

A Study of Assistive Devices for Indian Senior Citizens in Tier I and II Cities: Needs and Opportunities

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Abstract

Every person encounters various needs throughout his or her life. In the same lines, senior citizens have numerous needs, the most pressing of which is immediate care and protection in the event of an emergency. A variety of technologies are available to assist them in this regard. During the work undertaken, the researchers discovered a disconnect between the needs of senior citizens and the adoption of technologies that have the potential to assist and support more independent living. This paper examines people's needs in relation to assistive technology options. A team of 5 researchers conducted a primary survey of 207 subjects for detailed analysis. The survey was designed entirely to identify the need for a backup solution for existing solutions that underperform in certain situations. Slips and falls are the most common of these vulnerable situations. Mental health, cardiac arrest, and mobility issues dominated specific sub-categories in which the elderly was unable to communicate promptly with their caregivers. The goal of this study is to identify a subset of Indian senior citizens from tier 1 and tier 2 cities who have an immediate need for an assistive device that can address their identified needs.

Keywords: Senior Citizens, Backup, Technology, Vulnerable Situation, Elderly

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I. Introduction

The elderly people are thought to be the primary victims of crime and crime-related anxiety due to which they are heavily influenced by the same. They are weak, elderly, and powerless to protect themselves, which is one of the main reasons why crime rates against senior citizens have been steadily increasing. The elderly has limited budgets and frequently live in high-traffic areas, which contributes to their vulnerability to crime and violence. Health problems are more prevalent in people over the age of 80. These are the people who are disproportionately affected by crime and violence. The elderly lives in fear of being harmed by anyone, even if they are not subjected to any criminal or violent acts. They develop fear and apprehension, especially when they live alone because they have no means of support and thus fear being harmed by others.

Theft, robbery, and simple bodily harm are the three most common crimes committed against senior citizens in India today. In its latest report on crime in India in 2019, the National Crime Records Bureau (NCRB) stated that 26562 crimes against senior citizens occurred in 29 states, compared to 23501 cases in 2018. The situation is worse in cities, where 25.3 percent of elderly people live alone, compared to 21.38 percent in rural areas. This makes it critical for senior citizens' caregivers to take the necessary precautions and be aware of the hazards they may face while out and about.

Problems faced by senior citizens

Dementia

Dementia encompasses more than just memory loss. This is a problem that affects 5% of the population over the age of 65. Short-term memory loss, difficulty finding words, capability issues, difficulty handling complex daily routine tasks, apathy, irritability, apraxia, loss of speech intelligibility, loss of ability to walk, and physical irritability are the symptoms found in the people suffering with this condition. The primary issues are found in consciousness, orientation, memory, thinking, attention, and behaviour. When a person reaches the age of 70, his vocabulary and word usage typically decline. He has difficulty holding long conversations with others. However, with access to support and assistance from others, elderly people will not suffer significant disadvantages.

Anxiety and Phobias

Age-related psychological issues in the elderly are largely attributed to anxiety and phobias brought on by a variety of factors. One of the factors that causes both psychological and physical symptoms and signs is

stress. People are more likely to feel anxious and apprehensive when they are under stress. These may result from a number of causes. For instance, if they are ill or have health problems, they might be reluctant to go to a hospital or other type of medical facility and might need help. When visiting a temple or other place of worship, they might need company because crowded places can make people feel uneasy. Going to the market, conducting banking transactions, and so on are other tasks and functions that cause anxiety in the elderly. These are all possibilities, particularly if they are unfamiliar with the area.

Falls

A fall is defined as an event in which a person comes to rest inadvertently on the floor, which is frequently caused by a combination of intrinsic and extrinsic risk factors. According to the World Health Organization's (WHO) global report on fall prevention, people aged 65 and up fall about 28-35 percent of the time, and this proportion increases with age and frailty level. In India, the prevalence of falls among people over the age of 60 has been reported to range from 14% to 53%. Falls and their consequences are a major public health issue because they are the second leading cause of unintentional injury morbidity, accounting for 11% of unintentional injury mortality rates worldwide. One-fifth of the 424,000 reported fall-related deaths worldwide in 2004 occurred in India. A fall can result in either nontraumatic or traumatic injuries ranging from no injuries, bruises, and lacerations to dislocations, fractures, and head injuries, which can be fatal in some cases.

