

Digital Health Adoption and Sustained Use Among Older Adults

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Abstract

Background: Digital health is increasingly used to support healthcare delivery for older adults, but availability does not necessarily lead to adoption or continued use and engagement. Understanding the factors that influence adoption and sustained use is important for effective and efficient healthy-ageing strategies.

Objective: To examine determinants of digital-health adoption and sustained use among older adults and compare these factors across India, Canada, the United States, Germany and the Netherlands.

Methods: A comparative scoping review was undertaken using evidence published from January 2010 to August 2026. PubMed, openly accessible scholarly sources, targeted web searches and authoritative national and health-system sources were examined. Evidence was synthesised thematically across access, digital-health capability, perceived value and usability, trust and care preferences, social and professional support, initial adoption, sustained use and equity. Twenty-seven core sources were included.

Results: Digital-health engagement was shaped by multiple interacting factors rather than technology availability alone. Access, affordability and digital literacy were particularly important in India, while socioeconomic and geographic inequalities remained relevant in Canada and the United States despite established digital infrastructure. Germany demonstrated persistent digital-health-literacy inequalities, whereas evidence from the Netherlands highlighted usability, reliability and fit with users' needs. Across all five countries, evidence on sustained use remained less developed than evidence on initial adoption.

Conclusion: Digital-health adoption among older adults is a multidimensional engagement challenge. Initial adoption and sustained use should be evaluated separately, with equity and human support considered across both. Strategies should combine usable technologies with digital-literacy support, human assistance, privacy safeguards and appropriate hybrid care.

Keywords: digital health; older adults; digital health adoption; sustained use; digital health literacy; health equity

1. Introduction

Population ageing is increasing the demand for accessible, continuous and coordinated

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healthcare, while digital technologies are becoming increasingly embedded in healthcare delivery. Digital health encompasses telehealth and virtual-care platforms, electronic health records, patient portals, mobile-health applications, wearable devices and remote patient monitoring. These technologies can support communication, access, self-management and continuity of care for older adults. However, the expansion of digital-health infrastructure does not by itself ensure that older adults can or will use these services effectively.

Digital-health engagement involves more than access to technology. Older adults may encounter barriers related to digital and health literacy, affordability, connectivity, physical or cognitive limitations, usability, privacy, trust and preferences for human interaction. Conversely, perceived usefulness, ease of use, reliable services, professional endorsement and support from family or caregivers may facilitate engagement. Importantly, initial adoption does not necessarily result in continued use. A person may access a digital-health service without incorporating it into routine healthcare or continuing to use it over time.

These determinants vary across populations and healthcare systems. Countries with established digital infrastructure may still experience inequalities in digital-health capability, socioeconomic access and sustained engagement, while countries with developing digital-health ecosystems may face additional challenges involving affordability, connectivity and availability. Comparing contrasting healthcare contexts can therefore help distinguish barriers that are broadly applicable to older adults from those shaped by infrastructure, policy, socioeconomic conditions and healthcare-system organisation.

Existing reviews have identified numerous barriers and facilitators of digital-health adoption among older adults, but evidence remains more developed for initial acceptance or use than for continued engagement and discontinuation. Comparative evidence examining adoption and sustained use together across different healthcare systems is also limited. This creates a need for a broader, human-centred understanding of digital-health engagement.

This review therefore examines determinants of digital-health adoption and sustained use among older adults across India, Canada, the United States, Germany and the Netherlands. It compares the influence of access, capability, usability, perceived value, trust, care preferences and social and professional support, while distinguishing initial adoption from sustained use and identifying implications for equitable digital-health implementation. The review first synthesises determinants of adoption, then compares the five healthcare contexts, examines sustained use, and develops management and policy implications.

2. Objectives and Review Questions

This review aims to examine the factors influencing digital-health adoption and sustained use among older adults across India, Canada, the United States, Germany and the Netherlands. Specifically, it seeks to:

- synthesise evidence on individual, technological, social and health-system determinants of digital-health adoption;
- compare barriers and facilitators across the five healthcare contexts;

- distinguish initial adoption from sustained use and discontinuation; and
- identify management and policy implications for equitable and sustainable digital-health engagement.

