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REVIEW ARTICLE

TELEMEDICINE IN ELDERLY CARE: TRENDS, CHALLENGES, AND FUTURE DIRECTIONS

Andrea D.R. Arboleda, Maria R. A. Moreira, Paulo S.A. Sousa*

Faculty of Economics, Universidade do Porto, Portugal

*Correspondence: mrosario@fep.up.pt

ABSTRACT

BACKGROUND:

Telemedicine is transforming elderly care by enhancing accessibility, optimizing chronic disease management, and increasing healthcare efficiency. However, significant disparities in research funding, infrastructure development, and policy execution continue to hinder its widespread and equitable adoption.

OBJECTIVE:

This study conducts a comprehensive bibliometric analysis of global research on telemedicine in elderly care, identifying key trends, research gaps, and future opportunities. Unlike previous studies, it systematically maps global research collaborations, thematic research clusters, and persistent barriers to equitable telemedicine adoption, offering insights for decision-makers.

METHODS:

A scoping review and bibliometric analysis were conducted using Scopus, analyzing 862 peer-reviewed articles. Co-occurrence mapping, Betweenness Centrality, and Freeman Degree analyses were used to identify dominant research themes and emerging trends.

RESULTS:

Findings reveal a threefold increase in telemedicine research post-2014, peaking during COVID-19. Anglo-Saxon countries dominate research output, with significant regional disparities. Thematic clustering identified four core areas: 1) Healthcare access and demographics; 2) Institutional integration and nursing homes; 3) COVID-19's impact on telemedicine; 4) Gender disparities in elderly care research. Despite rapid advancements, critical challenges remain, including digital literacy gaps, financial constraints, and policy fragmentation.

CONCLUSIONS:

Telemedicine is a game-changer for elderly care, but without targeted policy reforms and infrastructure investments, its potential remains underutilized. This study provides data-driven insights for governments, healthcare providers, and nursing homes to bridge these gaps and ensure a more equitable future for digital healthcare.

KEYWORDS

telemedicine, elderly care, digital health, bibliometric analysis, healthcare access, remote monitoring, chronic disease management, geriatric healthcare.

INTRODUCTION

Healthcare systems worldwide are undergoing rapid digital transformation, with telemedicine emerging as a critical solution for addressing the complex and evolving healthcare needs of aging populations. The COVID-19 pandemic significantly accelerated this transition, aligning with broader trends in artificial intelligence, cloud computing, and 5G connectivity, key drivers of enhanced healthcare efficiency and accessibility [1]. Egypt's national telemedicine program exemplifies these advancements [2]

As digital innovations continue to evolve, telemedicine provides tailored solutions for elderly patients, mitigating mobility constraints and improving chronic disease management through remote monitoring and personalized care [3-5]. It delivers medical services remotely, synchronously, or asynchronously, supported by Information and Communication Technology (ICT) [6]. The widespread adoption of virtual healthcare platforms by clinics, hospitals, and governments has enhanced service delivery and efficiency, yet challenges remain in ensuring equitable access to these services across different regions [7].

Despite its rapid expansion, telemedicine adoption remains uneven. North America and Europe lead research output in this field, whereas many low- and middle-income countries face significant barriers, including infrastructure limitations and digital literacy gaps [8, 9]. This imbalance not only affects accessibility but also influences the implementation and effectiveness of telemedicine services.

In developed countries, where the elderly population is increasing alongside cases of chronic, low-urgency diseases [10], telemedicine has demonstrated its potential to reduce healthcare costs [8, 11]. However, further research is needed to enhance quality care for aging populations through e-health systems. While remote elderly care models integrate health monitoring devices linked to tablets and smartphones [6, 12, 13], their adoption remains limited due to economic constraints, privacy concerns, and varying levels of digital literacy among elderly patients.

The cost of acquiring necessary equipment and ensuring secure communication between medical staff and patients presents another challenge, as IT security measures such as encryption, compliance, and software updates contribute to rising expenses [31]. Additionally, intangible costs such as staff training and patient education remain critical for successful telemedicine adoption [14-17]. Without strategic investment in infrastructure and education, disparities in telemedicine access are likely to persist.

As the elderly population grows, investments in technology-driven healthcare solutions are expected to rise, driven by demand and advancements in wearable health monitoring devices [18]. While telemedicine research has made significant progress, certain gaps remain underexplored. One such area is gender disparities in telemedicine adoption among elderly patients. While differences in healthcare access and outcomes based on gender have been extensively studied, their specific impact on telemedicine usage in elderly populations remains unclear [19]

Understanding these nuances is essential for ensuring that digital healthcare solutions address the needs of all elderly individuals, regardless of demographic differences. A comprehensive understanding of global telemedicine research is necessary to guide future developments and address these gaps. Expanding literature underscores the importance of quantitative methods to track and synthesize findings in this field.

Bibliometric analysis offers an objective and repeatable approach to examining research output, collaboration networks, and the impact of healthcare policies [20]. Additionally, it provides valuable insights for researchers, healthcare administrators, and policymakers seeking to optimize telemedicine adoption [21, 22].