Knee problem

Osteoporosis is a common issue, particularly among older women. Broken bones are more common. In addition to limiting mobility, vertebral compression fractures can be painful. Muscle weakness contributes to fatigue, weakness, and a reduced capacity for activity. Mild stiffness to crippling arthritis are all types of joint issues (osteoarthritis). Injury risk rises, and loss of balance may result in falls. Reflexes can become less quick in older people. This is more likely to be caused by changes in the muscles and tendons than in the nerves. The elderly people are more likely to experience involuntary movements like fasciculations and muscle tremors.

Paralysis attack

Sleep paralysis is a parasomnia or sleep disorder. During a sleep paralysis episode, the person may experience temporary muscle paralysis that prevents movement. The individual may also be unable to speak. Those who are unable to open their eyes may have hallucinations about a supernatural presence in the room attempting to harm them. Because of a feeling of weight on the chest, the person experiencing sleep paralysis may find it difficult to breathe. The sensation of one's chest being crushed under intense pressure is a common occurrence. Even when they are firmly on the bed, some people may feel as if they are falling, floating, or spinning out of control. Due to inability to call for help, it may prove fatal.

Cardiac problems

Adults 65 and up are more likely than younger people to suffer from cardiovascular disease, which is characterised by problems with the heart, blood vessels, or both. Changes in the heart and blood vessels caused by ageing may increase a person's risk of developing cardiovascular disease. Heart attacks and heart strokes cause sudden disorientation and faintness, making it difficult for the person to speak or call for help. This could be fatal if not addressed quickly. Furthermore, a fainting spell may result in a sudden fall, resulting in serious injuries to the elderly.

Physical Activities

It has been found that elderly people go to parks every morning to socialise with their peers and engage in physical activity. They walk, interact with others, practise yoga and meditation, and other activities. The maintenance of an elderly person's health is thought to depend on engaging in physical activities and getting together with friends in the morning. With the help of family members or caregivers, elderly people who are unable to walk and need to use wheelchairs visit parks and other public places. People who stay at home all day and don't exercise or go for morning walks are more likely to experience depression, which has a detrimental effect on their health.

Methods adopted by caregivers

Growing old is a natural phenomenon that we must all accept gracefully, but it can become a problem if proper care, love, and support from the family is not provided. Most commonly, elderly people face the aforementioned issues, which necessitate immediate and prompt communication in order to seek assistance. Caregivers use a variety of methods to ensure safety and well-being in such situations, including:

- ◆ Neighbours
- ◆ Mobile phones
- ◆ Relatives

- ◆ Calling bell
- ◆ Domestic helper
- ◆ Close connections living nearby

II. Literature Review

Farivar Samira, Abouzahra Mohamed and Ghasemaghaei Maryam in their study titled “Wearable device adoption among older adults: A mixed-methods study” (2020) focused on understanding the factors that influence seniors' willingness to use wearable devices. However, the rate of adoption of such devices among older adults is very low. To address this, they created a research model to investigate the effects of cognitive age, perceived complexity, and subjective well-being on the use intention of seniors.

Hakim Al Latif, SoarJeffrey and Yu Lei in their research work titled “Older People’s Needs and Opportunities for Assistive Technologies” (2020) investigated the detailed and specific needs of the elderly. The work examined existing smart home and assistive technologies that meet needs, as well as the direction of technological innovation. They discovered that elderly people require sight/vision assistance technology (represented by 25% in this category), medication reminder/treatment technology (represented by 22% in this category), and general health monitoring technology (represented 14 percent in this category).

Jayesh Mahesh Bellara, Nikshita Ria John D’Souza, Deepa Krishnan, Nidhi Bhandari, Hiral Bipin Dedhia and PothirajPitchai in their study titled “Prevalence, risk factors, circumstances for falls and level of functional independence among geriatric population - A descriptive study” in year 2019 found the prevalence of falls among older adults to be 24.98%. The study found that falls are a significant health issue for older adults. Age group, education, marital status, and socioeconomic status all had a significant association with fallers. They also discovered that the upper middle class had a higher incidence of falling than other groups; additionally, these groups reported higher fall concern and decreased functional activities.

