

Progressive healthcare solutions for the aging population: Essential developments



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Abstract

Progressive healthcare solutions for the geriatric or aging population have become increasingly essential to address their growing and complex health needs. The developments include the integration of advanced technologies like telemedicine, remote monitoring, and wearable devices that enhance continuous health tracking and personalized care. Artificial intelligence and machine learning are being also involved to analyze the health data, predicting and preventing age-related diseases, and optimizing treatment plans. Additionally, improvements in healthcare infrastructure, like age-friendly hospitals and community-based care models, ensure that older adults receive appropriate and dignified care. The promotion of preventive healthcare through lifestyle interventions, nutrition, and physical activity programs also plays a crucial role in maintaining the well-being of the elderly. Furthermore, policies and initiatives aimed at addressing social determinants of health, such as access to healthcare services, social support, and economic stability, are fundamental in creating a holistic approach to geriatric care. These developments collectively aim to enhance the quality of life, independence, and longevity of the aging population, ensuring they can age with dignity and support.

Keywords: Artificial intelligence, remote monitoring, targeted medicine, telemedicine

1. Introduction

The global population is aging rapidly, leading to an increased number of elderly individuals who require specialized healthcare services. Geriatric healthcare is a specialized field of medicine focused on promoting the health, well-being, and quality life of older adults. It addresses the unique medical, psychological, and social needs of the elderly population, emphasizing the prevention, diagnosis, treatment, and management of age-related diseases and conditions. Geriatric healthcare focuses on promoting health by preventing and treating diseases and disabilities in older adults. As life expectancy increases, it becomes crucial to address the unique health needs of this population. Advancements in geriatric healthcare are essential to

meet the needs of the aging population. By leveraging personalized medicine, telemedicine, robotics, innovative therapies, and holistic care models, we can significantly enhance the quality of life for older adults. Addressing the challenges and focusing on future directions will ensure that elderly individuals receive the care and support they need in the coming years.

Advancements in geriatric healthcare are transforming the way we care for older adults, enabling more personalized, efficient, and effective treatments. By using these innovations, we can significantly enhance the quality of life for the elderly, ensuring they receive the comprehensive and compassionate care they deserve as they age. Continued research and development in these areas will be crucial to address the evolving needs of the aging population.

Health systems in lower- and middle-income countries (LMICs) must give priority to the demands of their older population since the ageing population is predicted to continue growing. Common problems encountered by older population include dementia, diabetes, cancer, and poor oral health, hence a comprehensive geriatric mental health support is desperately needed. Expertise and training are required to provide geriatric and palliative care, particularly for staff members who must learn how to treat elderly patients with empathy. Globally, there are several factors that impact the healthcare services designed for senior citizens, such as insufficient care and refusal of medical treatment. Particularly, since there is little staffing, inadequate training, and insufficient legislative security, older individuals in LMICs frequently experience verbal and psychological abuse as well as intolerance when seeking treatment. However, the high-income countries have developed geriatrics specialization and models for providing effective services (1).

The American Geriatrics Society (AGS) and British Geriatrics Society (BGS) published a guideline in 2001, which was revised in 2011, addressing common risk factors for falls and providing recommendations to reduce fall risk in community-dwelling older adults. In 2022, the World Falls Guidelines (WFG) Task Force created and updated globally oriented fall prevention risk stratification, assessment, management, and interventions for older adults (2).

According to a Jenny Yang article from May 13, 2024, there were about 60 home health care providers for every 1,000 seniors 65 years of age or over in the United States (US) in 2022. There were around 5% more home health care providers in the US in 2022 than there were in 2021 (3).