This study explores the evolving role of telemedicine in elderly care, focusing on its potential to enhance healthcare processes, improve resource management, and increase accessibility for aging populations. By synthesizing insights from existing studies, it provides a data-driven perspective on the development of telemedicine and its future directions.

Beyond its academic implications, bibliometric analysis helps uncover the social, political, and economic factors influencing telemedicine's growth and adoption [23]. In elderly care, telemedicine has been shown to improve service delivery and patient management, particularly in long-term care settings [24, 25].

This paper is structured as follows: Section 2 provides a comprehensive literature review, summarizing key studies on telemedicine in elderly care, highlighting existing challenges, and identifying gaps in research. Section 3 presents the data and methodology used for the analysis. Section 4 outlines the results, detailing the main trends, thematic clusters, and centrality measures identified through bibliometric analysis. Section 5 discusses the findings and their implications, while Section 6 offers practical recommendations for policymakers, healthcare providers, and researchers. Finally, Section 7 presents limitations and recommendations for future research.

THEORETICAL BACKGROUND

Telemedicine has evolved significantly over the past two decades, driven by technological advancements and the need for more efficient healthcare models. In the early 2000s, telecommunication technologies were introduced into patient care; however, adoption was restricted by infrastructure limitations [10]. With the rise of digital health platforms, telemedicine has expanded its role in managing chronic diseases, particularly among elderly populations [5]. The COVID-19 pandemic further accelerated this trend, prompting healthcare systems worldwide to adopt remote monitoring and virtual consultations as standard practices [15, 26, 27]. Despite these advancements, the long-term sustainability of telemedicine in elderly care remains a subject of ongoing research.

Several studies highlight the benefits of telemedicine in elderly care, particularly in improving accessibility and resource efficiency. Remote monitoring systems allow physicians to track patient health in real-time, reducing hospital visits and improving early detection of complications [12, 13, 28]. Cost-effectiveness is another key advantage, as telemedicine reduces the need for in-person consultations and optimizes healthcare resource allocation [8]. Additionally, studies indicate high levels of patient satisfaction, with elderly patients expressing comfort in using digital platforms for routine check-ups [4, 29]. However, the effectiveness of telemedicine varies based on technological infrastructure, digital literacy, and regional healthcare policies, factors that continue to create disparities in access [9].

While telemedicine presents numerous benefits, several challenges hinder its widespread adoption in elderly care. One significant barrier is the digital divide, particularly among low-income elderly populations who may lack the necessary technological literacy to navigate telemedicine platforms [30]. Additionally, data security concerns remain a critical issue, as telemedicine relies on digital health records that require strict encryption and compliance measures [31]. Financial constraints further limit implementation, especially in resource-limited settings where healthcare providers struggle to invest in telemedicine infrastructure [7]. Studies also highlight ethical concerns regarding the depersonalization of care, as remote consultations may lack the emotional connection found in traditional face-to-face interactions [16]. The economic sustainability of telemedicine remains uncertain, with researchers debating whether it can replace conventional healthcare models or should serve as a complementary service [32].

Despite the growing body of literature on telemedicine, certain research gaps persist. Most studies focus on the technological and financial aspects of telemedicine, while gender disparities in telemedicine adoption among elderly populations remain largely unexplored [19]. Additionally, while several bibliometric analyses have examined general trends in telemedicine research, few have specifically analyzed its evolution in elderly care [20].

Given the rapid expansion of digital healthcare, a comprehensive bibliometric analysis is needed to map global research trends, identify thematic gaps, and inform future research directions. This study aims to fill these gaps by systematically analyzing 862 peer-reviewed articles to provide a data-driven perspective on the role of telemedicine in elderly care.

MATERIALS AND METHODS

This study employs a scoping review and bibliometric analysis to systematically assess the evolution of research on telemedicine in elderly care. Given the breadth of the topic and the need to synthesize diverse sources, the study follows the PRISMA extension for scoping reviews [33]. This approach allows for a structured yet flexible methodology, ensuring comprehensive coverage while identifying key themes and gaps in existing research. A two-phase approach was adopted, beginning with a scoping review, followed by a bibliometric analysis, as conducted in prior studies [23, 34].

DATA COLLECTION AND SEARCH STRATEGY

The dataset for this study was retrieved from Scopus, one of the most comprehensive databases for peer-reviewed literature. The search query included a combination of relevant terms: ("telemedicine" OR "digital health" OR "e-health") AND ("elderly care" OR "long-term care" OR "geriatric care" OR "nursing homes" OR "skilled nursing facilities" OR "homes for the aged" OR "geriatric nursing"). The search was conducted on March 13, 2024, ensuring the inclusion of the most recent studies relevant to the field.

