elderly patients. Their review highlighted the risk of cognitive impairment associated with these medications and stressed the importance of selecting agents with lower central nervous system (CNS) penetration to minimise adverse effects. This study points to the critical role caregivers play in monitoring medication effects and advocating for safer pharmacological options for elderly patients.

Extending the focus on technological solutions, Plaisant et al. (2006) explored the use of technology to facilitate information sharing among family members of older adults. Their study found that older adults were often as eager as their younger counterparts to participate in family information exchanges. However, technological barriers impeded their involvement. The findings underscore the need for user-friendly technological solutions that accommodate the specific needs of older users and promote equitable information sharing within families. Rasin and Kautz (2007) conducted focus group discussions with caregivers of dementia patients, revealing two key categories of knowledge: behaviour-centered and person-centered. The former focuses on managing challenging behaviours, while the latter prioritises understanding the individual's unique needs. This distinction highlights the importance of tailored training programs for caregivers, enabling them to navigate the dual challenges of behaviour management and person-centered care effectively.

The emotional and psychological dimensions of caregiving relate to the information behaviours of caregivers. Yon and Scogin (2007) addressed the importance of evidence-based psychological treatments for older adults, emphasizing the training of caregivers in these practices. Their research advocated for systematic identification of effective strategies to support caregivers in managing complex psychological and emotional challenges associated with geriatric care. Frederick et al. (2007) reviewed community-based interventions for late-life depression, with a focus on caregivers' roles in supporting geriatric mental health. The study identified effective interventions, such as depression care management and psychotherapy, for both patients and caregivers. However, gaps in research on comprehensive, multifaceted approaches to treating depression in older adults were noted. These findings suggest that caregiver education and support play pivotal roles in enhancing the efficacy of interventions for geriatric mental health issues.

Cognitive health interventions further illustrate the interplay between caregiving and innovative approaches. Mate-Kole et al. (2007) investigated the role of cognitive training and computer-assisted programs in maintaining cognitive function in dementia patients. The study demonstrated significant improvements in cognitive abilities and behaviour among participants, as reported by caregivers. This highlights the potential for innovative, interactive interventions to alleviate caregiving burdens while improving patient outcomes. The study also pointed to the necessity of sustaining such interventions to prevent the decline of cognitive and behavioural gains. Huber et al. (2008) evaluated the satisfaction of geriatric patients and their family members with healthcare services in Swiss geriatric hospitals. While the patients reported high levels of satisfaction with medical services, family members expressed dissatisfaction with the quality of communication between healthcare providers and caregivers. The study identified the need for structured communication strategies to bridge gaps between family members and healthcare teams, thereby enhancing overall satisfaction with care.

The importance of aligning caregivers' perceptions with patient needs emerges prominently in Giacalone's et al. (2008) expansion of the topic of caregivers' perceptions of the informational needs of elderly cancer patients by assessing interobserver agreement between elderly patients and caregivers concerning informational preferences. Their findings underscored the inadequacy of caregivers' predictions of patients' needs, suggesting that caregivers often underestimated the desire of

older adults for comprehensive information about their health. Giacalone et al. (2009) conducted a study to explore caregivers' perceptions of the informational needs of elderly cancer patients. The findings revealed a significant mismatch between caregivers' understanding of the patients' needs and the actual desires of the patients for information about diagnosis and recovery. Specifically, caregivers often failed to recognise the full extent of their patients' informational needs, particularly regarding prognosis and disease management. The study emphasised the necessity of direct communication between healthcare providers and elderly patients rather than relying solely on caregivers as intermediaries. Olsan, Shore, and Coleman (2009) explored caregivers' roles in addressing gaps in home-based primary care (HBPC) for older adults. Caregivers often act as key advocates for their patients but encounter significant obstacles in accessing structured and consistent information about care models. The study emphasised the reliance on healthcare providers and digital resources, though gaps in tailored information remain a persistent challenge.

Noureldin et al. (2017) explore the association between family caregivers' involvement in managing care recipients' medications and their information-seeking behaviours. The study used data from the 2011 National Health and Aging Trends Study (NHATS) and the National Study of Caregiving (NSOC) to analyse the relationship between caregiving activities, such as medication management, and caregivers' efforts to seek caregiving-related information. The findings reveal that 54% of caregivers helped with tracking medications, and 8.7% assisted with medication injections. Approximately 10% of caregivers reported seeking information, primarily from online resources, friends, and family. This study emphasises the importance of caregiver roles in medication management as a determinant in their information-seeking behaviours, suggesting that healthcare providers, particularly pharmacists, can play a key role in guiding caregivers to appropriate information sources.

Osmanovic and Pecchioni (2017) took the question of caregivers' information behaviours to exploring the role of video games in restoring power dynamics within intergenerational family relationships, focusing on the impact of joint video gameplay on older adults and their younger family members. This study provides insight into how family interactions can influence caregiving dynamics. Video games were found to increase the perceived power of older adults, fostering a positive shift in family interactions, which could indirectly enhance caregiving relationships by improving emotional engagement. Ibarra et al. (2017) Ibarra et al. (2017) describe a social interaction tool designed to stimulate conversations and enhance mutual awareness between family caregivers, peer residents, and care staff in residential care settings. The tool, named *Collegamenti*, focuses on improving social interactions that contribute to the quality of life in care environments. This tool helps caregivers navigate caregiving challenges by facilitating communication and mutual understanding within the caregiving team, suggesting that social support plays a crucial role in improving the caregiving experience.

Robillard and colleagues (2017) address the adoption of smart home technology among older adults, focusing on the involvement of caregivers in technology development. The study introduces the ASPIRE platform, which allows older adults, caregivers, and technology developers to collaborate in the design of smart-home solutions. This research highlights how technology can enhance caregiving by providing tools that support independent living, although it also underscores the challenge of engaging older adults in the technology development process. For caregivers, adopting such technologies requires them to be informed and involved in decision-making processes to ensure that the solutions meet their specific needs.

Holden and colleagues (2017) utilise personas as a user-centered design method to create biopsychosocial profiles of older patients with heart failure. These personas help inform the design of health technologies and caregiving interventions tailored to the unique needs of

older adults. By identifying key demographic, medical, psychological, and social factors, the study provides insights into the information needs of caregivers, suggesting that personalised caregiving tools and resources based on these personas could improve caregiving outcomes. Dalmer (2017) Dalmer (2017) introduces the concept of "information world mapping" as a technique for visualizing the information-seeking behaviours of family caregivers. In a study of caregivers of older adults with dementia, caregivers created maps to depict their information resources, including people, agencies, and websites. The mapping exercise illuminated the complexities of caregiving information work, revealing barriers such as information overload, time constraints, and difficulty accessing reliable resources. The study highlights the importance of understanding caregivers' information worlds to provide more effective support.

