Application Fields and Innovative Technologies

Current Landscape of AgeTech Implementation and Adoption in the Canadian Healthcare System: A Scoping Review B. Ayaz, K. Bavaro, HT. Mohammed, C. Genge, S. Bestavros, R. Fraser, I. Abejirinde *Gerontechnology* 25(s)

Purpose The global population aged 60 and over is rapidly growing, with over 2 billion expected by 2050 [1]. In Canada, older adults increasingly prefer to age in place. While AgeTech, an innovative solution (hardware and/or software) explicitly designed to benefit older adults and their caregivers, can support aging in place [2], its uptake and sustainability across healthcare systems remain limited. We aim to map current AgeTech implementation for adults aged 65 and above with various health conditions in Canada and examine implementation strategies, the enablers, and barriers using the Nonadoption, Abandonment, Scale-up, Spread, and Sustainability (NASSS) framework across micro, meso, and macro levels. The review focused on the AGE-WELL challenge area 'Health Care and Health Service Delivery', which aims to improve the quality of care by providing medical consultations, accessing records, and navigating the healthcare system by means of active (requires user participation) or passive (does not require user participation for the system to work) technology. **Methods** A scoping review was conducted following PRISMA-ScR guidelines (See figure 1). Empirical literature was searched across five databases for primary studies on digital technology or AI interventions implemented in healthcare or health service delivery for older adults (≥65) in Canada between 2020 and 2025. Screening of the title and abstract, and full-text was conducted by two independent reviewers. The information abstraction was conducted by two persons for a divided portion of the selected sources, after piloting the Excel sheet and abstraction for 10% of the sources. Any conflicts were resolved with a consensus meeting between the two reviewers. Of 16,567 potential sources, 61 studies were included in the analysis. **Results and Discussion** Of 61 studies, 44% were quantitative, 36% qualitative, and 20% mixed methods. Most interventions were active digital technologies (80%), with virtual care dominating (48%) during COVID-19. Geographic distribution was highest in Ontario (50%), followed by Quebec (13%) and Alberta (11%). Participants in most studies were patients (65.5%), followed by care providers (10%) and others (21%). Key benefits and/or facilitators of adoption included improved health outcomes, convenience, reduced hospitalizations, and cost-effectiveness [4]. Barriers included poor alignment with client needs, the digital divide, systemic biases, and screen/portal fatigue [5]. Only 8 (13%) of studies utilized implementation science frameworks. Using the NASSS framework revealed challenges in technology integration, organizational readiness, and adaptation over time [5,6]. It highlighted the challenges related to technology infrastructure, its maintenance, and sustainability due to health system-level factors, such as funding availability and varied interests among multiple stakeholders [6]. **Discussion** Although the pandemic created a window of opportunity for AgeTech adoption, scale-up, and sustainability, successful integration depends on dynamic interactions among technological, organizational, and systemic factors rather than on isolated elements. Despite technology's ability to improve patients' access to care and clinical outcomes, patients structurally marginalized by ethnocultural, situational, and residential status faced obstacles in accessing technology and care [7]. Policies must address the digital divide by improving access to devices, connectivity, and digital literacy for older adults [4]. Lastly, moving beyond short-term pandemic-driven adoption toward long-term policies can promote scale-up, spread, and sustainability of AgeTech innovations. Furthermore, using an implementation sciences framework could enhance sustainability by enabling proactive planning and addressing factors as they arise.

References

1. World Health Organization. WHO's work on the UN Decade of Healthy Ageing (2021-2030) [Internet]. 2020 [cited 2025 Apr 9]. Available from: https://www.who.int/initiatives/decade-of-healthy-ageing
2. Genge C, McNeil H, Debergue P, Freeman S. Technology to support aging in place: key messages for policymakers and funders. Front Psychol [Internet]. 2023 Nov 16 [cited 2025 Feb 26];14:doi.org/10.3389/fpsyg.2023.1287486
3. Yu E, Hagens S. Socioeconomic Disparities in the Demand for and Use of Virtual Visits Among Senior Adults During the COVID-19 Pandemic: Cross-sectional Study. JMIR Aging [Internet]. 2022 Mar 22 [cited 2025 May 8];5(1):https://aging.jmir.org/2022/1/e35221
4. Abbasi M, Khera S, Dabravolskaj J, Aissiou A, Abbasi-Dezfouly R. Family Physicians' Feedback on the Feature Design of a Digital Health Platform to Streamline the Care of Older Adults. Geriatrics (Switzerland) [Internet]. 2024;9(6). DOI: 10.3390/geriatrics9060154
5. Tong C, Kernoghan A, Lemmon K, Fernandes P, Elliott J, Sacco V, et al. Lessons and Reflections From an Extended Co-design Process Developing an mHealth App With and for Older Adults: Multiphase, Mixed Methods Study. JMIR Aging [Internet]. 2022;5(4). https://aging.jmir.org/2022/4/e39189/
6. Safavi A.H., Lovas M., Liu Z.A., Melwani S., Truong T., Devonish S., et al. Virtual Care and Electronic Patient Communication During COVID-19: Cross-sectional Study of Inequities Across a Canadian Tertiary Cancer Center. Journal of Medical Internet Research [Internet]. 2022;24(11): https://www.jmir.org/2022/11/e39728.
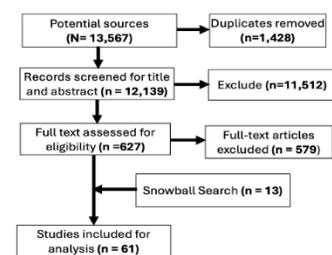
Figure 1: PRISMA Flow Diagram

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