While other databases, such as Web of Science (WoS), were considered, Scopus was ultimately chosen due to its greater citation tracking coverage, robust keyword indexing, and extensive inclusion of digital health research. Unlike WoS, Scopus provides higher citation coverage and a more structured classification system, ensuring the accuracy of bibliometric indicators such as citation frequency, co-occurrence mapping, and network analysis. Other studies also support the use of Scopus as a single-source database to avoid inconsistencies and biases introduced by multi-database integration [35-37].

ELIGIBILITY CRITERIA

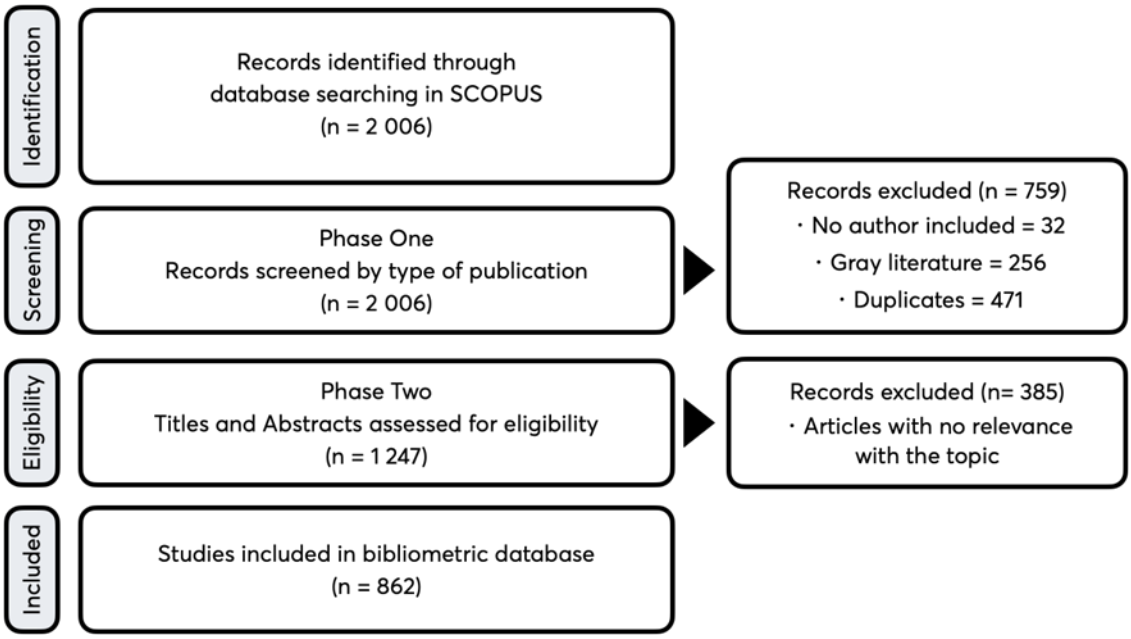
To ensure methodological consistency and relevance, specific inclusion and exclusion criteria were applied in selecting the articles. The study included peer-reviewed journal articles, reviews, and conference papers, as these provide validated and high-quality contributions to the field. Only articles published in English were considered, as English serves as the primary language for global research in digital health [38]. Studies that explicitly discussed telemedicine in elderly care were prioritized.

Grey literature (e.g., books, book chapters, reports, and conference abstracts) was excluded because peer-review and editorial practices are heterogeneous and the bibliographic metadata required for reproducible bibliometric mapping (e.g., abstracts, author keywords, affiliations, and reference lists) are often incomplete or not comparable across these sources.

In contrast, grey literature, such as books, book chapters, and conference abstracts, was excluded, as these sources lack standardized peer review, which is essential for maintaining methodological rigor. Additionally, non-English publications were excluded to avoid translation inconsistencies and to ensure uniform interpretation of keyword-based analyses. Studies that lacked an available abstract or author information were also removed from consideration. After manually reviewing article relevance, a total of 862 scientific articles were selected for bibliometric analysis.

Figure 1 illustrates the article selection process following PRISMA guidelines, detailing the number of studies retrieved, screened, and included in the analysis.

FIGURE 1 PRISMA FLOW DIAGRAM



BIBLIOMETRIC ANALYSIS AND STATISTICAL METHODS

The bibliometric analysis was conducted in three phases to examine research trends, keyword co-occurrence, and centrality measures.

The first phase involved a descriptive statistical analysis, which extracted data from Scopus, including publication trends, journal distribution, and research output by country. These statistical methods were aligned to ensure consistency [25]. The dataset was normalized and analyzed using Excel, which was used for data visualization and trend analysis.
The second phase focused on keyword co-occurrence analysis to detect emerging themes and research clusters. The 100 most frequent keywords were identified and analyzed using Python's AI module, which processed abstracts from all 862 articles. To ensure data uniformity, all text from abstracts was converted to lowercase [30]. The co-occurrence matrix was then processed using VOSviewer , which generated visual network maps that highlight relationships between research topics.

