ORIGINAL RESEARCH PAPER

Geriatric Health

NEEDS OF GEROTECHNOLOGY BY ELDERLY PATIENTS PREDOMINANTLY FROM LOWER SOCIOECONOMIC STRATA ATTENDING MEDICAL OPD OF A MEDICAL COLLEGE

KEY WORDS:
Gerotechnology, autonomy, lower socioeconomic strata.

Dr. Shweta Sehgal — Professor, Department of Physiology, Al-Falah School of Medical Sciences, Dhauj, Faridabad

Avila Fernandes — Second year MBBS student, Al-Falah School of Medical Sciences, Dhauj, Faridabad

Aalia Khan* — Second year MBBS student, Al-Falah School of Medical Sciences, Dhauj, Faridabad*Corresponding Author

ABSTRACT

INTRODUCTION: Gerotechnology is an expanding multidisciplinary field which plays a very important role in enhancing the quality of life for older adults and their caregivers. It includes a wide range of technologies designed to address the unique needs of aging populations, promoting autonomy, independence, and social inclusion. This research specifically aims to assess the needs and relevance of gerotechnology among elderly patients, with a focus on those predominantly from lower socioeconomic strata. By understanding the challenges faced by this demographic, the study seeks to explore how technological solutions can empower older adults and improve their well-being, especially in resource-constrained settings.**AIM AND OBJECTIVES:**This research aims at finding out the needs of gerotechnology of elderly patients from lower socioeconomic status attending medical OPD of a medical college We set out to assess whether the patients were aware of or using any Gerotechnology and their requirements of gerotechnology.**MATERIALS AND METHODS:** This was a cross-sectional study conducted in the OPD of a Medical college where 107 patients more than or equal to 60 years of age were approached for the interview and all those who wished to be part of the study were interviewed and asked questions.**RESULT:** Most elderly patients are not even aware of the technologies that could improve their quality of life. This lack of awareness is a major barrier to their adoption and use. Many elderly people face challenges like difficulty understanding how these technologies work, limited access, and high costs. To truly help them, there is a need for better education, simpler and more affordable solutions, and efforts to make these technologies more accessible.

INTRODUCTION

Gerotechnology is about combining technology with the needs and aspirations of older adults to make aging a more positive experience. It focuses on creating tools and solutions that help people stay healthy, independent, and socially connected as they grow older.[1] This field recognizes the challenges that come with aging, such as reduced mobility, health issues, or feeling isolated, and aims to address them in practical and innovative ways. Whether it's improving daily activities, enhancing communication, or supporting better healthcare, gerontechnology is designed to help older adults lead fulfilling, comfortable lives while maintaining their dignity and autonomy. Gerotechnologies are used to prevent, delay, or compensate for physical, cognitive, and sensorial decline due to aging. For instance, gerotechnologies are used to optimize communication with family caregivers, monitor older adults and the environment to increase safety, and to assist in daily living activities.[2]

There are wearable devices that monitor health, like tracking your heart rate or reminding you to take medication. Smart home systems can detect falls, turn on lights automatically, or even adjust the temperature for comfort and safety. Mobility aids, like stairlifts or walkers with added features, help people get around more easily. Simplified smartphones and voice-activated devices make it easier to stay connected with loved ones. Telehealth services allow remote doctor visits, and apps designed for brain exercises help keep the mind sharp. These technologies work together to make aging a little easier and a lot more enjoyable. [3,4]

Ultimately, this research aims to provide practical insights into how gerotechnology can become more inclusive and accessible, ensuring that no community is left behind. By focusing on fairness and empathy, this study hopes to contribute to a future where technology genuinely serves everyone, no matter their background or circumstances.

In short, gerotechnology has the potential to address many challenges older adults face, but it must be implemented thoughtfully and inclusively.

