

Technology tailored for seniors: Enhancing daily life with geriatric friendly innovations



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Abstract

In an era of tremendous advancement in technology, it makes perfect sense that adults who are not accustomed to utilizing digital devices might discover the idea of learning out new skills frightening. This article highlights how technology may improve people's everyday activities and practices, physical and mental health, and cognitive function all of which are beneficial for older adults. Utilizing the technology continues to be restricted by social concerns regarding technology literacy as well as psychological issues related to motivation, attitudes, privacy, and trust. This article lays the foundation for future aging populations while also advancing knowledge and understanding of how digital activities and technology might enhance the lives of older people in modern society. The focus of this article is on geriatric-friendly technologies, including personal safety gadgets, telemedicine, smart homes, remote monitoring, and cognitive fitness applications.

Keywords: Geriatric innovations, Smart homes, Telemedicine

1. Introduction

The idea of "aging in place" allows seniors to stay in their personal residences as they get older, even if their mobility and health deteriorate. There is a strong evidence that older people would rather age residing in their own homes, maintaining their independence, than moving into assisted living facilities (1). Older adults are using telehealth, mobile devices, and other contemporary health technologies more often to support self-management of their condition, maintain open lines of communication between patients and doctors, and remove barriers to care. There is a broad range of geriatric friendly technology, each with unique benefits. Independent adults find comfort in monitoring systems, and smartwatches motivate them to stay active and track their fitness levels (2).

2. Geriatric friendly technology

2.1. Assistive devices

In many nations, demographic shifts and technical advancements have led to an increase in the usage of assistive technologies to support the elderly. These innovations are intended to support the aged, enable them to live freely at home or in assisted living facilities, and improve their quality of life by addressing age-related problems. Although they can help patients become more independent and active, assistive devices like walkers, crutches, and canes can place a tremendous strain on the musculoskeletal and metabolic systems.

Many patients who utilize assistive devices frequently have equipment's that are misaligned, broken, or the wrong height because they have never received instruction on how to use them properly. Selecting the ideal device depends on the patient's strength, endurance, balance, cognitive function, and

environmental needs. Crutches can help patients who depend on their arms for balance, propulsion, and weight bearing. By strengthening the patient's base of support and bearing their weight, walkers promote better mobility and stability in people with lower extremity weakness or poor balance (Figure1) (2).

The size of wearable technology has greatly decreased because to technological improvements Wearable technology helps people with heart failure exercise and recover by providing real-time monitoring of factors such as blood oxygen levels, pressure, energy expenditure, sleep, walking pace, and breathing rate. Patients with chronic illnesses can benefit from wearables by using them to track their health symptoms, which could improve treatment outcomes and individualized healthcare. Elderly people are using wearables more and more, especially for fall detection, which is a critical area of research in this field (3).