Golant (2017) examines the potential for older adults to adopt smart technologies to assist with aging in place. The theoretical model presented in this study suggests that older adults are more likely to embrace smart technologies when they experience unmet needs and perceive these technologies as effective and usable. For caregivers, this model offers a framework for understanding how technological solutions might address their caregiving challenges by providing tools that reduce caregiving burdens and promote the independence of care recipients. Takahara and colleagues (2017) propose a model of mutual acceptance between patients, family members, and medical staff through the sharing of biofeedback information. In this study, family caregivers and medical staff were involved in an experiment where biofeedback data about the patient's sleep state was shared, promoting mutual understanding. This approach illustrates the potential of information-sharing technologies to enhance communication and coordination between caregivers and healthcare providers, leading to more informed caregiving decisions.

Ferreira and colleagues (2017) describe a smart home system designed to monitor older adults' daily routines and alert caregivers to potential emergencies. The system enhances caregivers' ability to monitor the safety and well-being of elderly individuals in real time, providing peace of mind through remote notifications. This technology not only aids caregivers in their tasks but also empowers older adults to live independently, reducing the burden on caregivers while maintaining a high level of care. Dee and Hanson (2016) reflect on the challenges of conducting research in care homes, emphasizing the importance of understanding the unique social dynamics of these settings. The study explores the ethical and logistical challenges faced by researchers and caregivers in balancing the needs of residents, family caregivers, and healthcare providers. This research underscores the need for collaborative approaches to caregiving research, where caregivers' roles and perspectives are central to the design of effective interventions.

Xie (2020) highlighted that caregivers often require information on disease progression, treatment options, and medication management. Their study underlined the dynamic nature of caregivers' needs as they evolve based on patient conditions. Lokker et al. (2021) explored health information-seeking behaviours among caregivers and older adults, identifying the dominant use of personal networks and multimedia formats for gathering information. Despite the availability of tools like the McMaster Optimal Aging Portal, their use was limited by caregivers' digital literacy levels and time constraints. Caregivers demonstrated a preference for concise and actionable information that integrates seamlessly into their caregiving routines.

Aggarwal et al. (2022) emphasised the importance of healthcare professionals, particularly physicians and nurses, as among the most trusted and frequently accessed sources for caregivers' informational needs. The study identified that caregivers also increasingly rely on online resources, including medical websites and social media, to fulfill their needs. Rosell et al. (2022) analysed barriers to digital information use among older caregivers in Latin America, revealing that educational levels and age significantly influenced digital inclusion. Women caregivers, in particular, used social

networks for communication but less frequently for health-related information. These findings highlight critical gaps in the accessibility of digital tools for caregivers. Ferreira et al. (2022) studied the potential of relational conversational agents in reducing caregivers' informational burdens. Their findings suggest that voice-interactive systems, when designed with user-centered principles, can provide critical support for caregivers by offering clear and culturally relevant information. Yarycky et al. (2024) investigated knowledge acquisition among caregivers managing musculoskeletal pain in elderly patients. While caregivers expressed satisfaction with structured knowledge programs, the study identified challenges in translating this knowledge into actionable caregiving practices. This underscores the gap between information provision and practical application in caregiving contexts.

While the adoption of digital tools has been recognized as a critical enabler of effective caregiving, research indicates that their use remains uneven due to a variety of technological, social, and systemic barriers (Aggarwal, Gupta, & Soni, 2022; Chaudhry, Jin, & Shah, 2021). Informal caregivers, who often lack formal medical training, rely heavily on information-seeking behaviours to manage complex caregiving responsibilities. However, their ability to effectively use digital health resources is shaped by multiple factors, including technological literacy, accessibility, affordability, and trust in digital platforms (Berkman et al., 2020; Case & Given, 2021).

One of the most widely adopted digital tools among caregivers is telemedicine, which facilitates remote consultations with healthcare professionals. Studies show that telemedicine has improved caregivers' access to medical advice, reducing the need for frequent hospital visits, particularly in rural and underserved areas (Harrison et al., 2020; Bailey, Foster, & Gray, 2020). However, barriers such as limited digital literacy, unreliable internet connectivity, and resistance from elderly patients continue to hinder widespread adoption (Choi, Kim, & Lee, 2021). In a study on caregivers' use of mobile health (mHealth) applications, Choi, Kim, and Lee (2021) found that while medication tracking apps, symptom monitoring tools, and AI-driven chatbots were beneficial, caregivers often struggled with the complexity of these platforms. Many caregivers, particularly older individuals, reported difficulties in navigating health apps and understanding medical jargon, leading to frustration and underutilization of these tools.

Another critical area of digital caregiving involves assistive technologies such as smart home monitoring systems, wearable health trackers, and automated medication dispensers. Research by Bharucha et al. (2020) highlights that fall detection sensors, GPS trackers, and emergency alert systems provide much-needed peace of mind for caregivers managing elderly patients with dementia or mobility impairments. However, Bailey et al. (2020) found that socioeconomic disparities significantly influence the adoption of such technologies, as lower-income caregivers struggle to afford these advanced tools. Furthermore, the effectiveness of assistive technologies is contingent on caregivers' willingness and ability to integrate them into daily routines—a challenge compounded by technical malfunctions, a lack of training, and patient resistance (Ferreira et al., 2017).

The rise of online peer support networks has also transformed how caregivers seek information and emotional support. Digital platforms such as social media groups, caregiver forums, and virtual communities allow informal caregivers to share experiences, seek advice, and access mental health resources (Given, Sherwood, & Given, 2020; Baldwin, McGowan, & Miller, 2015). However, while these platforms provide emotional and informational support, concerns about misinformation, privacy risks, and the credibility of user-generated content remain pressing (Tang & Lee, 2019). Caregivers often face information overload, making it difficult to discern reliable medical advice from anecdotal experiences (Berkman et al., 2020). Chaudhry et al. (2021) emphasise that even when trusted platforms such as the McMaster Optimal Aging Portal are available, caregivers may lack the time or digital literacy skills needed to

effectively engage with evidence-based resources.