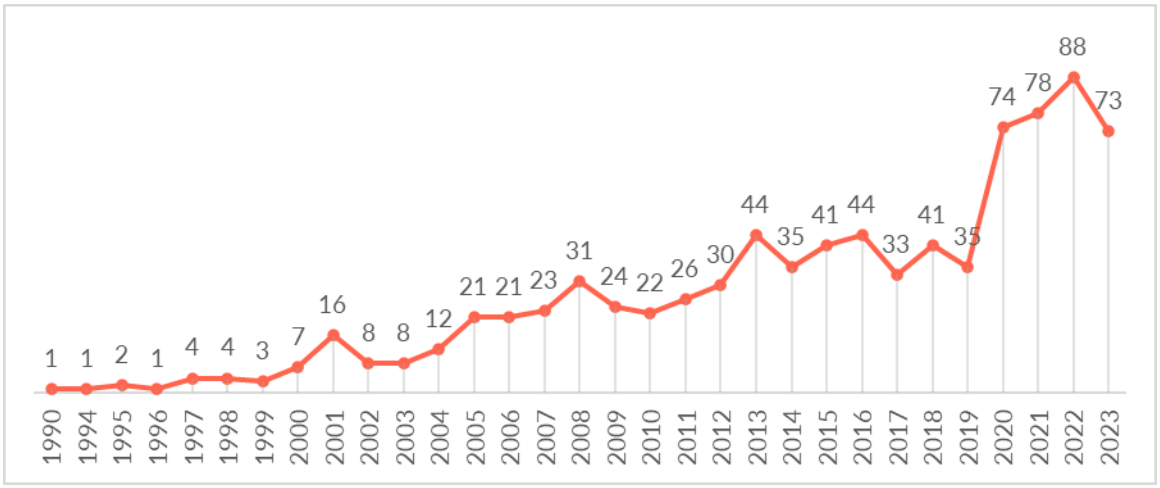
The third phase involved centrality measures, including Freeman Degree and Betweenness Centrality, to evaluate keyword significance. Freeman Degree was used to identify highly connected keywords, which reflect dominant research topics [39]. Betweenness Centrality was applied to determine bridge keywords, which link different research domains and indicate interdisciplinary trends [40]. The combined use of co-occurrence analysis and centrality measures allowed for a comprehensive understanding of thematic clusters and key areas driving telemedicine research.

RESULTS

TRENDS IN TELEMEDICINE AND ELDERLY CARE RESEARCH

The bibliometric analysis reveals a steady increase in telemedicine research focused on elderly care over the past two decades. As shown in Figure 2, research output has grown significantly since 2000, with a sharp increase after 2014, likely driven by advancements in digital health technologies. The most substantial spike in publications occurred between 2019 and 2022, corresponding to the COVID-19 pandemic, which accelerated the adoption of remote healthcare solutions. The increase in research highlights the growing interest in telemedicine as an alternative to in-person elderly care and its potential to improve healthcare accessibility.

FIGURE 2 ANNUAL PUBLICATIONS TREND (1990-2023)



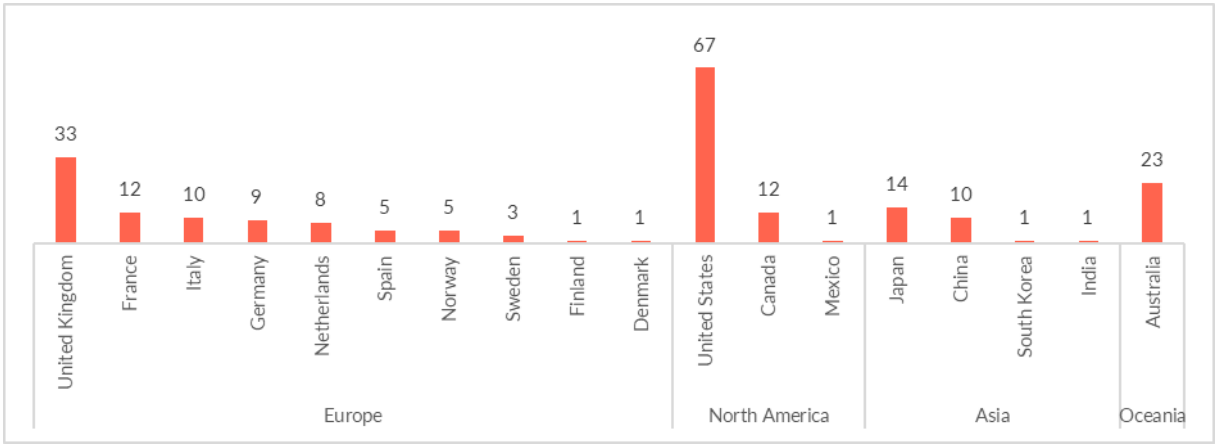
Note: Based on this research dataset

GEOGRAPHIC DISTRIBUTION OF RESEARCH OUTPUT

A geographical analysis of research mentions in abstracts identifies key regions leading telemedicine research. As shown in Figure 3, North America dominates, with the United States accounting for 67 mentions, reinforcing its leadership in digital health innovation. In Europe, the United Kingdom (33 mentions), France [12], and Italy [10] emerge as major contributors, reflecting the region's strong focus on technological healthcare solutions. Asia has also seen notable contributions, particularly from Japan (14 mentions) and China (10 mentions], while Australia (23 mentions) leads in Oceania.