To ensure the successful implementation of gerotechnology in lower-income communities, it is essential to engage older adults in the development and design process [5]. By involving them in the creation of technology solutions, we can better understand their preferences, needs, and concerns. User-centered design approaches can lead to more intuitive and accessible devices, interfaces, and services that are tailored to the unique challenges faced by older adults [6]. For example, incorporating large buttons, voice-activated commands, and visual aids into devices can make them more usable for those with reduced dexterity or visual impairments. Furthermore, including feedback loops where older adults can share their experiences with technology will allow for continuous improvement and refinement of these tools.

Another key aspect to consider is the importance of training and ongoing support. Even the most intuitive technology can feel intimidating to someone who has little experience with it. To address this, community-based training programs should be established to help older adults build digital literacy [7]. These programs can take place in local libraries, community centers, or healthcare facilities, where older adults already feel comfortable. Peer-led initiatives, where older adults who are more technologically savvy mentor others, can also be effective in reducing feelings of isolation. Additionally, accessible, and responsive technical support, either in-person or via phone, can provide ongoing assistance to older adults as they navigate new technologies.

Lastly, it is important to consider the role of public policy and funding in bridging the digital divide [8]. Governments and non-governmental organizations should prioritize policies that make gerotechnology affordable and accessible to those in need. This could involve subsidizing the cost of essential devices or providing grants for local organizations to offer

training and support. Furthermore, public-private partnerships between tech companies, healthcare providers, and community organizations can help create sustainable solutions that address both the technological and social challenges faced by older adults in underserved areas [9]. By aligning resources and efforts, we can ensure that gerotechnology truly benefits all older adults, regardless of their socioeconomic status.Some older adults also expressed concern that technology may be too complicated to use. Further, older people with higher education and income and those who have a partner are more likely to use technologies of any kind, compared to older people who are single and have a lower socio-economic background [10]. Familiarity is another important variable in technology adoption by older adults. Older adult care recipients' perspective of telemedicine and indicated that perceived feelings of security, vulnerability, privacy, and confidentiality fostered reluctance to use the technology. On the other hand, care recipients were more willing to adopt telemedicine technology if the equipment included familiar technologies such as cable lines, standard telephone, and a home computer.[11]

Embracing technology provides individuals with access to information, social support, and mental health resources, fostering a sense of connectedness and empowerment. For instance, telehealth services and supportive health apps offer convenient and personalized support, reducing barriers to care and encouraging proactive management of mental health issues. Additionally, technology facilitates social interactions and community building through social media and online platforms, which can mitigate feelings of loneliness and isolation among older adults. Integrating gerotechnology with its broad benefits for mental well-being and daily functioning is then vital for ongoing research in this field [12]

Older adults have underutilized digital health technologies, such as video visitations and wearable remote patient monitoring (RPM) devices. This has been attributed partially to a lack of focus in addressing the specific needs of older adults during the developmental phase of these technologies [13]. Incorporating known deficiencies, such as decreased motor skills, grip strength, hand-eye coordination, processing speed, and other limitations, during the initial developmental stages may aid in a more meaningful utilization. It is also important to acknowledge that some older adults, as a result of strong personal preferences or related to physical, cognitive, or other barriers, may never adopt digital health technologies. [14,15,16]

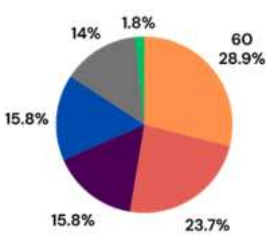
MATERIALS AND METHODS:

Study design: Cross-sectional study
Study area: OPD of a Medical college in North India
Study population: Older populations > or = 60 years of age
Sample size: 107 patients

Sampling technique: All the older patients > or= 60 years of age attending medical OPD of a college in North India, were approached for the interview. All those who wished to be part of the study were interviewed for the study.