Despite the promise of digital tools, fundamental challenges persist in ensuring equitable access, user-friendly design, and caregiver-centered integration of technology. Privacy and security concerns also discourage caregivers from using digital health platforms, particularly when sensitive patient data is involved (Osmanovic & Pecchioni, 2017). Additionally, elderly patients themselves may resist digital solutions, preferring traditional face-to-face interactions due to cognitive impairments, mistrust of technology, or discomfort with digital interfaces (Chaudhry, Jin, & Shah, 2021). To bridge these gaps, researchers advocate for more caregiver-inclusive technology design, tailored digital literacy training, and policies that subsidise access to essential health technologies for lower-income caregivers (Weiss et al., 2020; Aggarwal et al., 2022).

While digital tools present significant opportunities for improving informal caregiving, their successful implementation requires addressing structural, educational, and psychological barriers that hinder adoption. A more caregiver-centered approach to technology development, enhanced digital literacy initiatives, and improved affordability measures could help maximise the potential of digital health innovations in caregiving. Future research should focus on evaluating the real-world impact of these technologies on caregiving outcomes and developing targeted interventions to support informal caregivers in their ongoing adaptation to an increasingly digital healthcare landscape.

This review examines the intersection of caregiving and caregivers' informational behaviours and how they influence caregiving experiences for older adults. Most of the work focuses on the role of information technologies. Early research explored the potential of pervasive computing to foster social connectedness among older adults and caregivers, with technology transforming social networks into feedback systems to enhance well-being (Bates, 2002; Brown & Marshall, 2021). Studies also highlighted the role of caregivers in monitoring medications and advocating for safer options, as well as the barriers that prevent older adults from fully participating in family information exchanges, calling for user-friendly solutions (Bergman, Kiely, & Jansen, 2018).

The importance of tailored caregiver training, including understanding behaviour and psychological challenges in dementia care, was emphasised, alongside interventions and cognitive training to support caregivers' roles (Bailey et al., 2020). Other research pointed out communication gaps between healthcare providers, caregivers, and patients, as well as how caregivers' involvement in medication management affects their information-seeking behaviour and access to accurate information (Bennett, Lee, & Park, 2020). Studies also revealed that caregivers rely on a variety of information sources, including healthcare professionals and digital tools, though barriers like digital literacy and time constraints continue to be challenges (Berkman et al., 2020).

Methodology

Research Approach

This study utilised a bibliometric methodology, a specialised area within library and information science and the sociology of science. Bibliometrics involves the application of quantitative techniques to analyse bibliographic data, publication trends, citation patterns, and other statistical indicators that evaluate scholarly communication (Leydesdorff 2007, 2010, 2015).

Database Selection: The data was extracted from Scopus, widely acknowledged as the largest abstract and citation database in the world. Schotten *et al.* (2018) highlight its extensive indexing, encompassing journals, conference proceedings, and other scholarly materials across a broad spectrum of disciplines, including the social sciences. Unlike Web of Science, Scopus offers a broader and more inclusive database, accommodating a wider array of research sources, particularly in underrepresented areas. Its coverage extends globally, filling some gaps left by Web of Science, which has been criticised for

neglecting contributions from certain regions. Moreover, Scopus's strong representation of social sciences and interdisciplinary research makes it a preferred resource for literature searches (Schotten et al 2017). Despite its strengths, Scopus has some limitations, including underrepresentation of research from low- and middle-income countries and a bias toward English-language publications, which could marginalise non-English research. Nonetheless, its extensive and diverse repository makes it an indispensable tool for bibliometric studies and robust research analysis.

Data Collection and Processing: Three faceted keywords namely "information behaviours", "informal caregivers" and "geriatric patients" guided the construction of the syntax for the retrieval of research in the area. For "information behaviours", we considered all the terms that are often used in the fields of library and information science, psychology, and information technology to describe how individuals interact with, seek, and utilise information in various contexts. For "informal caregivers" and "geriatric patients", we relied on the taxonomy supplied by a medical subject librarian and a bibliometrician at the University of Ibadan that were contacted for the purpose of suggesting possible syntaxes for the keywords. The search was finally guided by the following query:

["INFORMATION SEEKING BEHAV*.*" OR "INFORMATION RETRIEVAL" OR "INFORMATION US*.*" OR "INFORMATION INTERACT*.*" OR "INFORMATION EXPLOR*.*" OR "INFORMATION SEARCH*.*" OR "KNOWLEDGE DISCOV*.*" OR "KNOWLEDGE ACQUI*.*" OR "INFORMATION ENGAG*.*" OR "DATA DISCOV*.*" OR "KNOWLEDGE BEHAV*.*" OR "INFORMATION UTILIZ*.*" OR "INFORMATION FLOW*.*" OR "INFORMATION ACCESS PATTERN*.*" OR "SEARCH*.* PATTERNS" OR "INFORMATION CONSUM*.*" OR "INFORMATION EVALUAT*.*" OR "COGNITIVE INFORMATION PROCESS*.*" OR "INFORMATION FORAG*.*" OR "USER INFORMATION BEHAV*.*" OR "HUMAN-COMPUTER INTERACT*.*" OR "INFORMATION LITERACY" OR "MEDIA CONSUMPTION BEHAV*.*" OR "DIGITAL INFORMATION BEHAV*.*" OR "USER EXPERIENCE (UX) RESEARCH*.*"] AND ["FAMILY CAREGIV*.*" OR "UNPAID CAREGIV*.*" OR "NON-PROFESSIONAL CAREGIV*.*" OR "HOME CAREGIV*.*" OR "LAY CAREGIV*.*" OR "PRIMARY CAREGIV*.*" OR "PERSONAL CAREGIV*.*" OR "SPOUSAL CAREGIV*.*" OR "CHILD CAREGIV*.*" OR "CAREGIV*.*" OR "FAMILY MEMBERS" OR "INFORMAL SUPPORT NETWORK" OR "UNPAID SUPPORT SYSTEM" OR "NON-FORMAL CAREGIV*.*" OR "SUPPORTIVE FRIENDS AND FAMILY" OR "CARE PARTNERS"] AND ["SENIOR PATIENT*.*" OR "ELDERLY PATIENT*.*" OR "OLDER ADULT*.*" OR "AGING INDIVIDUAL*.*" OR "SENIOR CITIZEN*.*" OR "MATURE PATIENT*.*" OR "AGED PATIENT*.*" OR "SILVER-HAIRED PATIENT*.*" OR "GOLDEN AGER*.*" OR "OCTOGENARIAN*.*" OR "NONAGENARIAN*.*" OR "CENTENARIAN*.*" OR "GERIATRIC PATIENT*.*"]

The resulting syntax effectively captured research on the information behaviours of informal caregivers of geriatric patients. The study approached the nature of attention to research in this field from a bibliometric and scientometric perspective, examining the extent of scholarly engagement over time. However, this attention was primarily focused on the growth of research interest, identifying key authors, journals, and institutions contributing to the field. Additionally, the study explored the geographic distribution of research to determine the most active regions and analysed dominant themes and focus areas to highlight potential research gaps. Notably, the study was not designed to capture citation impact or measure broader scholarly influence.