The review addresses the following four questions:

1. What factors influence digital-health adoption among older adults?
2. How do these factors differ across the five countries?
3. What evidence exists regarding continued use and discontinuation after initial adoption?
4. What actions can healthcare managers and policymakers take to improve equitable and sustained digital-health engagement?

3. Methods

3.1 Review Design

A comparative scoping review was undertaken to map evidence on the determinants of digital-health adoption and sustained use among older adults across India, Canada, the United States, Germany and the Netherlands. The review was informed by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) reporting framework.[1] A scoping approach was selected because the evidence encompasses quantitative, qualitative, mixed-methods, systematic-review and health-system sources and addresses diverse digital-health technologies and engagement outcomes.

3.2 Search Strategy and Information Sources

Evidence published between January 2010 and August 2026 was examined. Peer-reviewed literature was identified primarily through PubMed and supplemented by openly accessible scholarly sources, targeted web searches and authoritative national and health-system sources. Search concepts included digital health, telehealth, patient portals, electronic health records, remote monitoring, digital health literacy, adoption, acceptance, sustained use, discontinuation, barriers, facilitators and older adults. Country-specific searches were undertaken for India, Canada, the United States, Germany and the Netherlands, and reference lists of relevant reviews were screened to identify additional sources. Searches were structured around predefined concepts rather than a single fixed query because the review covered multiple technologies and healthcare contexts.

3.3 Eligibility Criteria

Evidence was considered eligible when it addressed adults aged 65 years and above, or populations aged 60 years and above where findings were directly relevant to older adults. Studies using broader age ranges were retained only when their findings were directly relevant to later-life digital-health engagement and were used primarily as contextual evidence. Reviews, systematic and scoping reviews, surveys, qualitative and mixed-methods studies, observational studies, and relevant government or health-system reports were considered. Studies addressing access, readiness, adoption, use, barriers, facilitators, sustained engagement

or discontinuation were included. Evidence was excluded when it had no substantive relevance to older populations, digital-health engagement or the review questions.

3.4 Data Extraction and Thematic Synthesis

Evidence was extracted according to country, study design, population, digital-health technology, determinants, adoption, sustained use, discontinuation and equity considerations. Findings were synthesised thematically across eight dimensions: access; digital-health capability; perceived value and usability; trust and care preferences; social and professional support; initial adoption; sustained use; and meaningful care or healthy-ageing benefit. Comparative synthesis examined similarities and differences across the five countries. Twenty-seven core sources were included in the comparative evidence base. No quantitative meta-analysis was undertaken because of heterogeneity in study designs, populations, technologies and outcome measures.

3.5 Ethics

Ethics approval was not required because the review used publicly available published literature and publicly accessible demographic, health-system and digital-health information and did not involve human participants or identifiable personal data.

4. Digital-Health Adoption Among Older Adults

Digital-health adoption among older adults is shaped by multiple interacting individual, technological, social and health-system factors. Evidence from systematic reviews indicates that demographic and socioeconomic characteristics, health status, digital capability, technology characteristics and social support can influence whether older adults engage with digital-health services.[2-6] Technology availability is therefore a necessary but insufficient condition for adoption.

Access and affordability are foundational determinants. Availability of suitable devices, reliable internet connectivity and affordable services can influence whether older adults are able to participate in digital healthcare. These barriers are particularly relevant where connectivity and device access remain uneven. Evidence from India identifies digital and health literacy, smartphone access, unreliable internet connectivity and preferences for in-person consultations as recurring barriers to telemedicine implementation, while family involvement, training and community outreach can facilitate engagement. [8-11] Similar inequalities in socioeconomic and geographic access remain relevant in more digitally established settings. [12-16]