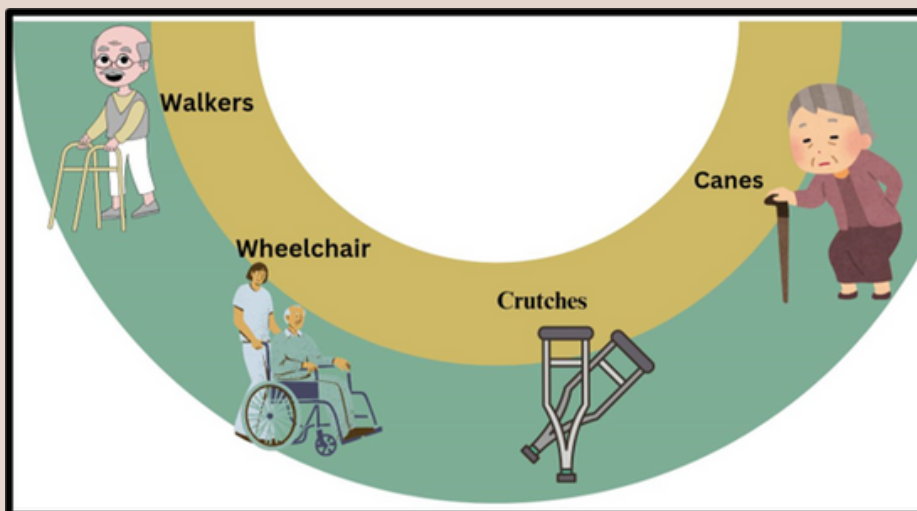


Figure 1. Assistive devices

2.2. Telemedicine

In addition to improving a senior citizen's quality of life, home telehealth systems can be utilized to provide rehabilitative treatments. When compared to in-person consultations, telemedicine makes sense as a treatment option for elderly individuals experiencing cognitive decline. Seniors who live in communities may visit the ER less frequently thanks to telemedicine. Information technology and communications are used in telemedicine, which is remote medical help. A vital and extremely effective tool in geriatrics, telemedicine is discussed (4).

2.3. Geriatric specific software

Patient care can be made more accessible, high-quality, safe, and efficient with the usage of HIT (health information technology). Regarding the care of senior citizens, the application of HIT may be especially beneficial. The elderly population is most vulnerable to subpar care and inefficient transitions between different settings due to advanced age, the need for assistance with everyday tasks, and several ongoing chronic conditions.

Digitalization of geriatric care streamlines the care process and improves the quality, accuracy, and efficiency of healthcare by using emerging technology to deliver person centred care (5).

2.4. Medication management

Elderly medication management can be complicated and varies from that of younger folks in a number of ways. Medication safety, efficacy, and necessity are all impacted by age-related changes in physiology, function, cognition, and society.

2.5. Home automation

The term "smart home technology" refers to the combination of sensors, machine learning, and Internet-enabled digital gadgets in a home that can learn about its physical surroundings and its occupants and make the most of that knowledge to improve their visit.

The utilization of artificial intelligence (AI) methods, such as machine learning (ML), distinguishes smart home technology from traditional home automation. (Figure 2) (7).

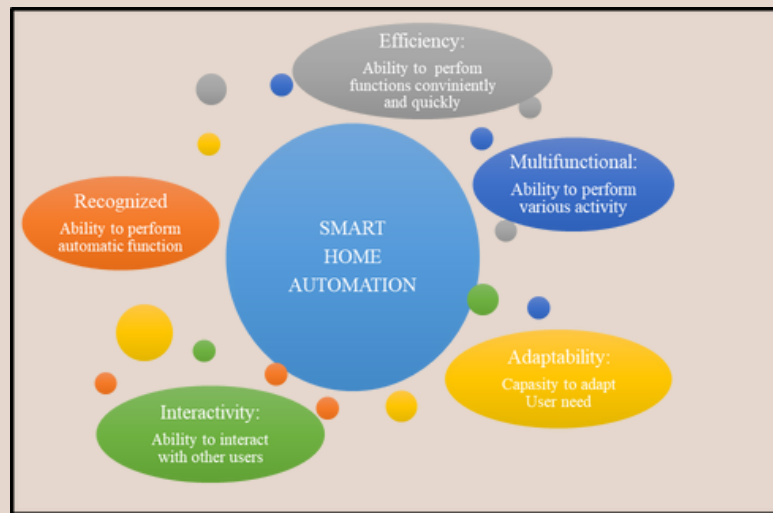


Figure 2. Smart home automation

2.6. Communication tools

Inter professional digital communication tools could help improve the subpar coordination and communication between primary healthcare providers and unpaid carers who provide care for fragile older individuals.

The technology made care coordination easier, and medical professionals reported that they were more aware of the current situations of their patients. In general, networks for primary elderly care can benefit from the communication that inter professional digital communication technologies can bring about networks for primary care of the elderly. To decrease the amount of tools, nevertheless, system integration across digital platforms is required. The realization of the instruments' long-term utility is mostly dependent on organizations and policy makers (7).

2.7. Personalised health analytics

The health monitoring system offers a model for tracking the health condition of older persons using a variety of data sources, which can aid in the creation of accurate and dependable predictive analytics. Researchers and other stakeholders that offer care for older persons via telehealth systems might use the outcomes as a guide (8). The world's healthcare systems face significant challenges due to the exponential rise in the senior population. As a result, creative solutions for early detection and mitigation of age-related disorders are needed. This study's main goal is to investigate how data analytics can be used to enhance medical procedures. Utilizing big data analytics has the ability to address some of the most significant and unsolvable problems in the provision of individualized senior care (9).