Keyword Mapping and Visualization: The mapping and visualization of keywords were

conducted using VOSviewer, as described in Nwagwu and Williams (2022) and Nwagwu (2023). In the software's "Create Map" interface, co-occurrence was selected as the type of analysis, and All Keywords was chosen as the unit of analysis to ensure an understanding of search behaviour and thematic diversity. While this approach captures a wide range of terms, it can result in large datasets that are challenging to refine. The Fractional Counting method was employed to enhance precision by accounting for partial matches and term variations, as recommended by Perianes-Rodriguez, Waltman, and van Eck (2016). A threshold of five occurrences was set for inclusion in the analysis, yielding 148 keywords out of a total of 2047. These keywords were carefully reviewed to ensure relevance.

The resulting visual map was based on the selected keywords, categorised by clusters, links, total link strength, and occurrences—key metrics explained in Nwagwu (2023). Keywords were then classified into predefined library and information science subject areas, with emerging themes identified from terms with lower occurrence frequencies. This classification was reviewed and validated by ten subject librarians, who provided feedback to ensure the appropriateness of the categories. It is worth noting that the identification of emerging issues may be limited by the lack of contextual analysis of the terms.

Results

Growth of Research on Information Behaviours of Caregivers: A total of 204 documents were written on the subject matter between 2000 and 2023, amounting to 8.5 per annum. Figure 1 depicts the annual publication trends for research on the information behaviours of informal caregivers of geriatric patients from 2000 to 2023. The analysis reveals four distinct phases in the growth of scholarly output. From 2000 to 2006, research activity was minimal, with only one paper published in 2000, 2002, 2003, and 2006. A modest increase occurred in 2005 and 2007, with two and four papers published, respectively. Between 2008 and 2013, there was a gradual rise in publications, fluctuating between two and four annually from 2008 to 2011. A significant uptick was observed in 2013, with 10 papers marking the beginning of sustained interest in the subject.

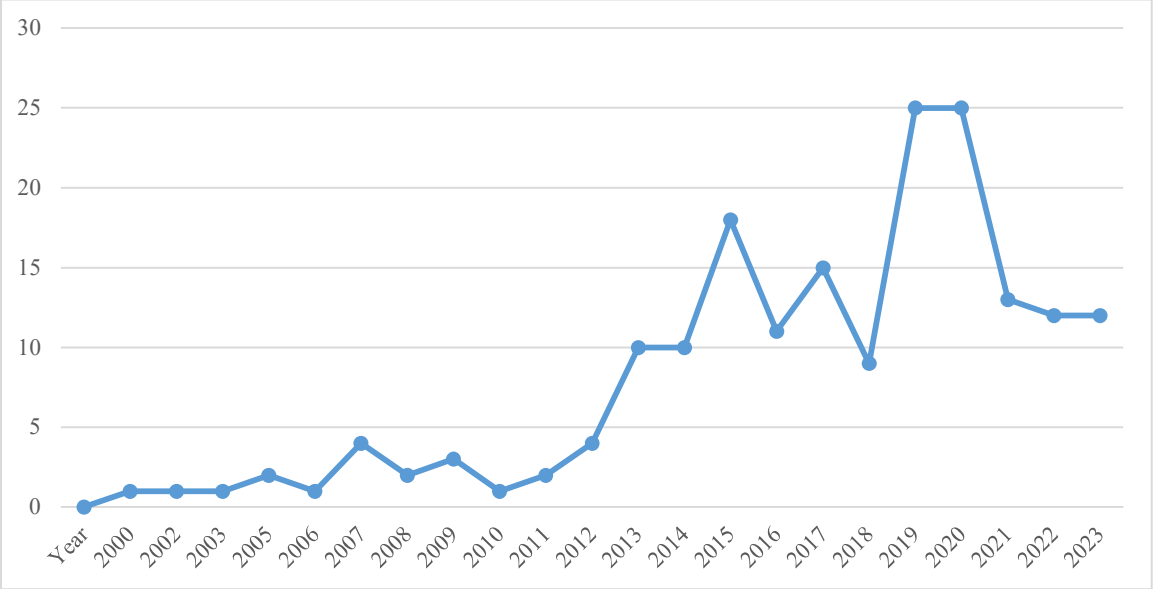
The period from 2014 to 2020 witnessed a sharp increase in research activity, with publications peaking at 25 papers in both 2019 and 2020. This surge reflects heightened academic and practical interest in caregiving and the challenges faced by aging populations. However, from 2021 to 2023, there was a slight decline in output, with 13 papers published in 2021 and 12 papers in each of the following two years. These trends, summarised in Figure 1, underscore a growing scholarly focus on this topic, particularly from 2013 onward. The rise in publications aligns with increasing awareness of aging demographics and the critical role informal caregivers play in geriatric care. The peak in 2019 and 2020 indicates a period of heightened research interest, which has since stabilised at slightly lower levels.

The largest proportion of publications falls under Computer Science (29.29%), followed by Medicine (21.11%) and Mathematics (15.57%). Smaller contributions are observed in areas like Decision Sciences (0.26%) and Multidisciplinary studies (0.26%).

Analysis of the Keywords to show the Key Classes of Interest in the Area

In respect of the clusters of the keywords, the research on information behaviours of informal caregivers of geriatric patients reveals several key patterns and trends across various keyword clusters as shown in Figure 2 and Table 2. These clusters highlight significant themes within the literature, which have been identified based on the analysis of keyword occurrences, link strength, and other bibliometric indicators.