These findings suggest that high-income countries continue to shape global research on telemedicine, while low- and middle-income countries remain underrepresented. This geographic disparity indicates a need for increased international collaboration to ensure that telemedicine solutions address global challenges, rather than being concentrated in wealthier regions. The geographic concentration of research in high-income countries suggests a lack of telemedicine studies from developing regions, which may impact the global scalability of digital health solutions.

FIGURE 3 GEOGRAPHICAL DISTRIBUTION OF THE STUDIES BY COUNTRY AND CONTINENTS



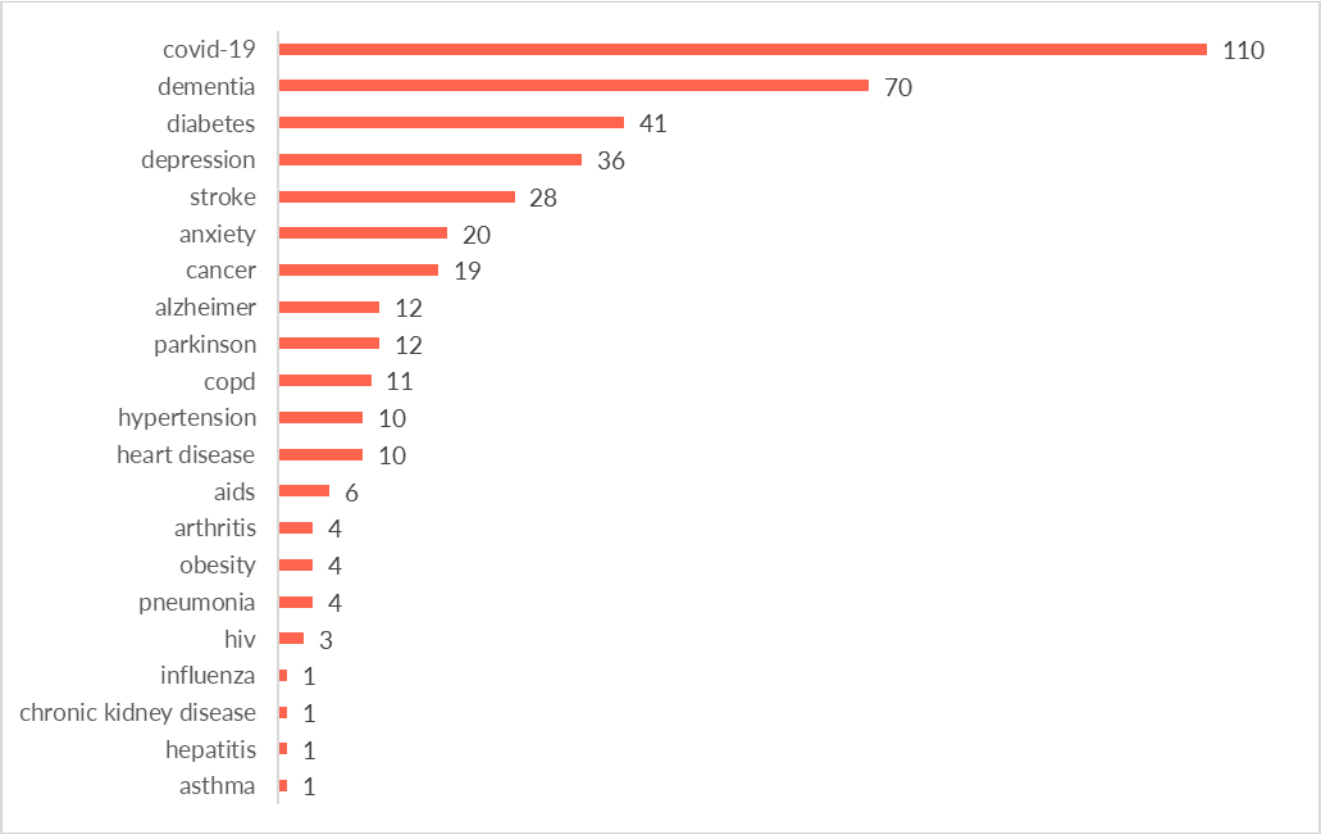
Note: Based on this research dataset

RESEARCH FOCUS: DISEASES AND HEALTHCARE CHALLENGES

Analysis of disease mentions in abstracts reveals that dementia and diabetes are the most frequently studied conditions in telemedicine-related elderly care, as shown in Figure 4. These findings align with broader trends in chronic disease management, reinforcing the role of telemedicine in monitoring long-term health conditions among the elderly. The research focus on dementia suggests a strong interest in cognitive health interventions, while diabetes research highlights the importance of remote monitoring technologies for chronic disease management. The high frequency of dementia

and diabetes studies indicates a growing emphasis on telemedicine's role in chronic disease management, particularly for elderly patients requiring long-term monitoring.

