

Role of Emerging Technologies in Geriatric Pain Management

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KEYWORDS

- Older adults • Technology • Pain management • Pain assessment • Apps • mHealth

KEY POINTS

- Emerging technologies can help to create innovative methods to assess and manage in older adults.
- Although there is some evidence for the efficacy of the technologies, existing studies rarely focus on older populations.
- There are still several changes required to ensure the secure use of technology in clinical settings; for example, acute care, long-term care, urgent care, and primary care.
- Most pain applications that have been developed so far have had almost no input from health care professionals or end users. Future technologies should be developed with appropriate clinical and end user partners to maximize their relevance.

INTRODUCTION

The use of technology has become a key part of life as the availability of tablets and smartphones has continued to increase. Innovation has moved to focus on emerging new technologies and their ability to improve health and wellbeing. In particular, applications (apps) can be used by consumers and patients as part of homecare and self-care, thus potentially providing cost savings to health systems.¹ As pointed out by the recent report from the IMS Institute for Healthcare Informatics, although there is increasing enthusiasm for the use of technology in health care, the use of apps still remains a novelty.

The past century has seen an increase in life expectancy² and, for the first time, people 60 years and older outnumber those younger than 16 years.³ With increasing age comes the increase of diseases of old age such as dementia, arthritis, and cancer. Dementia affects approximately 35.6 million persons globally⁴ and it has been estimated

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that the prevalence of dementia will double every 20 years (Ferri and colleagues,⁵ 2005). There is also evidence that the prevalence of pain increases with age, particularly disabling pain or pain sufficient to interfere with day-to-day living.^{6–8} Dionne and colleagues⁶ reviewed epidemiologic studies that examined back pain prevalence by age and found that although older people experience a decrease in nondisabling back pain they experience an increased prevalence of disabling back pain. Docking and colleagues⁸ found, in a United Kingdom (UK) population, that although nondisabling back pain plateaued in older age, disabling back pain continued to increase in the oldest old. Also, Thomas and colleagues⁷ reported that the onset of pain that interferes with everyday life continues to increase with age.

This increase in pain in older adults, along with the increasing use of technology, presents a huge opportunity for health care staff and researchers to harness advances in technology to develop new ways of assessing pain and delivering education, support, and behavior change interventions for the management of pain in later life.⁹ Due to the increased use of technology within health care, the World Health Organization (WHO) has coined the term mobile health (mHealth), which refers to medical and public health practice supported by mobile devices.¹⁰

Certain patient groups have greater challenges and barriers to accessing care (eg, older adults) due to problems such as geographic distance from health care centers, obtaining transportation services, and increased mobility difficulties. Therefore, the use of technology-based approaches for older people with various pain conditions may lead to significant cost savings in intervention delivery but also improved quality of life and feelings of control among patients.

The demand for support for pain management and assessment in older adults is set to grow rapidly as the population continues to age. There is a need for sufficient evidence of the benefit technology can offer regarding improved patient outcomes and reduced health care costs. Additionally, those in the health and care services will need to embrace more technology-enabled products, services, and systems to allow for the successful and efficient management of pain in the older population. This article provides a brief overview of the challenges and opportunities that technology can offer geriatric pain management and reviews emerging evidence to demonstrate the role that technology can play in improving and advancing how to not only assess but manage pain in older adults.

EVIDENCE REGARDING THE USE OF TECHNOLOGY FOR PAIN CARE

The last few years have seen substantial progress in ways to make the management of pain as accurate, reliable, and convenient as possible, including technology-assisted self-management interventions, electronic pain diaries, clinical dashboards, and interventions delivered using Internet and mobile apps. The following section discusses some of the evidence regarding the use of technology for assessing and managing pain among older adults.

Pain Assessment

Currently, there is limited research to inform the assessment and management of pain in those 65 years of age and older, particularly those with dementia. Evidence suggests that this group may not receive adequate assessment of their pain¹¹ and pain that is assessed is often undertreated or poorly managed.^{12–14} One innovative example of how technology could help to improve the assessment of pain in older adults with dementia is described in the following section.

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