Figure 1: Annual Quantity of Publications on the subject



Subject Areas

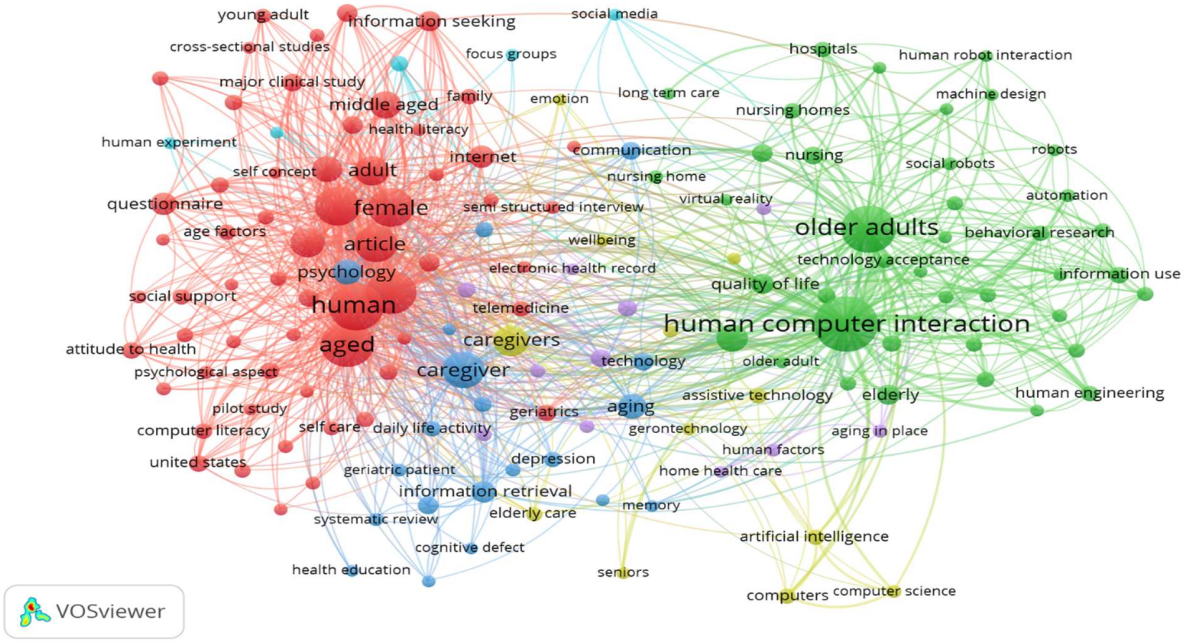
Table 1 displays the distribution of publications across various subject areas.

Table 1: Subject Areas of the Publications

Subject Area	Counts	%
Computer Science	111	29.29
Medicine	80	21.11
Mathematics	59	15.57
Nursing	32	8.44
Social Sciences	31	8.18
Engineering	21	5.54
Biochemistry, Genetics, and Molecular Biology	11	2.90
Health Professions	10	2.64
Psychology	5	1.32
Physics and Astronomy	3	0.79
Arts and Humanities	3	0.79
Neuroscience	3	0.79

Business, Management, and Accounting	2	0.53
Environmental Science	2	0.53
Materials Science	2	0.53
Pharmacology, Toxicology, and Pharmaceutics	2	0.53
Decision Sciences	1	0.26
Multidisciplinary	1	0.26

Figure 2: Visualisation of the keywords of research on Information Behaviour of Geriatric Patients



Cluster 1: Human-Centric Care and Geriatric Focus - This cluster revolves around terms related to human factors and aging, such as "Human," "Humans," "Aged," "Female," "Male," and "Older Adults." These terms reflect the demographic characteristics of the studied populations, particularly older adults and their caregivers. The term "Aged, 80 and over" is particularly prominent, with high occurrences and significant average citations, suggesting that this age group is a critical focus of caregiving studies. Keywords like "Caregiver," "Adult," and "Very Elderly" further emphasise the human-centric nature of research in this area, underlining the importance of understanding the specific needs of aging individuals and the role of caregivers in providing support. "Middle Aged" and "Aging" are also frequently associated terms, reflecting a broader exploration of how aging impacts both caregivers and care recipients.

Cluster 2: Technological Interactions and Digital Health - The second cluster emphasises the integration of technology in caregiving and geriatric care, with terms like "Human-

Computer Interaction," "Robotics," "Telemedicine," and "Technology." These keywords indicate that research is increasingly exploring how digital tools and innovations can enhance the caregiving process, improve patient outcomes, and assist caregivers. "Telemedicine" is particularly notable for its high citation averages, reflecting the growing reliance on remote healthcare solutions for geriatric patients. Other terms such as **"Computer Literacy" and "Technology Acceptance"** highlight the challenges and opportunities caregivers face in adapting to new technologies, while "Assistive Technology" and "Home Care" demonstrate how technological aids are becoming integral to enabling independent living for older adults.

Cluster 3: Psychological and Social Aspects of Caregiving - This cluster focuses on the psychological and social dynamics of caregiving, with keywords such as "Depression," "Psychology," "Daily Life Activity," and "Mental Health." These terms suggest a strong focus on the mental and emotional well-being of both caregivers and geriatric patients. "Depression" stands out with a relatively high occurrence and citation rate, underscoring the mental health challenges that are common in caregiving contexts. Research also covers "Social Support" and "Interpersonal Communication," indicating the importance of social networks and communication strategies in alleviating the stresses of caregiving. "Caregiver" and "Aging" also appear in this cluster, reinforcing the connection between caregiving roles and the psychological burden they entail.

Table 2: Top thirty keywords (assorted according to occurrences)

Label	Cluster	Links	Total link strength	Occurrences	Avg. pub. year	Avg. citations	Avg. norm. citations
Human computer interaction	2	139	105	107	2017.523	19.0561	0.8821
Human	1	129	77	77	2016.831	28.9351	1.5489
Older adults	2	126	75	77	2018.896	7.0649	0.5228
Aged	1	128	72	72	2016.417	30.4028	1.6083
Humans	1	129	66	66	2016.015	32.9545	1.7358
Female	1	127	54	54	2017.278	32.5741	1.6966
Male	1	126	53	53	2017.17	33.0755	1.7003
Article	1	126	47	47	2016.128	24.8298	1.2958
Caregiver	3	125	47	47	2016.319	31	1.5794
Caregivers	4	116	31	32	2016.063	21.75	1.4264
Adult	1	121	31	31	2016.871	22.9032	1.3697
Aged, 80 and over	1	113	31	31	2014.613	45.871	2.2454
Dementia	2	105	27	27	2017.926	28.7037	1.4196
Middle aged	1	109	26	26	2016.654	27.1538	1.6573
Very elderly	1	111	23	23	2017.478	53.4783	2.4701
Aging	3	105	22	22	2016.227	38.5909	1.6815

Psychology	3	100	21	21	2018.429	53.0476	2.4564
Internet	1	102	18	18	2015.556	32.6111	1.678
Questionnaire	1	95	17	17	2016.235	19.7059	1.1002
Information retrieval	3	74	16	16	2014.75	27.9375	1.2999
Information seeking	1	71	15	15	2017.8	26.8	1.5971
Elderly	2	69	13	14	2016.143	20.3571	0.5918
Quality of life	2	64	14	14	2016.643	16.0714	0.853
Priority journal	1	92	12	12	2015.25	67.75	2.7255
Procedures	1	81	12	12	2018.333	63.9167	2.7086
Technology	3	73	12	12	2018.833	30	2.074
Information seeking behaviour	1	67	12	12	2017.5	32.5833	2.1374
Robotics	2	77	11	11	2018.636	23.7273	1.2226
Home care	5	76	11	11	2017.727	23.1818	1.3019
Medical information	1	72	11	11	2019.091	20.3636	1.2293