Mohammad Amiri in his research titled “Problems Faced by Old Age People” in July 2018 focused on various major social and economic problems faced by old age people, as well as factors such as family care and support. He also emphasised the importance of understanding older people's perceptions of the major causes of problems and their negative attitudes toward life in order to assess the scope of social work intervention in terms of medical/health care, emotional support, counselling, and so on.

Kapur Radhika in her work on Problems of the Aged People in India, carried out in the year 2018, learnt about the problems that the elderly face in India, such as social, economic, psychological, health, crime, abuse, and other issues. Social work interventions are another area that has been included. These are formulation of measures and policies which are being developed with the goal of alleviating the problems of the elderly, providing them with security and protection, and focusing on their well-being.

Hemavathi U. and Rani. B. S. (2014) focused on the problems faced by old age people based on age, gender, and types of stay in Tirupati town and Mannurapalli village in Andhra Pradesh State. The study's authors discovered that the majority of elderly people admitted to institutions came from nuclear families. When compared to non-institutionalised old age people, institutionalised old age will face many social problems, such as mental health issues. The authors also discovered that institutionalised elderly people had more psychological problems than non-institutionalized elderly people, who had more financial problems.

Zainal Azaliza, FarizaHanis Abdul Razak and NahdatulAkma Ahmad (2013) in their research work investigated qualitative interviewing in eliciting needs from older people. They discovered that they can conduct qualitative interviews with the elderly people, but that working with them should be different in terms of a greater awareness of the pressures between the diversity of responses from elderly people versus interviewer topic and time.

Kumar Prakash, Dr. Usha Dixit and Dr. V. C. Goyal in their study, Assistive and Enabling Technology Needs of Elderly People in India: Issues and Initial Results, year 2009, found that majority of respondents lacked awareness of Assistance and Enabling Devices (AEDs) but were willing to use provided these are available at affordable costs.

III. Research Methodology

Data collection

The research is based on primary data. The study was carried out in tier 1 and tier 2 cities of India. The minimum age criteria for senior citizens were chosen as 65 years old. Face-to-face interviews were selected as the data collection method because they are especially helpful for pursuing in-depth knowledge about the subject. The interviews were conducted by 5 people to get a whole geographical area coverage for better understanding as it becomes practically impossible for a single person to cover such a wide range of area with utmost accuracy. For this study, 207 respondents were considered as a sample size. At first, some tentative questions were decided which were to be asked at the time of the interview. To get the absolute idea of the depth of the problem, interviews were conducted in two phases.

In phase 1, the caregivers of the elderly were interviewed to know what all measures are adopted by them for their safety and prompt communication in vulnerable situations. To know in-depth of the problem, 3 conditions were checked such as if they are living together with the senior citizen, living far enough or are living separately in the nearby region. The employment status was also taken into consideration to know the number of hours elderly has to live alone. They were asked if they encountered such an emergency situation in the past in which they faced problem in communicating with the elderly or faced any difficulty with their existing measures to know if they need a backup for existing solutions in such situations and are looking for them.

In phase 2, the senior citizens were interviewed to know in-depth of the problem from their perspective, that is, if they face difficulty in communicating with their care-givers at the time of emergency. They were even asked what all problems they are facing and have faced previously such as fall, slip, heart stroke, etc. and if it is frequent in nature. Working and mobility activities were also noted to get a measure of their activeness and hence vulnerability of the problem as it makes them more susceptible to undergo such situations. During this phase, an equivalent set of questions to those used in the focus group was created for the individual interview schedule. The interviewers were intended to get a deep insight into the life of a senior citizen.

Both individual interviews took place one after the other. First, written informed consent was obtained from the interviewee in both phases. To capture the narratives of the participants, mostly open-ended questions were asked. Both interviews lasted 30-40 minutes and were documented by taking notes first and later in the LPG glider tool as well as an excel sheet.