FIGURE 4 MOST FREQUENTLY IDENTIFIED DISEASES IN ABSTRACTS



Note: Based on this research dataset

THEMATIC CLUSTERS IN TELEMEDICINE RESEARCH

Keyword co-occurrence analysis identified four major thematic clusters, visualized in Figure 5, which highlight distinct research trends in telemedicine and elderly care. Together, these clusters illustrate how telemedicine research has evolved from broad accessibility concerns to more targeted areas, such as institutional care, pandemic-driven adoption, and demographic-specific disparities.

Cluster 1- Healthcare Access and Demographics: This cluster includes keywords such as "elderly care," "healthcare access," and "quality of life," reflecting the role of telemedicine in improving medical accessibility for aging populations.

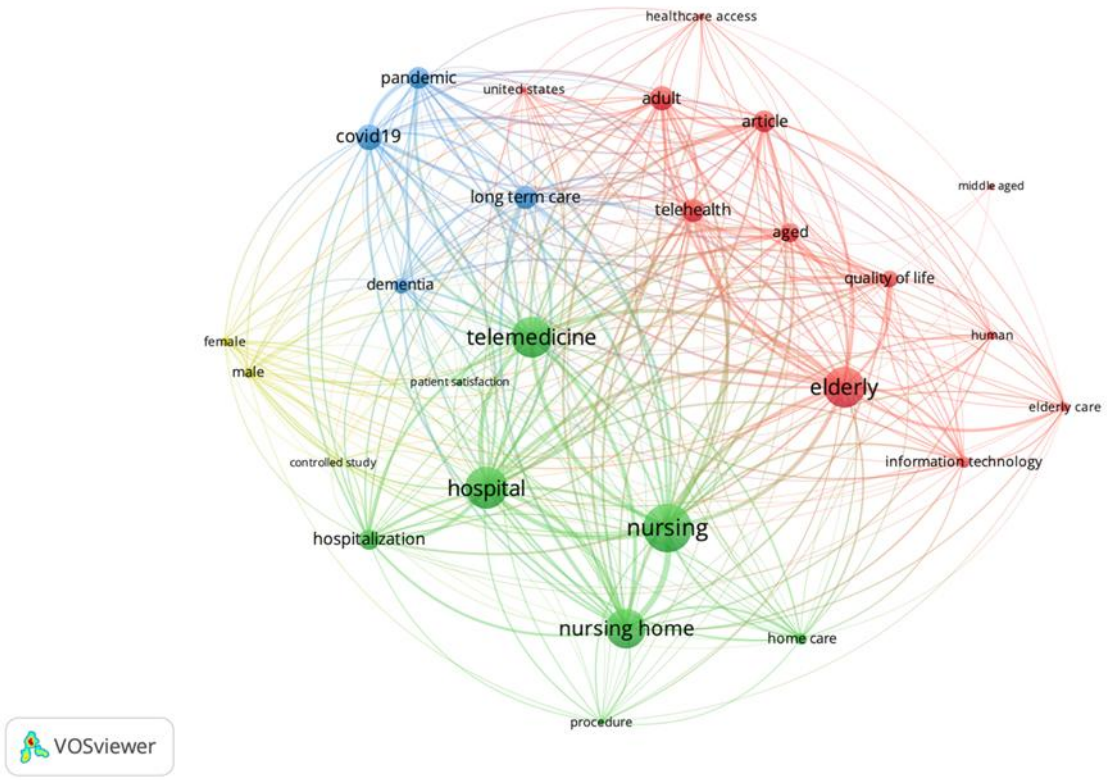
Cluster 2- Institutional Integration and Nursing Homes: This group focuses on hospitals, home care, patient satisfaction, and nursing home integration, showing telemedicine's growing role in long-term care facilities.

Cluster 3- COVID-19's Impact on Telemedicine: This cluster highlights pandemic-related terms, including "COVID-19," "long-term care," and "telemedicine," confirming that the pandemic significantly influenced telemedicine adoption.

Cluster 4- Gender Disparities and Controlled Studies: A smaller but significant cluster focuses on "controlled study," "female," and "male," indicating an emerging research interest in gender-based differences in telemedicine adoption.

These clusters collectively indicate that telemedicine research is evolving beyond general accessibility concerns to focus on specialized areas such as institutional care, pandemic-driven adoption, and demographic-specific disparities. This highlights the growing need for interdisciplinary collaboration to optimize digital health strategies for elderly populations.

FIGURE 5 TOP 40 KEYWORDS CO-OCCURRENCE NETWORK VISUALIZATION



CENTRALITY MEASURES: IDENTIFYING KEY RESEARCH TOPICS

To assess keyword significance and influence, we calculated Freeman Degree and Betweenness Centrality for the top terms in the dataset.

Freeman Degree measures how frequently a keyword appears in the dataset. The most connected terms were "telemedicine," "quality of life," and "monitoring," highlighting their central role in elderly care research.