2.8. Voice assistants

The care of older individuals is becoming more difficult for nations as the world's population ages. As a result, people are becoming more interested in the ways that voice assistants and smart speakers may promote the independence and health of old persons. Senior citizens may benefit from voice assistants based on smart speakers since they allow for hands-free and eye-free communication. Intelligent voice assistants (IVAs) are becoming more popular and show the possibility to meet the health needs of geriatric patients. Using virtual assistants (IVAs) to send reminders about medication and provide detailed, reliable information about medications are two potential solutions that can be emphasized (10).

2.9. Wearable technology

It is critical to research and promote the use of effective wearable technology that can help geriatric patients because of the growing concern for the quality of life of the elderly, the high prevalence of chronic diseases in this population, and the variability associated with their health conditions. Maintaining general health, cardiovascular, metabolic, and cognitive function throughout the aging process will surely benefit from the use of wearable devices (WDs) and technology to monitor and evaluate physical activity and health-related data.

Wearable technology may be used to track the health of elderly patients. There have been numerous initiatives to promote its use among this demographic (11).

2.10. Fall detection

Falls are believed to be one of the top causes of death among the elderly. In recent years, typical and wireless detection platforms have been used extensively in industrialized countries to detect senior falls. However, because the vast majority of falls-related mortality in developing countries go unreported, we believe more should be done to address this issue there.

Elderly people are falling more frequently worldwide, especially those who are 60 years of age and beyond. Thus, reliable and useful e-health technologies are essential for elder care, especially for single people. Artificial intelligence (AI), one of the newest and fastest-growing technologies, would be a great tool to help them keep an eye on their health and avoid falls (12).

2.11. Safety monitoring

This topic focuses on monitoring technologies for senior patients in light of the present demographic shift caused by the aging population and its impact on shifting the health system toward community care. Specifically, the emphasis lies on the integration of safety monitoring technologies with telehealth services.

Even from a great distance, the patient can be monitored in real time. In an emergency, you can utilize this to get emergency medical assistance right away. Real-time monitoring significantly decreased healthcare costs while also enhancing treatment outcomes. You can monitor the patients with little gadgets like wearables. The patient can utilize machine learning to detect any sort of cough, which will enable their caregiver or physician to identify the patient's medical condition (13).

2.12. Social connectivity

Information and communication technology has the promise to help older individuals feel less alone and more supported. Social isolation affects a lot of older people because of health issues, loss of mobility, changes in economic status, and death of companions and friends.

Technology helps seniors overcome social and physical barriers to social engagement by offering easily available and reasonably priced communication technologies that enable connection in several forms, such as text messaging, email, and audio or video conversation anytime and anywhere. In today's world, a lot of older folks are connected through digital media, but their networks are rather small (13).

3. General principles for medication use in frail older persons

- To reduce needless polypharmacy, think about using non-pharmacological therapy alternatives
- For elderly patients, use the drug with the lowest potential for side effects.
- Utilize the fewest drugs possible with the most straightforward dosage instructions.
- Examine prescriptions on a regular basis (Figure 3) (6).

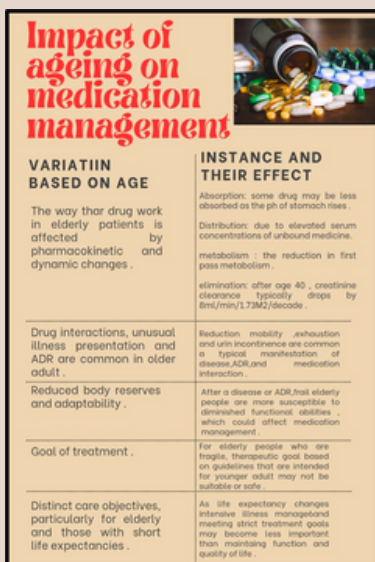


Figure 3. Impact of ageing on medication management

4. Conclusion

Technology personalized for seniors offers user-friendly innovations and digital tools that empower older adults, enhancing their independence for medication management and overall quality of life in a digital age.

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