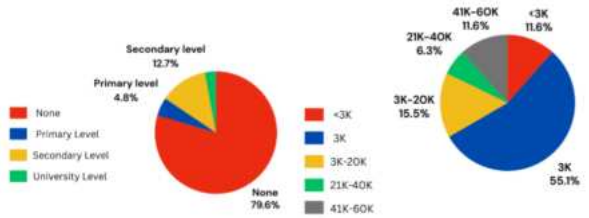
RESULTS: DEMOGRAPHIC INFROMATION

(1) AGE



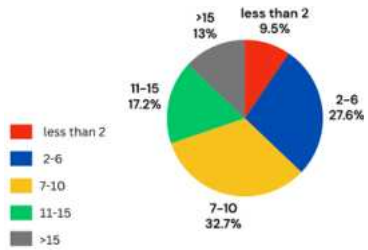
This graph depicts the age group of patients. It can be seen that majority of the patients who belonged were of age 60 (28.9%). Around 23.7% of them belonged to the age group 61-65 years. 14% of them were of the age 75-80 years while only 1.8% of them were above 80 years of age. The study had a slightly higher number of male patients (56.6%) compared to females (43.4). As this study was conducted in a Muslim predominant area it was seen that majority of the patients (77.3%) were Muslims while only 22.6% of them were Hindus.

(2) EDUCATION LEVEL AND MONTHLY INCOME



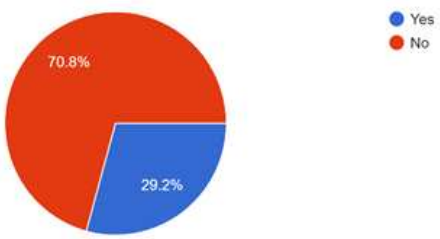
The graph shows the education level of the patients where it can be seen that majority of the patients (79.6%) were not educated, only 12.7% of them received secondary level of education while only 2.9% of them received university level of education.This can also be co-related to their monthly income where we can see that majority of them (55.1%) had a monthly income of just 3000 rupees. Individuals with low monthly income often have lower levels of education, which can limit their access to well-paying job opportunities and financial stability. Only 6.3% of them had their monthly income between 21K-40K.When asked about their type of household, 47.6% mentioned living in a pucca(paved) household, 20% mentioned living in a kacha(raw) household and 32.4% were living in semi pucca or semi paved households.

(3) NUMBER OF PEOPLE IN THEIR HOUSEHOLD



- Majority of the patients (32.7%) had 7-10 people in their household.
- 27.6% of them had 2-6 people in their household.
- 13% of them had more than 15 people in their household.

(4) AGRICULTURAL ACTIVITIES

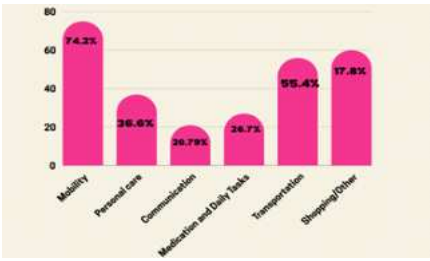


About 29.2% of the patients had their household members involve in agricultural activities in the last 12 months.

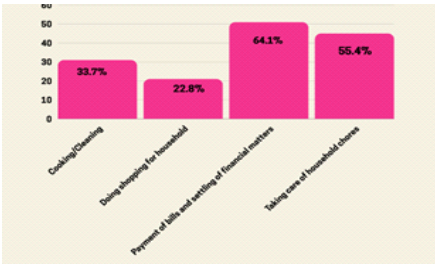
(5) DIFFICULTY IN PERFORMING TASKS

This chart provides an insightful look into the difficulties faced by the geriatric population in performing various daily tasks, highlighting the percentage of individuals struggling with different aspects of their daily lives. The analysis covers essential tasks like mobility, personal care, and

communication, along with external activities such as transportation and shopping. Participants were asked whether or not they had difficulty in the above mentioned tasks.74.2% of the patients had difficulty in mobility.55.4% of them had difficulty in transportation while 36.6% of them had difficulty in daily care activities.60% of them had difficulty in performing shopping and other chores. Only 20.79% of them had difficulty in communication.