Cluster 4: Information and Knowledge Management **-** The fourth cluster highlights themes related to information-seeking behaviours and knowledge management in caregiving. Terms like "Information Seeking," "Information Retrieval," and "Consumer Health Information" suggest that informal caregivers often rely on information sources to enhance their caregiving abilities. "Questionnaire," "Survey," and "Cross-Sectional Study" also appear, indicating the frequent use of structured data collection methods in this area of research. "Self-Care" and "Patient Satisfaction" reflect the goals of caregivers and healthcare providers in promoting autonomy and well-being among older adults, while "Health Literacy" is a critical factor influencing the ability of caregivers to understand and act upon medical information.

Cluster 5: Care Models and Clinical Support **-** This final cluster includes terms associated with different models of care and clinical support systems, such as "Nursing," "Independent Living," "Home Care Services," and "Geriatric Assessment." These keywords suggest a focus on formalised care structures, with research examining how these systems support both caregivers and older adults. "Home Care" and "Independent Living" reflect efforts to provide care within domestic environments, reducing the need for institutionalization. Keywords such as "Elderly Care" and "Activities of Daily Living" indicate that caregiving research also frequently explores the day-to-day tasks involved in supporting geriatric patients. Furthermore, "Nursing Home" and "Nursing Homes" suggest ongoing debates about the role of institutional care versus home-based care.

In terms of publication trends, the average publication year for these topics suggests a gradual increase in interest, with many terms showing peaks in recent years. For instance, technological keywords like "Robotics" and "Telemedicine" show a relatively recent focus, with average publication years of 2018. In contrast, more traditional topics like "Human" and "Aged" have a longer history of study, with average publication years around 2016. For Citations and Norms, the keywords such as

"Telemedicine," "Independent Living," and "Depression" have higher average citation rates, reflecting their critical importance in ongoing research. Terms like "Aged, 80 and over" and "Very Elderly" have particularly high normalised citations, indicating they are frequently cited relative to other terms, suggesting the significance of advanced age groups in caregiving research. This research field is shaped by several key thematic clusters: human-centric care, technological innovations, psychological and social aspects of caregiving, information-seeking behaviour, and care models. These clusters provide a full view of the multifaceted nature of caregiving for geriatric patients, underscoring the importance of understanding both the human and technological dimensions of caregiving, as well as the psychological and social support structures necessary for caregivers and patients alike.

In respect of the links, total link strength and occurrences, several important terms emerged with notable linkages, total link strength, and frequency of occurrence. One of the central terms, "Human-Computer Interaction," is highly interconnected, with 139 links, indicating its wide relevance across various studies. Its total link strength of 105 shows strong associations with other research areas, and it appears 107 times, making it a critical concept in understanding how technology interfaces with caregiving for elderly populations. Similarly, the term "Human" is connected to 129 other concepts, showing moderate overall link strength at 77, and it appears 77 times within the dataset. This reflects the frequent reference to human-centric elements in caregiving research. The term "Aged" follows closely with 128 links and a total link strength of 72, emphasizing its role in discussions about elderly care. Its occurrence is also significant, appearing 72 times in the analysed studies.

"Older Adults" shows a similar pattern with 126 links and a strong total link strength of 75, occurring 77 times. This term highlights the focus on the specific demographic of older individuals within the caregiving research. The term "Caregiver" is also crucial, with 125 connections, though its total link strength is relatively lower at 47, and it appears 47 times. This suggests that while caregivers are central to the research, their link strength may be more concentrated in fewer studies compared to broader concepts like human-computer interaction. Collectively, these terms illustrate the intricate network of ideas and concepts that underpin the study of informal caregivers for geriatric patients, showing how frequently and strongly they interact with one another to shape the overall landscape of this research field.

Emerging Issues in Research on Geriatric Caregivers Information Needs

To analyse the emerging issues, keyword clusters were examined, their weights, and the average publication years (see Table 3). Keywords with higher linkage strengths and more recent publication dates were taken to indicate current trends or emerging themes. Additionally, patterns in keywords which show increasing citation trends and reflect growing interest in these areas were identified and considered emerging areas.

Table 3: Emerging Issues in Research on Geriatric Caregivers Information Needs

Category	Emerging Issues
Technological Integration and Assistance	
1. Ambient Assisted Living (AAL) and Assistive Technologies	Gaining attention for supporting caregivers and patients in home-based settings, addressing aging-in-place concerns.
2. Artificial Intelligence (AI)	Playing a prominent role in assisting caregivers, particularly in monitoring and decision-making.

3. Human-Computer Interaction (HCI)	Emphasizing usability in caregiver-focused tools and systems, with a focus on co-design processes.
4. Gerontechnology	Leveraging technology to address aging challenges, particularly for those with cognitive impairments or dementia.
Health and Behavioral Dimensions	
1. Mental Health	Exploring caregivers' mental well-being and its intersection with caregiving duties.
2. Health Literacy	Supporting caregivers to understand medical and health-related information for more effective caregiving.
3. Depression and Emotional Strain	Addressing the emotional toll on caregivers and resources available to mitigate these challenges.
Evolving Care Needs	
1. Aging-in-Place	Balancing independent living with adequate support for elderly individuals.
2. Chronic Diseases and Neurodegenerative Conditions	Focusing on the impact of these conditions on caregiving dynamics.
3. End-of-Life and Long-Term Care Considerations	Highlighting informational and emotional needs during these critical caregiving phases.
Social and Policy Dimensions	
1. Social Support	Emphasizing community, family networks, and policy interventions to alleviate caregiver burden.
2. Information Dissemination and Education	Enhancing outreach to ensure caregivers can access vital and relevant information easily.

The results highlight the multilayered nature of the information behaviours of informal caregivers of geriatric patients, emphasizing a convergence of technological, health-related, social, and policy dimensions. Key themes include the growing integration of advanced technologies such as Artificial Intelligence and assistive tools to support caregiving tasks, alongside efforts to enhance usability and co-design in caregiver tools. Health and behavioural aspects, such as addressing mental health, improving health literacy, and managing the emotional toll of caregiving, are pivotal to caregiver well-being. Furthermore, evolving care needs related to aging-in-place, chronic diseases, and end-of-life considerations reveal the complex demands placed on caregivers. Social and policy dimensions underscore the importance of social support networks and effective information dissemination to empower caregivers. Collectively, these findings suggest that caregiving research and interventions must adopt a holistic, interdisciplinary approach to meet the diverse and evolving needs of caregivers effectively.