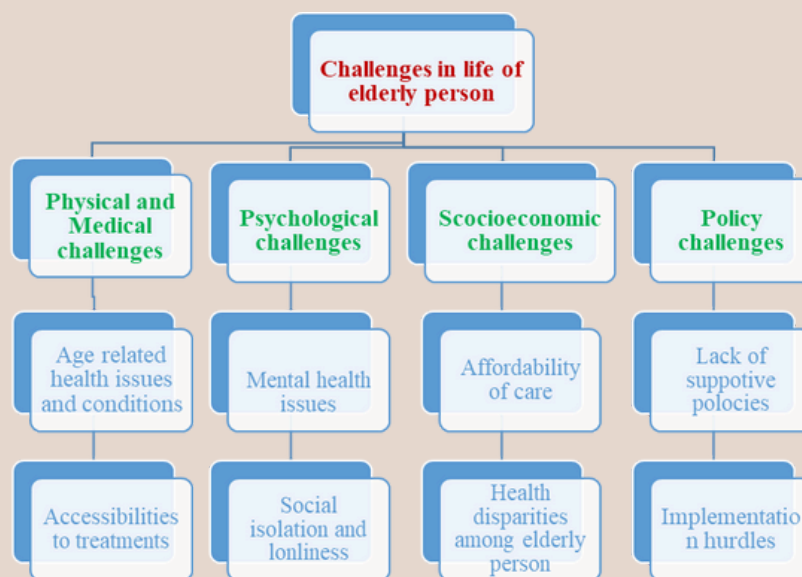


Figure 1. Common challenges faced by elderly population

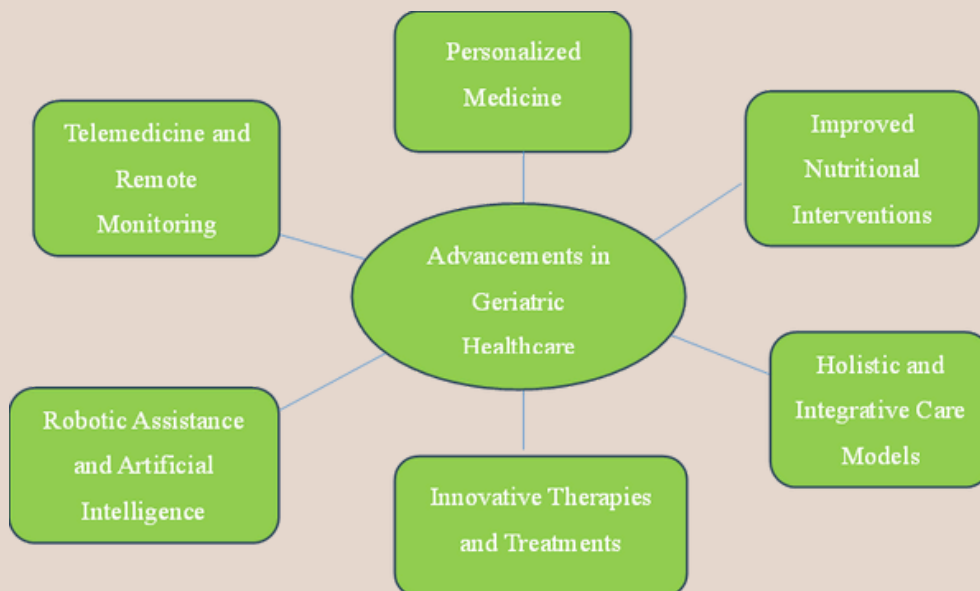


Figure 2. Advancements in geriatric healthcare

2. Technological advancements

2.1. Robotic technologies

Not every senior in the world today has kids, family, or friends who can give them the long-term care they need. Even if they are parents, some of them may not be able to help their parents with everyday tasks like getting dressed, taking a shower, and taking their medications. Considering care ethics, which places a strong focus on the interdependent connections that exist between parents and their offspring, children have a moral obligation to provide care for their parents even in situations where they are unable to do so. Such kids could use robotic technology as a means of expressing their kindness, empathy, and attentiveness to the needs of their elderly parents. Robotic care offers enormous benefits in elderly care because of the robots' high capacity to work round the clock and to perform similar and repetitive tasks as professional caregivers. Robots can assist the elderly with their day-to-day needs by reducing daily chores and allowing them more time for socialization and other cognitive engagements. There are already some forms of robotic caregivers which can assist seniors in their everyday tasks for e.g., Bestic robotic arm, which provides independent eating for those who have difficulties of using their arms; Giraff robot, which allows healthcare staff virtually interact with a senior who is living at home; Hector, which helps keep a daily routine of the seniors and detects emergencies, and many others. These robots provide not only the necessary assistance for the elderly but also release actual human caregivers from their duties so that they can perform other tasks (4).