Digital-health capability extends beyond possession of a device to the ability and confidence to find, understand, evaluate and use health information and digital services. Systematic reviews identify digital literacy as a recurring determinant of engagement among older adults. [2,3] Evidence from India highlights gaps in digital literacy, while German population studies demonstrate substantial inequalities associated with age, education and socioeconomic position. [8,19,20] Interventions designed to improve digital-health literacy can increase capability among older adults, suggesting that capability is modifiable rather than a fixed characteristic.[27]

Perceived value, usability and reliability also influence adoption. Older adults are more likely to engage when digital services are perceived as useful, easy to use and compatible with their needs and routines. Recent evidence identifies perceived usefulness as a particularly important predictor of acceptance, with perceived ease of use contributing indirectly through perceived usefulness.[5] Qualitative evidence from the Netherlands similarly highlights convenience, efficiency and immediate availability as facilitators, while unfamiliarity, poor computer experience and unreliable applications can discourage use.[23,24]

Trust, privacy and care preferences represent additional determinants. Concerns regarding privacy, security and the reliability of digital services may discourage engagement, while some older adults continue to value direct interaction with healthcare professionals.[2,4,25] Digital adoption therefore depends not only on technical functionality but also on whether users consider the service trustworthy and appropriate to their preferred form of care.

Social and professional support can facilitate engagement, particularly where individual digital capability is limited. Family members, caregivers and healthcare professionals may provide practical assistance, encouragement and reassurance. Evidence from India identifies family involvement as a facilitator, while provider endorsement and human assistance are also identified in broader reviews of older adults' digital-health adoption.[2,6,8,11,18]

Overall, the evidence indicates that digital-health adoption is best understood as a multidimensional engagement outcome. Access creates the opportunity to use digital health, but capability, perceived value, usability, trust, care preferences and human support influence whether that opportunity results in actual adoption.

Table 1. Determinants of Digital-Health Adoption Among Older Adults

Determinant	Key considerations	Evidence emphasis
Access and affordability	Devices, connectivity, affordability and service availability	Particularly prominent in India; socioeconomic and geographic inequalities also persist in Canada and the United States.[8-17]
Digital-health capability	Digital and health literacy, confidence and ability to use services	Important across settings; pronounced inequalities are documented in India and Germany.[2,3,8,19,20]
Perceived value and usability	Usefulness, ease of use, reliability and fit with everyday needs	Strong determinant of acceptance; especially evident in Dutch qualitative evidence.[5,23,24]
Trust and care preference	Privacy, security, confidence and preference for digital, face-to-face or hybrid care	Relevant across settings; human interaction remains important.[2,4,25]

Determinant	Key considerations	Evidence emphasis
Social and professional support	Family, caregiver and healthcare-professional assistance	Can reduce capability barriers and facilitate engagement.[2,6,8,11]
Equity	Age, income, education, geography and other social factors	Cross-cutting determinant affecting access, capability and use.[8,13,19,20]

5. Five-Country Comparison

The comparative evidence indicates that the determinants of digital-health engagement vary according to the maturity of digital infrastructure, socioeconomic conditions, digital-health capability and the organisation of healthcare services. Although common barriers such as digital literacy, usability, trust and access were identified across the five countries, their relative importance differed by context.

India - In India, access, affordability and digital-health literacy remain important determinants of engagement among older adults. Evidence identifies limited smartphone access, unreliable internet connectivity and gaps in digital and health literacy as barriers to telemedicine use, while family involvement, training and community outreach can facilitate adoption.[8-11] The development of digital-health infrastructure provides expanding opportunities for remote and digitally enabled care, but infrastructure expansion does not necessarily remove individual-level capability and affordability barriers. These findings suggest that adoption in India requires attention to both digital infrastructure and the practical ability of older adults to use available services.

Canada - Canada has relatively established digital-health and virtual-care infrastructure, but access and engagement remain uneven across socioeconomic and geographic groups. National evidence indicates substantial use of internet-enabled technologies among older adults, while use of specific digital-health services varies according to factors including province, living environment, willingness to pay and other socioeconomic circumstances.[12,13] Evidence on virtual care also suggests that experiences and satisfaction can vary according to access to regular healthcare providers and financial circumstances.[14] Thus, digital maturity does not eliminate inequalities in digital-health engagement.