Discussion

This study was designed to examine key issues that characterise research on the Information Behaviours of Informal Caregivers of Geriatric Patients. Research in this area highlights the evolving landscape of caregiving since 2000, emphasizing the interplay between technology and human-centric approaches. The analysis draws upon several studies and sources that inform our understanding of this dynamic

(Sorrell & McGowan, 2019; Brown & Marshall, 2021). The research on the information behaviours of informal caregivers of geriatric patients is a subject of increasing interest and this is reflected in the steady growth of scholarly activity, particularly since 2013. This aligns with global demographic shifts, where aging populations necessitate greater attention to caregiving dynamics, especially for geriatric patients. As indicated by the data, the peak in publications observed around 2019 and 2020 is particularly noteworthy, as it suggests that scholars have been responding to the growing societal and healthcare challenges presented by aging populations and the role of informal caregivers. This increased research output highlights a significant shift towards acknowledging the contributions of informal caregivers, a population that has often been underrepresented in health-related research (Bergman et al., 2018; Kiely et al., 2020).

The significant rise in paper production during the COVID-19 period (2020–2021) on subjects related to caregiving, healthcare, and associated fields can be attributed to several factors. First, I may be that the pandemic placed unprecedented strain on healthcare systems worldwide, drawing attention to the challenges faced by caregivers, particularly those providing informal care to vulnerable populations like geriatric patients. Researchers responded by addressing emerging gaps in knowledge about caregiving in the context of a health crisis (Foster & Kreuter, 2021). Additionally, geriatric patients were among the most at-risk groups for severe outcomes from COVID-19, prompting a surge in research on how caregivers managed their needs during the pandemic. The constraints of isolation and quarantine further emphasised unique challenges for caregivers, including maintaining social distancing, managing health risks, and dealing with heightened mental health concerns (Haider et al., 2021). These pressing issues likely fueled academic interest in caregiving.

The rapid adoption of technology during the pandemic also played a crucial role. Tools like telemedicine, assistive devices, and other technological innovations gained prominence as ways to enhance caregiving processes. This shift spurred research into their effectiveness, accessibility, and adoption, particularly in the context of geriatric care (Chung et al., 2021). Moreover, the pandemic's urgency led to a surge in studies examining policies and frameworks aimed at supporting caregivers, as well as ways to improve preparedness for future crises (Van der Kolk et al., 2020). Increased funding opportunities further stimulated research activity, as governments and institutions prioritised projects focused on healthcare and caregiving during the pandemic (Meyer et al., 2020). Finally, the flexibility afforded by work-from-home arrangements provided researchers with more time to focus on publishing, analyzing existing datasets, and conducting literature reviews, which likely contributed to the increase in academic output on caregiving-related topics.

The diverse spread of subject areas across computer science, medicine, nursing, social sciences, and other fields underlines the multidisciplinary nature of the research on caregiving for older adults. It also suggests that informal caregiving is not only viewed through the lens of healthcare and nursing but is also seen as a critical intersection of technology, social support, and mental health (Johnson et al., 2019; Stajduhar et al., 2020). For example, the high proportion of studies from computer science (29.29%) and the significant focus on technological terms such as “Human-Computer Interaction” and “Telemedicine” illustrate the growing recognition of technology's role in caregiving. These innovations are increasingly integrated into caregiving practices to improve the quality of care and alleviate caregiver burden (Anderson et al., 2020). The increasing relevance of “Telemedicine” in particular shows how digital health tools have become pivotal in providing remote care and assistance for geriatric patients, especially during the COVID-19 pandemic (Harrison et al., 2020).

The study also highlights the prominent themes in caregiving research, with the psychological and social aspects of caregiving emerging as significant. The frequent occurrence of keywords like “Depression” and “Mental Health” reinforces the well-documented

emotional and psychological toll on informal caregivers (Hunt et al., 2019). Caregiver stress and burnout are critical factors that need attention, as they not only affect the well-being of caregivers but also impact the quality of care provided to patients (Bailey et al., 2020). Furthermore, keywords such as "Social Support" and "Interpersonal Communication" underscore the importance of social networks in mitigating these psychological challenges. It suggests that caregivers often rely on their social networks for emotional support, which can significantly affect their caregiving experience (Choi et al., 2020).

The study points to the critical role of information access in the caregiving process. Keywords such as "Information Seeking," "Information Retrieval," and "Health Literacy" reflect the importance of caregivers acquiring relevant medical and caregiving information to support their care recipients. Research indicates that caregivers often engage in information-seeking activities to improve their caregiving skills and make informed decisions, especially in managing complex conditions like dementia (Berkman et al., 2020). However, the ability of caregivers to access and interpret health-related information can vary significantly, influenced by factors such as health literacy, technology access, and social support systems. The inclusion of terms like "Consumer Health Information" and "Self-Care" reflects the growing recognition that caregivers must also manage their own health needs to avoid burnout and provide optimal care (Weiss et al., 2020).

Finally, the research on care models and clinical support systems, highlighted by terms such as "Home Care Services" and "Geriatric Assessment," underscores the importance of formalised care structures in supporting both caregivers and care recipients. The ongoing debate between institutional and home-based care is reflected in the prominent appearance of "Nursing Homes" in the keyword clusters. This suggests that while there is a strong emphasis on home care and independent living, the need for institutional support and care facilities remains a critical area of research (Wiles et al., 2018). Moreover, the prominence of terms like "Independent Living" signals a trend towards supporting aging in place, where geriatric patients can continue living at home with the necessary supports in place (Bharucha et al., 2020).

Conclusion: The caregiving landscape is undergoing significant transformation with the integration of technology and a human-centric approach. Caregivers increasingly depend on digital resources to enhance their practices, reflecting a shift towards technology-mediated support systems. Research by Morris et al. (2015) underscores this trend, highlighting that caregivers actively use various digital platforms to access information relevant to geriatric care. This reliance on technology underscores its vital role in shaping information-seeking behaviour among caregivers. Equally important is the emphasis on understanding the unique needs of older adults through a holistic caregiving approach. Studies, such as those by Baldwin et al. (2015), demonstrate that effective caregiving extends beyond addressing medical needs to include the emotional and social dimensions of care. This perspective reinforces the idea that caregivers prioritise information that promotes the overall well-being of their geriatric patients.