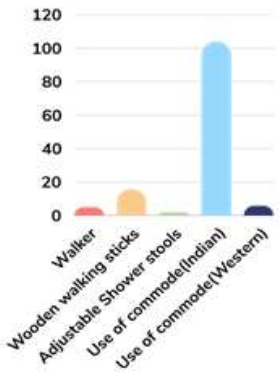


(6) INVOLVEMENT IN HOUSEHOLD CHORES



The varying percentages reflect the diverse range of obstacles encountered by elderly individuals in maintaining independence. Tasks like financial management (64.1%) and household chores (55.4%) present significant challenges, while activities such as shopping (22.8%) appear to be comparatively less difficult. These findings underline the importance of targeted support and interventions to assist the elderly in managing household responsibilities, ensuring better quality of life and greater autonomy.

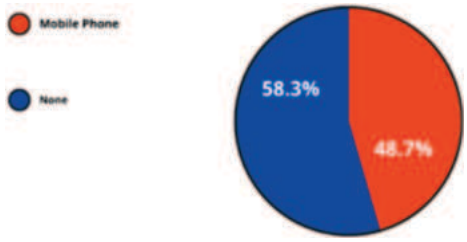
(7) AIDS/EQUIPMENTS USED BY PATIENTS



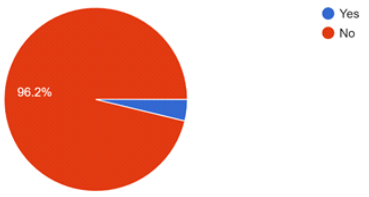
This graph provides an overview of the aids/equipment used by the patients. As depicted by the previous graph, a majority of the patients had not even heard about most of the aids A majority of the patients mentioned using Indian style commodes. A few of them mentioned using wooden walking sticks and walkers.

(8) THE USE OF MOBILE DEVICES FOR SOCIAL INTERACTIONS BY PATIENTS AND THE IMPACT OF THEIR ABILITY TO USE TECHNOLOGY ON THE TYPES OF DEVICES THEY OWN

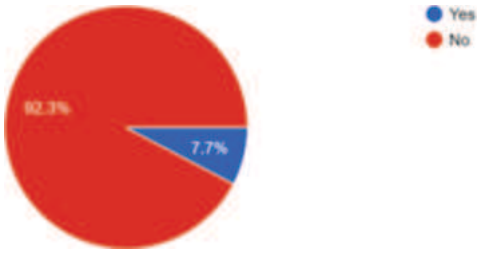
The graphs depicts that only 48.7% of the patients had mobile phones while the others did not use any technological devices. Out of these only 41% had the current ability to use these devices while only 42% were using phones for social interaction. Majority of the patients do not own any technological devices due to their economic status and financial constraints.



(9) USE OF INTERNET FOR HEALTH-RELATED QUERY

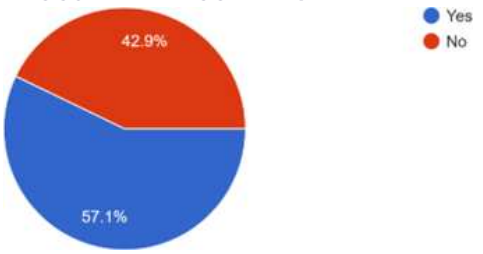


(10) WAS THE PATIENT EVALUATED BY AN HCP FOR HEARING LOSS, ADVISED TO USE HEARING AIDS, AND ABLE TO PRODUCE THE RECOMMENDED AID



Around 7.7% of them have consulted an HCP for hearing loss. Majority of the patients did not even consult an HCP despite feeling the need to, mentioning financial constraints as a major reason. Out of which 3.8% were advised to use hearing aids after the evaluation, while only 1% of them procured the necessary hearing aid and only 1% of them are using the hearing aid at present.