United States - The United States has extensive digital-health infrastructure and widespread access to electronic health records, patient portals and telehealth. Nevertheless, recent national evidence shows continued variation in telehealth use among adults aged 65 years and older according to geography, health characteristics, digital literacy and previous experience with information technology.[16] Patient-portal and proxy-access data also indicate substantial engagement with digital health, while differences in patterns of use demonstrate that availability alone does not ensure equitable or sustained participation.[17] The US experience therefore illustrates the persistence of adoption inequalities within a highly developed digital-health environment.

Germany - Germany demonstrates a contrasting pattern in which digital-health infrastructure has developed alongside substantial inequalities in digital-health capability. Population-level evidence has identified low digital-health literacy among a large proportion of adults, with older age, lower education and lower socioeconomic status associated with poorer capability.[19] More recent evidence among adults aged 65 years and older similarly indicates strong associations between digital-health literacy and internet use, education and income.[20] Evidence on telemedicine use also suggests that adoption remains relatively limited among some older populations despite the availability of national digital-health infrastructure.[22] Germany therefore highlights the distinction between system-level digital maturity and individual readiness.

Netherlands - The Netherlands represents a relatively mature digital-health environment in which usability, reliability and alignment with users' needs become particularly important. Qualitative evidence among older adults identifies convenience, efficiency and immediate availability as facilitators, while unfamiliarity, limited computer experience and poorly functioning applications can discourage engagement.[23] Evidence from digital-health platforms in general practice further highlights the importance of older adults' experiences with digital services and their integration into routine care.[24] The Dutch context therefore illustrates how, as infrastructure becomes more established, the quality and fit of digital services may become increasingly important determinants of engagement.

Comparative synthesis - Across the five countries, digital-health adoption cannot be explained by infrastructure maturity alone. India demonstrates the continuing importance of access, affordability and capability; Canada and the United States illustrate persistent inequalities despite established digital infrastructure; Germany highlights digital-health-literacy inequalities within a mature system; and the Netherlands demonstrates the importance of usability, reliability and fit with users' needs. These differences suggest that digital-health strategies should be adapted to the dominant barriers within each healthcare context rather than applying a uniform implementation model.

Table 2. Comparative Determinants of Digital-Health Engagement Across Five Countries

Country	Dominant adoption determinants	Evidence pattern	Contextual implication
India	Access, affordability, digital-health literacy and family support.[8-11]	Infrastructure expansion coexists with connectivity, device-access and capability barriers.	Combine infrastructure investment with literacy, affordability and human support.
Canada	Socioeconomic and geographic inequalities, virtual-care access and care circumstances.[12-15]	Established virtual-care environment but uneven engagement across populations and settings.	Address within-country disparities rather than assuming infrastructure solves access.

Country	Dominant adoption determinants	Evidence pattern	Contextual implication
United States	Digital literacy, geography and previous technology experience.[16,17]	High system maturity with persistent differences in telehealth and related digital-health use.	Target digital capability and underserved populations alongside infrastructure.
Germany	Digital-health literacy, education, income and individual readiness.[19-22]	Mature infrastructure coexists with substantial capability inequalities and limited uptake among some older groups.	Strengthen digital-health literacy, inclusive design and user readiness.
Netherlands	Usability, reliability, convenience, digital experience and fit with needs.[23,24,26]	Mature digital-health environment in which service quality and integration into routine care are prominent.	Prioritise usability, reliability and integration with routine care.

6. Adoption Versus Sustained Use

Initial adoption and sustained use represent related but distinct stages of digital-health engagement. An older adult may have access to a digital service and use it initially without continuing to use it as part of routine healthcare. Treating adoption as equivalent to sustained engagement may therefore overestimate the effectiveness of digital-health implementation.