Betweenness Centrality identifies keywords that serve as "bridges" between different research themes. The highest-scoring terms included "long-term care," "healthcare delivery," and "controlled study," suggesting that these topics link multiple aspects of telemedicine research.

These findings suggest that telemedicine research is expanding into new areas, such as institutional care models and demographic-specific studies, which may shape future innovations in elderly care technology.

CONCLUSION

Bibliometric analyses effectively explore large volumes of research documents [41]. This study combines classical statistical approaches [3, 30]. Combined with newer methods like centrality and link strength analyses [23]. While statistical analyses provide a broad overview, including publication trends and country contributions, co-occurrence analyses identify themes and relationships, offering insights into trends and practical implications [21]. Combining these methods enables a comprehensive understanding of research progress and future directions.

The results underscore the growing role of telemedicine in elderly care, particularly since the COVID-19 pandemic, as reflected in the surge of academic publications. Telemedicine enhances access to quality healthcare for elderly patients with chronic illnesses while optimizing resources, especially in settings with geographic, physical, or logistical barriers [3, 4].

A key challenge lies in the technological gap between regions. Research is concentrated in English-speaking countries like the United States, the United Kingdom, and Australia, highlighting disparities in access to telemedicine technologies [8]. Developing regions face barriers such as high costs, insufficient training, and limited infrastructure [9], widening the gap between accessible and inaccessible populations.

Gender differences in remote healthcare remain underexplored. While studies emphasize the importance of addressing biological and social differences in healthcare reception, telemedicine research has yet to adequately consider this aspect [17]. Addressing this gap is critical for adapting telemedicine to diverse demographic needs. Future studies should focus on identifying gender-based differences in telemedicine adoption and patient outcomes, ensuring that digital healthcare solutions are inclusive and equitable for all elderly populations.

In conclusion, for telemedicine to fulfill its transformative potential in elderly care, sustained investments, inclusive policies, and interdisciplinary collaboration will be essential. By ensuring equitable access, fostering technological innovation, and adapting to evolving healthcare needs, digital healthcare solutions can become a cornerstone of global aging strategies.

PRACTICAL IMPLICATIONS

Practical implications were analyzed from the perspective of different stakeholders, including healthcare providers, nursing homes, government and policymakers, and for patients and care recipients.

PRACTICAL IMPLICATIONS FOR HEALTHCARE PROVIDERS

For healthcare providers, this study highlights the growing trend of delivering medical services through remote technologies. With continuous advancements in digital tools, integrating telemedicine into healthcare systems is becoming increasingly essential for improving patients' quality of life. Regardless of whether providers operate in the public or private sector, offering remote therapies and home-based medical care through these technologies can enhance service quality by complementing traditional treatments with innovative approaches.

Estimating the initial costs of telemedicine implementation is challenging. However, in addition to financial investments, staff training and patient education are crucial for effective adoption. Other industries, including banking and insurance, have adapted to digital models to remain competitive, underscoring the necessity for healthcare providers to embrace these changes.

The surge in telemedicine publications since 2000 reflects a growing market for health-monitoring devices and digital healthcare platforms. As healthcare providers integrate telemedicine, nursing homes also face unique challenges in ensuring accessibility and quality of care. However, financial constraints and logistical barriers must be addressed to maximize telemedicine's potential.

PRACTICAL IMPLICATIONS FOR NURSING HOMES

For nursing homes, implementing telemedicine presents additional challenges, particularly due to the disparities between public and private facilities. Both sectors must recognize the benefits of these services and secure public and regulatory support to prevent underfunded institutions from lagging behind. This support is especially vital in the early stages of implementation, when additional incentives may be required to establish the necessary infrastructure.

Elderly care centers should be regarded as models for managing telemedicine services effectively. Their deep understanding of patient demographics, treatment plans, and the cultural and intergenerational nuances of elderly populations provides valuable insights for successful implementation. No other institutions possess this level of firsthand expertise, making their involvement crucial in designing effective digital healthcare solutions.

Access to quality healthcare is a fundamental priority, and telemedicine presents an opportunity to address some of the core challenges in elderly care, particularly in managing chronic illnesses and providing bedside assessments for

bedridden patients. However, it is essential to develop strategies that integrate telemedicine without diminishing the human aspect of medical care. Maintaining patient satisfaction and adherence to treatments requires a balanced approach that combines digital efficiency with compassionate, personalized attention. Center administrators and healthcare professionals must collaborate to ensure that telemedicine initiatives align with broader healthcare priorities, fostering synergy between different stakeholders for enhanced patient care.

PRACTICAL IMPLICATIONS FOR GOVERNMENTS AND POLICYMAKERS

From a policy perspective, governments play a pivotal role in facilitating telemedicine adoption. Countries with higher GDPs, particularly in North America, Europe, and Asia, have made significant strides in this area. Less economically developed nations can benefit from these advancements by leveraging existing models and technological frameworks. International collaboration among researchers and policymakers has also proven effective in knowledge exchange and best practices, highlighting the importance of cross-border cooperation in healthcare innovation.