(12) WAS THE PATIENT EVALUATED BY AN HCP FOR VISION LOSS, ADVISED TO USE VISUAL AIDS, AND ABLE TO PROCURE THE RECOMMENDED AID



57.2% of the patients consulted a HCP for vision loss, out of which 52.8% of them were advised to use visual aid after the evaluation. Despite this, only 35.2% of them had procured the necessary visual aid and only 34% of them were currently using the visual aids. This proves that despite needing visual aids the patients were not able to procure them because of several reasons. Upon asking, 50% of these patients were using spectacles, 4.8% were using contact lenses,45.2% of them had undergone cataract surgery.

DISCUSSION:

This study looked at the needs for gerotechnology in lower socioeconomic areas, focusing on how technology can help older adults in these communities. The results show that while gerotechnology has the potential to improve the quality of life for older adults, there are also significant barriers, such as high costs, lack of digital skills, and a need for better solutions

that fit the specific needs of people in low-income areas. One major finding of this study is that many older adults in these areas cannot afford the technology that could help them. Many people in these communities live on limited incomes, which makes it hard for them to invest in health-monitoring devices, mobility aids, or other technologies. This study also found that many older adults face difficulties with using technology, such as smartphones and health-monitoring tools.

Another important finding is the need for simpler and more affordable technology. Participants in this study said they wanted devices that were easy to use and understand, without needing technical knowledge. It is important to make technology both affordable and user-friendly. The study also explored how social technologies can help reduce loneliness and isolation. Many older adults reported feeling isolated, especially because they had trouble getting out of their homes. They were interested in using technology to stay in touch with family and friends. Social isolation is a big problem for older adults in low-income areas and that tools like video calling and social media can help them stay connected.

However, the study also showed that for gerotechnology to succeed in these areas, we need to address bigger issues, like economic inequality and the digital divide. Future research should focus on developing low-cost, easy-to-use technologies, and policies should work to improve internet access and digital training for older adults in these communities.

Research suggests that negative self-perceptions can significantly hinder older adults' acceptance of gerotechnology (Freiesleben et al., 2021; Joseph et al., 2018). For example, Chen and Chan (2013) found that non-usage of gerotechnology is often linked to low literacy levels, as it requires older adults to acquire specialized knowledge. Additionally, Halicka and Surel (2021) observed that lower levels of self-efficacy and heightened anxiety influence how older adults perceive geotechnology, with those feeling less capable often finding the technology more difficult to use.

This anxiety stems from a sense of limited control over these technologies, making older adults feel less confident and more resistant to adopting them (Chen and Chan, 2014; Jarvis et al., 2020; Wilson et al., 2021). While assistance can alleviate some challenges, older adults may still hesitate to ask for help out of fear of burdening their caregivers (Chen and Chan, 2013).

Situational factors also play a significant role in influencing gerotechnology acceptance, as an individual's current circumstances—often beyond their control—can shape their willingness or ability to adopt these technologies (Peek et al., 2016). Additionally, using one type of technology can sometimes compete with or even discourage the use of another (Joseph et al., 2018; Peek et al., 2016). For instance, Peek et al. (2016) observed that many older adults prefer landline phones over mobile phones simply because they are more familiar with them, while mobile phones are often seen as tools for younger generations.

In conclusion, this study shows that gerotechnology can make a big difference for older adults in low-income areas. While there are challenges to overcome, technology has the potential to greatly improve the lives of older adults in these communities if we can make it affordable and accessible.

CONCLUSION:

The need for gerotechnology in lower socioeconomic areas is both significant and urgent. These regions often face a dual challenge of limited resources and an increasing elderly population with unmet healthcare and support needs. Gerotechnology presents an opportunity to bridge these gaps by offering affordable and accessible solutions that can improve the quality of life for older adults. Technologies such as telemedicine, low-cost assistive devices, and community-based digital solutions can help address barriers to healthcare access, reduce isolation, and promote independence among aging individuals.

Ultimately, the integration of gerotechnology in lower socioeconomic areas has the potential to not only improve individual well-being but also reduce the strain on caregivers and overburdened healthcare systems. Prioritizing the development and implementation of affordable, user-friendly, and culturally sensitive technologies can pave the way for a more equitable and inclusive approach to aging support.

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