Evidence from systematic reviews indicates that adoption is influenced by perceived usefulness, ease of use, digital-health capability, social support, trust and the characteristics of the technology.[2-6] These factors may facilitate initial engagement, particularly when a service addresses an immediate healthcare need. However, continued use requires the technology to remain relevant, reliable and sufficiently easy to integrate into everyday healthcare practices. Qualitative evidence from older adults indicates that convenience and efficiency can encourage engagement, whereas unfamiliarity, limited digital experience and problems with digital applications can discourage continued use.[23,24]

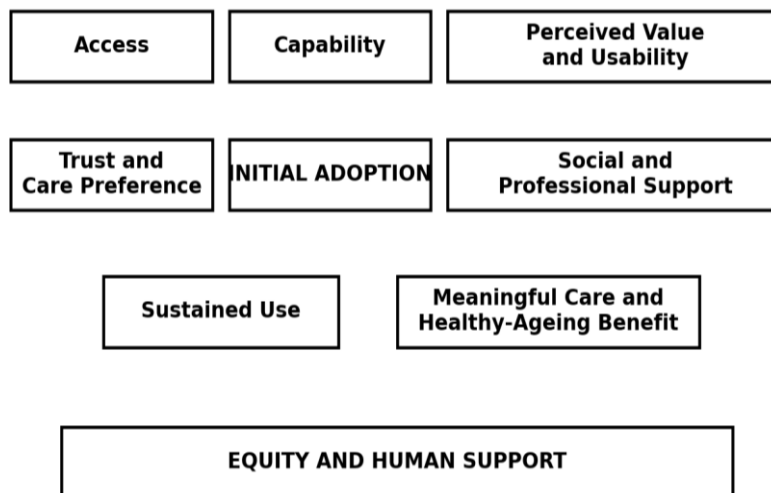
Evidence specifically examining sustained use remains comparatively limited. A recent meta-analysis estimated that approximately 55% of older adults had ever used a patient portal, while approximately 49% were continuing users; however, substantial heterogeneity was observed across studies.[7] Although these estimates vary across settings and technologies, they demonstrate why ever-use should not be treated as evidence of sustained engagement.

Discontinuation may occur when perceived value declines, services are difficult to use, technical problems persist, healthcare needs change, or users prefer alternative forms of care. Human and professional support may also influence continuation, particularly for older adults with limited digital capability.[2,6] Sustained use should therefore be understood not simply as repeated technology use, but as continued engagement with a digital service that remains relevant to the individual's healthcare needs and preferences.

The distinction has important implications for evaluation. Digital-health programmes should measure access, capability, initial adoption and sustained use separately, while also examining discontinuation and the reasons for it. Evaluation should extend beyond utilisation rates to consider continuity of care, user experience, independence, self-management and other meaningful outcomes. This approach recognises that successful digital transformation depends not only on getting older adults to use technology, but on ensuring that digital services remain useful, accessible, trusted and appropriately supported over time.

7. Human-Centred Framework for Digital-Health Engagement

The comparative evidence suggests that digital-health engagement among older adults should be understood as a multidimensional process rather than as a simple measure of technology availability or use. The proposed Human-Centred Framework for Digital-Health Engagement Among Older Adults integrates eight dimensions identified across the evidence: access, capability, perceived value and usability, trust and care preference, initial adoption, social and professional support, sustained use, and meaningful care and healthy-ageing benefit.[2-7]



The dimensions interact rather than form a rigid linear sequence. Equity and human support are cross-cutting principles.

Figure 1. Human-Centred Framework for Digital-Health Engagement Among Older Adults.

Note: The framework is a conceptual synthesis of the review evidence and is not a statistically tested model.

