



Disability and Rehabilitation: Assistive Technology

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REVIEW

Smart home and communication technology for people with disability: a scoping review

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ABSTRACT

Purpose: The links between disability, activity limitation and participation restriction are well established. Recent and continued advancement of technology, particularly smart home and communication technologies, presents new ways in which some of the limitations and restrictions experienced by people with disabilities can be overcome. The aim of this scoping review was to explore the impact of smart home and communication technology on the outcomes of people with disabilities and complex needs.

Method: This review involved systematic searching of four databases, hand searches and data extraction. Eligibility criteria included [1] participant outcomes of [2] technology used within the home [3] among adults with a disability and complex needs.

Results: Of the 2400 studies identified, 21 met our inclusion criteria. Studies were characterized by significant diversity in relation to disability and type of technology. Overall, technology appeared to improve independence, participation and quality of life among people with a disability and complex needs. Despite this, ethical considerations were raised given the vulnerability of this population, including potential risks through social participation and privacy concerns of using monitoring technology.

Conclusions: Smart home and communication technology can improve outcomes for people living with disabilities and complex needs. However, a number of factors impact the successful implementation of technology, including personalization, flexibility and ongoing support to the person with a disability and their close others. Future research should utilize high-quality study designs and established measures of important outcomes for this group.

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KEYWORDS

Assistive technology;
disability; complex needs;
smart technology; outcomes

► IMPLICATIONS FOR REHABILITATION

- There is a broad range of smart home and communication technology devices and systems available that may support the independence and participation of people with disabilities and complex needs; however, high-quality evidence documenting the impact of technology is lacking.
- Soft-technology supports, including assessment, training and evaluation of technology implementation, may play just as important a role in shaping outcomes as the technology itself.
- Systematic research is required to ensure there is quality evidence to inform investment in both technologies, and the soft-technology supports that promote its successful use.


Introduction

Living with a disability can present an individual with unique challenges in daily life and may impact a person's task performance and participation within a range of settings, including the home. Over the last three decades, the world has seen a proliferation of smart home and communication technologies [1]. Generally, these technologies are described as devices or systems that automate home-based activities. For example, they may allow their users to complete tasks, control their environment, or communicate with others [1]. These technologies may also support activity tracking via home-based sensors, to monitor a person's health and safety remotely [2]. The implementation of smart home technology in these ways offers significant potential to people with disability to enhance participation and independence at home, and to overcome some of the challenges they experience in daily living [3,4]. Previously, access to such technologies may have been precluded

by their specialized nature, or the significant costs associated with their purchase and set up. However, rapid technology advancement has seen the widespread adoption of smart technologies by the wider population – with many devices and systems now more affordable than ever before [5].

In addition to this environment of ever-advancing technology, Australia has taken two significant steps that may ultimately support more people with disabilities and complex needs to access smart home technology. The first is the establishment of a National Disability Insurance Scheme (NDIS), which provides funding for “reasonable and necessary” support needs related to a person's disability [6] – including assistive technology [7]. Smart home technologies that support a person's participation and communication may be funded through this scheme. The second is the rollout of the National Broadband Network (NBN), a major infrastructure project that is laying the foundations for high-speed Internet access to homes and businesses throughout Australia [8].

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