2.2. IoT-based technologies

By utilising technologies like big data analytics, artificial intelligence, cloud computing, mobile computing, and real-time operating systems, IoT-based goods and services can help the ageing population live better. These technologies are used to create low power, networked electronic devices with sensors that interface with computers and cell phones. Wearable sensors, which have higher processing power, resolution, and data throughput, can support public health care services for older people who have locomotor limitations or in distant areas. The gadgets that are fastened to the human body are called wearables. Wearables are very useful for elderly people

because of the sensors that are available to detect falls, track sleep patterns, check blood pressure, heart health, blood oxygen levels, body temperature, and inactive behaviour. Caretakers or medical professionals can be notified by the connected wearable devices when an issue needs to be addressed. Using cloud servers or internal storage, real-time monitoring can also be set up for round-the-clock, continuous monitoring (5).

3. Medical advancements

3.1. New treatment methods

Another significant development in medical progress is the introduction of targeted medicines or targeted therapies which focusses on treating specific areas or systems rather than whole body. The targeted nature of these therapies reduces the side effects often associated with conventional treatments, a significant benefit for older patients who are more vulnerable to side effects due to age and frequently co-existing health issues (6).

3.2. Preventative care strategies

This approach encompasses diverse strategies, including routine screenings for the early detection of potential diseases, adherence to regular vaccination schedules to guard against infectious diseases, and lifestyle modifications for the healthier habits, out of these, routine health screening is particularly significant since they provide an essential means of early detection and prompt intervention, particularly for the elderly. Early diagnosis often leads to more manageable treatments and enhanced health outcomes. Immunisations are essential for protecting against a variety of illnesses, some of which can be more serious in the elderly due to weakened immune systems.

4. Social advancements

4.1. Improvement in living conditions

Positive changes can be seen in the rise of senior-friendly housing alternatives that come with emergency response systems, accessibility tools, and facilities designed specifically to meet the requirements of the elderly. Concurrently, the growth of in-home care services offers medical aid, companionship, and help with everyday tasks to elderly individuals, promoting their independence with essential care. However, despite these advancements, challenges persist for improving living conditions for older persons. Many older persons may not be able to take advantage of these improved environments due to concerns with affordability and accessibility.

4.2. Role of social support and community

The mental, emotional, and physical well-being of senior citizens is greatly enhanced by strong social networks. Taking part in community activities, such as volunteering, joining local clubs, or exercising in groups, helps older people feel more included in the community, boost their self-esteem, and improve their well-being. The digital platforms like virtual communities play a crucial role in addressing feelings of isolation among elderly person, providing valuable paths for social engagement and connection.

5. Policy advancements

5.1. Government policies for health care of older people

Policies which promote active aging, emphasizing regular physical activity, mental engagement,

social involvement, are gaining popularity in maintaining health and well-being in elderly person. It can have policies which are related with the finance health care for older persons, stimulating the demand for targeted and effective medical services designed to their needs.

5.2. Global programs and initiatives

Various global projects and programs which are associated with an ageing population have increased significantly in the last few years. The rights and needs of aging populations have now been recognised by governments, non-profit organisations, and international organisations.

6. Conclusion

The development of methods to improve older people's health-related quality of life offers a promising future for them. The advancements made in adapting health care services to the unique demands of the elderly population demonstrate the beneficial effects of medical discoveries, technology advancements, and raised awareness. It can be better treatments, enhanced diagnostics, and increased accessibility to healthcare resources. To overcome the obstacles in health care need of elderly person collaboration among health care professionals, policymakers, and community organizations is vital. A comprehensive solution for improving health-related quality of life of elderly can be developed through the combination of resources, knowledge, and skills. The health systems of low- and middle-income nations have not prioritised the establishment of policies targeted at providing suitable healthcare services and allocating health workers for geriatric and palliative care, despite the growing trajectory in the number of older persons.

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