Access refers to the availability and affordability of appropriate devices, connectivity and digital-health services. Access creates the opportunity for engagement but does not ensure use. Capability encompasses digital-health literacy, confidence, health literacy and the ability to use digital services effectively. Evidence indicates that capability varies substantially according to age, education and socioeconomic circumstances.[2,3,8,19,20]

Perceived value and usability concern whether a digital service is useful, understandable, reliable and compatible with an older person's abilities and everyday needs. Perceived usefulness and ease of use are important determinants of acceptance, while poor functionality

or limited fit may discourage engagement.[5,23,24] Trust and care preference incorporate confidence in digital services, privacy and security, as well as preferences for digital, face-to-face or hybrid forms of care. These factors may influence both willingness to adopt and willingness to continue using digital services.[2,4]

Social and professional support represents assistance provided by family members, caregivers and healthcare professionals. Such support can facilitate engagement by helping older adults overcome practical or capability-related barriers and by providing reassurance and encouragement.[2,6,8,11] It is particularly relevant where digital capability is limited.

Initial adoption refers to the commencement of digital-health use, whereas sustained use refers to continued engagement over time. The distinction is central to the framework because determinants of continued use may differ from those influencing initial adoption.[7,23,24] Sustained engagement is more likely when digital services remain useful, reliable, accessible and integrated with users' healthcare needs and preferences.

The final dimension is meaningful care and healthy-ageing benefit. Digital-health success should ultimately be assessed by whether engagement contributes to meaningful outcomes such as improved self-management, medication adherence, quality of life and other patient-centred benefits, rather than by utilisation alone.[28,29]

Equity and human support operate as cross-cutting principles across all dimensions. The framework therefore does not represent a rigid linear sequence. The dimensions interact, and weaknesses in one area may constrain engagement even when other conditions are favourable. A human-centred approach consequently positions digital health as a complement to professional care, family support and social connection rather than a replacement for them.

8. Management and Policy Implications

The findings indicate that digital-health implementation for older adults should move beyond expanding technology availability towards sustained, equitable and human-centred engagement. Healthcare managers and policymakers should recognise that the requirements for initial adoption may differ from those needed to maintain use over time.

At the health-system level, digital services should be designed as part of integrated care pathways rather than implemented as stand-alone technology programmes. Interoperability, reliable platforms, accessible interfaces and appropriate hybrid care options can support continuity while preserving access to face-to-face care when required.[2,5,23] Performance assessment should therefore include sustained use, discontinuation, user experience and continuity of care rather than initial uptake alone.

At the individual and community level, digital-health strategies should address capability alongside access. Digital-health literacy programmes, practical training and ongoing assistance can help older adults develop confidence and skills.[2,8,27] Family members, caregivers and healthcare professionals can provide important support, particularly for users with limited digital capability. Such support should complement rather than replace older adults' autonomy and preferences.

At the policy level, equity should be incorporated into digital-health planning from the outset. Affordability, connectivity, accessibility and differences in education and socioeconomic circumstances can influence engagement even in digitally mature healthcare systems.[8,13,19,20] Policies should therefore monitor disparities in access, adoption and sustained use rather than relying on population-level utilisation rates alone.

Trust and choice should also remain central. Privacy, security, transparency and appropriate consent mechanisms can strengthen confidence in digital services, while hybrid models can accommodate older adults who prefer face-to-face interaction.[2,4] Digital-health programmes should allow flexibility rather than assuming that digital delivery is appropriate for every encounter or every older adult.

For healthcare managers, the central implication is that successful digital transformation should be measured by meaningful and sustained engagement rather than technology utilisation alone. For policymakers, this requires coordinated investment in infrastructure, digital capability, human support, privacy and equitable access. Together, these measures can help ensure that digital health strengthens rather than fragments person-centred care for older adults.

9. Discussion

This comparative review indicates that digital-health engagement among older adults is shaped by interacting individual, technological, social and health-system factors. Across India, Canada, the United States, Germany and the Netherlands, access to digital infrastructure was important but insufficient to explain adoption. Digital-health capability, perceived usefulness, usability, trust, care preferences and social or professional support also influenced engagement. These findings support a shift from viewing digital-health adoption primarily as a technology-access issue towards understanding it as a multidimensional engagement challenge.