While high-income countries have prioritized telemedicine for elderly care due to aging populations, its benefits extend globally, particularly in regions with limited healthcare access. Telemedicine can be instrumental in improving healthcare accessibility in rural areas, reducing the need for patient travel, and easing logistical burdens on public agencies. Governments, in collaboration with medical research institutions and universities, can advance telemedicine applications. Tailoring these services to specific diseases, cultural contexts, and gender considerations will enhance both equity and personalization in digital healthcare.

PRACTICAL IMPLICATIONS FOR PATIENTS AND CARE RECIPIENTS

For patients and care recipients, the findings of this study suggest that telemedicine can be successfully implemented across diverse healthcare contexts without compromising service quality. However, for older adults accustomed to traditional in-person care, transitioning to digital healthcare models may feel disruptive. Therefore, integrating telemedicine should involve careful consideration of patients' perspectives, concerns, and needs.

The findings on digital literacy disparities suggest that patients familiar with technology may adapt more easily to telemedicine, whereas those with limited experience may require additional support. A well-planned transition strategy, incorporating patient education and gradual adoption, can help mitigate these concerns. Ultimately, telemedicine aims to enhance healthcare accessibility and equity, not only across socioeconomic groups within a country but also across nations and regions where elderly populations are among the most vulnerable demographic groups.

By addressing these challenges and implementing telemedicine thoughtfully, healthcare systems can improve service delivery, reduce disparities, and ensure that elderly patients receive high-quality, accessible, and efficient care.

LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

While centrality measures like Freeman Degree and Betweenness Centrality identify key concepts and bridge terms, they do not fully capture the evolving nature of telemedicine in diverse healthcare settings. A longitudinal analysis tracking changes in keyword relevance and connections over time could better reflect how telemedicine concepts adapt to technological advancements and policy shifts. This would provide forward-looking insights into emerging trends and changing research priorities.

Future studies could explore telemedicine trends in elderly care after its peak during the 2020 pandemic, assessing whether interest continues to grow or declines. Additionally, qualitative research and case studies of successful telemedicine programs could offer valuable insights into best practices for overcoming institutional resistance and ensuring sustainability.

Despite increasing research output, gaps persist in gender disparities in telemedicine adoption among elderly populations. Further research should focus on how demographic factors influence patient engagement with telemedicine services, particularly in underserved populations. Addressing these gaps can enhance the effectiveness and inclusivity of digital healthcare strategies.

Policymakers and researchers should also prioritize evaluating the cost-effectiveness of telemedicine across different healthcare models, particularly in low-resource settings. Understanding the economic impact and sustainability of telemedicine programs will be crucial for their long-term integration into elderly care services.

ETHICS STATEMENT:

This study analysed publicly available, previously published literature and did not involve human participants, identifiable personal data, or animals. Therefore, ethics committee approval and informed consent were not required. The conduct of this review complied with relevant institutional and national guidance for studies based solely on secondary data.

DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS:

During the preparation of this work the author(s) used ChatGPT in order to check English grammar. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

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None

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APPENDIX 1. TOP 100 KEYWORDS

CHART EXAMPLES

1. aged
2. telemedicine
3. human
4. female
5. humans
6. male
7. article
8. elderly care
9. priority journal
10. middle aged
11. 80 and over
12. patient satisfaction
13. controlled study
14. home care
15. review
16. chronic disease
17. adult
18. quality of life
19. telehealth
20. home care services
21. major clinical study
22. treatment outcome
23. health services for the a
24. monitoring
25. health care delivery
26. geriatric care
27. long term care
28. hospitalization
29. nursing home
30. randomized controlled t
31. dementia
32. telecommunication
33. diabetes mellitus
34. patient care
35. procedures
36. systematic review
37. technology
38. united states
39. methodology
40. robotics
41. aging
42. independent living
43. heart failure
44. videoconferencing
45. clinical trial
46. follow up
47. health care
48. nursing homes
49. outcome assessment
50. depression
51. delivery of health care
52. health service
53. internet
54. frail elderly
55. long-term care
56. organization management
57. patient monitoring
58. telephone
59. cost-benefit analysis
60. health care cost
61. health care access
62. feasibility study
63. mobile phone
64. prevalence
65. very elderly
66. caregiver
67. geriatrics
68. pandemic
69. physiologic
70. stroke
71. teleconsultation
72. chronic obstructive lung disease
73. cost effectiveness analysis
74. economics
75. daily life activity
76. hospitals
77. hospital admission
78. health care quality
79. patient education
80. pilot projects
81. questionnaire
82. social isolation
83. clinical effectiveness
84. cost benefit analysis
85. falling
86. feasibility studies
87. medical informatics
88. medical technology
89. patient compliance
90. Parkinson disease
91. mortality
92. nursing
93. social support
94. time factors
95. ambulatory
96. activities of daily living
97. coronavirus disease 2019
98. devices
99. controlled clinical trial
100. confidentiality