However, caregivers often face significant challenges, including informational gaps that hinder their ability to provide optimal care. Research by Mayo et al. (2017) reveals that informal caregivers require tailored resources that address their specific needs and challenges. This highlights the importance of creating targeted support systems and fostering an ongoing dialogue to better understand and alleviate caregiver experiences. Furthermore, an integrated approach that combines technological efficiency with the emotional aspects of caregiving is gaining recognition. Bourgeois et al. (2020) advocate for the integration of technology into caregiving practices to enhance not only efficiency but also the meaningful connections between caregivers and elderly patients. This holistic integration is essential for improving the quality of care delivered to geriatric patients, ensuring their physical, emotional, and social well-being. The analysis of informal caregivers' information behaviour underscores the need for a

multifaceted understanding of their roles. By addressing both technological and human-centric aspects, we can develop more effective support systems that empower caregivers in their critical roles.

Limitations of the study: A major limitation of this study is that it focuses solely on publications indexed in Scopus, which may restrict the diversity of perspectives and findings. Since caregiving practices vary across different cultural and regional contexts, the exclusion of other databases and grey literature may limit the comprehensiveness of the analysis. Future research could enhance generalizability by incorporating a broader range of sources, including regional databases, policy reports, and non-indexed scholarly works.

Implications for Policy, Practice, and Society: The findings of this study have significant implications for policy, professional practice, and society, particularly in enhancing support for informal caregivers of geriatric patients. As digital tools become increasingly integrated into healthcare, the study highlights critical gaps that must be addressed to improve caregivers' access to reliable information, assistive technologies, and healthcare services.

Policy Implications: The study underscores the need for policies that promote greater inclusivity in digital health initiatives, ensuring that caregivers—who play a crucial role in patient well-being—are not overlooked in national and institutional healthcare strategies. Many caregivers, particularly in lower-income settings, face challenges in accessing digital tools due to financial constraints, lack of digital literacy, and limited internet infrastructure. Policymakers must develop initiatives that subsidise access to assistive technologies, telehealth services, and mobile health applications to reduce these barriers. Additionally, given concerns about privacy and misinformation in online health spaces, there is an urgent need for regulatory frameworks that protect user data, standardise digital health applications, and ensure the credibility of online medical information.

Beyond digital health, the study calls for a broader recognition of caregivers as essential contributors to healthcare systems. Governments and healthcare institutions should consider formalizing caregiver support mechanisms, such as financial aid programs, caregiver training workshops, and flexible work policies for those balancing employment with caregiving responsibilities. Furthermore, given the diverse cultural and regional contexts of caregiving, policies should encourage localised approaches that address specific caregiver needs within different communities.

Practice Implications: The study also has direct implications for healthcare professionals and technology developers who design solutions for caregivers. Healthcare providers must recognise that caregivers are not just secondary participants in patient care but active partners who require targeted training and engagement. Medical professionals should integrate caregiver education programs into hospital visits, provide clearer medication management guidelines, and offer structured telehealth services to assist caregivers in their daily responsibilities.

Similarly, developers of digital health technologies should prioritise user-friendly designs tailored to the needs of caregivers, particularly those with low digital literacy. Many existing telemedicine and mobile health applications assume a level of technological proficiency that caregivers may not possess, leading to frustration and underuse. To bridge this gap, technology providers should develop simplified interfaces, multilingual support, and interactive training modules that empower caregivers to confidently navigate digital health platforms. Moreover, interdisciplinary collaborations between medical professionals, social workers, and technologists could help create comprehensive caregiver support systems, incorporating telehealth consultations, peer support groups, and mental health resources.

Societal Implications: On a broader societal level, this study contributes to the growing recognition of informal caregiving as an essential but often overlooked aspect of

healthcare. Many caregivers experience emotional, physical, and financial strain, yet their contributions remain undervalued. Raising awareness about caregiving challenges can help foster a culture of support and appreciation, leading to policies that provide tangible assistance to caregivers, such as paid leave, tax benefits, and mental health support services.

Additionally, the study highlights the digital divide that exists in caregiving, where those in low-income, rural, or technologically underserved communities have fewer opportunities to access digital health resources. Addressing this divide requires targeted efforts to improve internet accessibility, expand digital literacy programs, and promote community-based digital health initiatives that ensure caregivers in marginalised groups are not left behind. Finally, this research calls for a shift in societal attitudes toward caregiving, emphasizing that caregiving responsibilities should not fall solely on individuals but should be a shared social responsibility. Families, workplaces, and community organizations should work together to create stronger support networks for caregivers, enabling them to provide quality care while maintaining their own well-being. Furthermore, as digital healthcare continues to evolve, it is important to strike a balance between traditional caregiving practices and new technological solutions, ensuring that innovations are culturally sensitive and aligned with caregivers' actual needs.

Recommendations: This study has provided a bibliometric analysis of the growing body of research on the information-seeking behaviours of informal caregivers, revealing key trends, challenges, and opportunities in this evolving field. The findings indicate that while digital health tools and online resources are becoming increasingly important in caregiving, their effectiveness is limited by digital literacy gaps, socioeconomic barriers, and concerns over information reliability.

To address these challenges, the following recommendations are proposed:

1. Enhancing Digital Literacy for Caregivers: Governments and healthcare institutions should implement nationwide digital literacy training programs tailored for caregivers, particularly older adults and those in low-income communities. These programs should include practical workshops on using telehealth services, navigating health apps, and evaluating online health information.

2. Developing Culturally and Linguistically Inclusive Digital Tools: Developers should create more accessible and user-friendly caregiving technologies, including multilingual interfaces, voice-assisted applications, and simplified navigation options to cater to diverse caregiver populations.

3. Improving Online Health Information Regulation: Policymakers should establish stronger verification mechanisms for online health resources, ensuring that caregivers can rely on evidence-based and trustworthy digital platforms for medical guidance.

4. Expanding Financial and Structural Support for Caregivers: Financial incentives such as tax breaks, stipends, or subsidised access to digital health tools can help alleviate the economic burden of caregiving. Furthermore, healthcare systems should integrate caregiver support services into routine patient care, recognizing caregivers as key stakeholders in healthcare decision-making.

5. Encouraging Interdisciplinary Research and Collaboration: Future research should explore how emerging technologies, such as artificial intelligence (AI) and wearable health trackers, can be optimised for caregiving. Additionally, interdisciplinary studies involving healthcare providers, social scientists, and technology developers can help design more effective caregiving interventions.

Future research can build on the current findings to create a more inclusive and supportive caregiving ecosystem, ensuring that informal caregivers receive the resources and assistance they need to manage their responsibilities effectively.

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