A second finding is that health-system maturity changes the nature of the adoption gap rather than eliminating it. The country comparison suggests that barriers shift as digital-health environments mature: challenges are more prominent around affordability, connectivity and capability in India, while Canada and the United States continue to show socioeconomic and geographic inequalities despite more established infrastructure. Germany illustrates persistent digital-health-literacy inequalities within a mature environment, whereas the Netherlands highlights usability, reliability and fit with users' needs. Digital-health strategies should therefore be adapted to context rather than implemented through a uniform model.

A third and particularly important finding is the distinction between initial adoption and sustained use. Evidence on whether older adults begin using digital-health services is considerably more developed than evidence concerning continued engagement or discontinuation. The difference between ever-use and continuing patient-portal use illustrates why adoption should not be treated as evidence of sustained engagement.[7] Continued use depends on whether services remain useful, reliable, accessible and compatible with changing healthcare needs and user preferences.[23,24] This distinction has implications for both research and programme evaluation.

The findings also reinforce the importance of human support. Family members, caregivers and healthcare professionals can facilitate engagement by providing practical assistance, encouragement and reassurance.[2,6,8] Digital health should therefore complement rather than replace professional judgement, face-to-face care and social relationships. Hybrid models may be particularly important where digital capability is limited or where users prefer personal interaction.

Equity is a cross-cutting concern. Differences in education, income, connectivity, geography and digital capability can influence engagement at multiple points. Evaluating only overall utilisation may therefore conceal important disparities. Equity-sensitive assessment should examine access, capability, adoption, sustained use and meaningful outcomes across different population groups.

The proposed human-centred framework contributes a structured way of integrating these findings. Its value lies in connecting determinants of engagement with the distinction between adoption and sustained use and, ultimately, with meaningful care and healthy-ageing benefit. The framework is conceptual and requires empirical testing across technologies, populations and healthcare systems.

This review has several limitations. Evidence varied in population definitions, technologies, study designs and outcome measures, limiting direct comparison across countries. The evidence base was not sufficiently homogeneous to permit direct comparison of effect sizes or adoption rates across countries. Some country-specific evidence included adults aged 50 years and above or mixed-age populations where findings were relevant to older adults. The review also relied substantially on publicly accessible evidence, and digital-health technologies and policies continue to evolve rapidly. Sustained-use evidence was particularly limited, restricting conclusions about long-term engagement.

Future research should test the framework longitudinally and examine why older adults continue, modify or discontinue digital-health use. Greater attention should also be given to sustained engagement, equity and meaningful outcomes rather than initial adoption alone.

10. Conclusion

Digital-health adoption among older adults is influenced by a combination of access, digital capability, usability, perceived value, trust, care preferences and social and professional support. The comparison across India, Canada, the United States, Germany and the Netherlands demonstrates that digital infrastructure alone does not ensure equitable engagement.

A central finding of this review is that initial adoption and sustained use should be treated as distinct outcomes. Older adults may begin using a digital-health service without continuing to engage with it over time. Sustained use depends on whether digital services remain useful, reliable, accessible, trusted and compatible with users' healthcare needs and preferences.

The proposed human-centred framework provides a structured basis for considering these dimensions together, while recognising equity and human support as cross-cutting principles. Digital health should complement professional care, family and caregiver support, and appropriate face-to-face services rather than replace them.

For healthcare managers and policymakers, successful digital transformation should therefore be assessed not simply by technology availability or utilisation, but by whether digital services produce sustained, equitable and meaningful improvements in healthcare engagement and healthy ageing.

Declaration of Conflicting Interests

The Author declares that there is no conflict of interest.

AI Use Disclosure

Generative AI tools were used as assistive tools during manuscript preparation for language refinement, editing, organisational support and document formatting. AI tools were not used as a substitute for the author's scholarly judgement or responsibility for the study design, interpretation of evidence, conclusions or final manuscript. The author independently reviewed and verified the cited evidence, references and numerical data and takes full responsibility for the accuracy, integrity and originality of the work.

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