Limitations

1. The present study is restricted to only tier 1 and tier 2 cities due to wide area of the sample.
2. The reluctance on the part of few respondents (especially elderly people) to provide accurate information is another limitation.
3. Due to time constraint, tier 3 cities were excluded from consideration.
4. Since India is a multilingual nation, the interviewers' ability to communicate was limited by the language barrier.

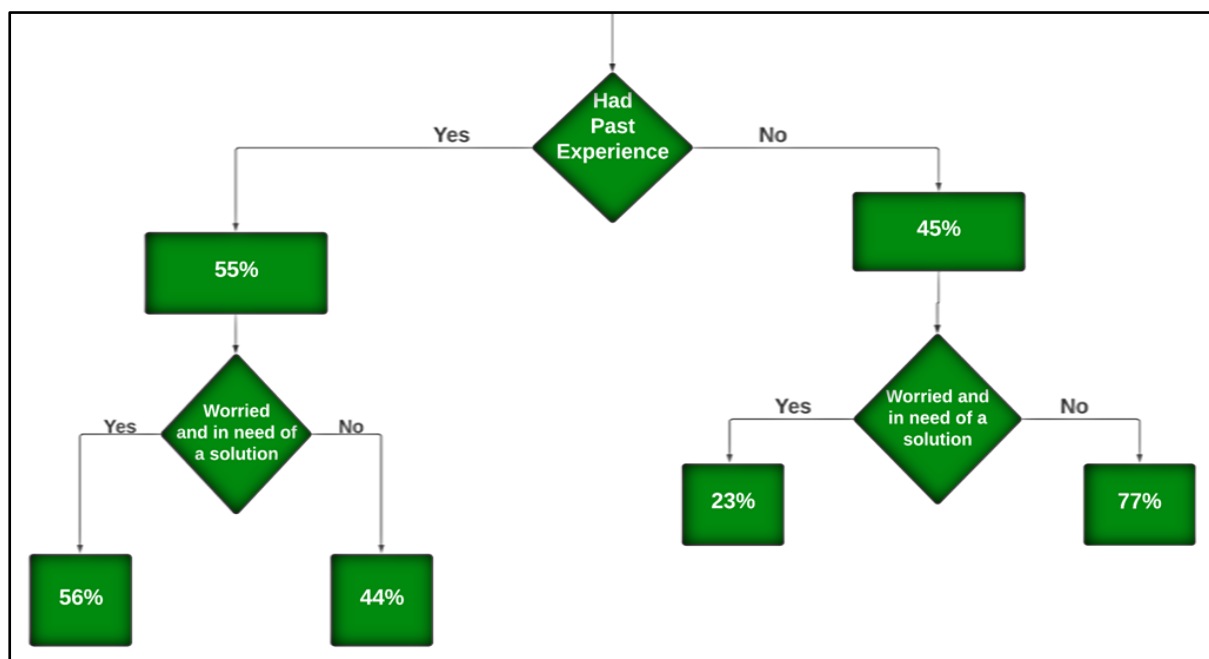
Significance of the study

Senior citizens face numerous problems for which they require special care and attention. For their wellbeing, their caregivers take certain measures based on existing methods available to them. However, these existing solutions underperform/fail in certain emergency situations (For instance, an elderly living alone slips and falls down in the bathroom, then he/she might not have accessibility to phone for prompt communication) and caregivers require a backup for such situations to ensure complete safety of the elderly.

Analysis of data

The study is based on primary data gathered through face-to-face interactions with the caregivers and their elderly loved ones. Based on the data gathered, following are the findings from the analysis:

- ◆ People who had a previous experience are more cautious and are looking for an alternative solution.
- ◆ Major Problems found are Mobility, Cardiac Attack, Low BP, Memory Loss and Falls where Fall accounts the majority of them
- ◆ People living in independent houses in tier 2 cities with a proper relationship with their neighbours are not much worried.
- ◆ Caretakers who are solely responsible for elderly's care are more cautious.



The flowchart above is displayed to help with the understanding of the outcome. 55% of the senior citizens surveyed had some past experience where they required immediate assistance for their rescue. Out of these 55%, 56% of the caregivers are worried about the safety of their elderly loved ones and are in need of a solution that can act as a backup to their existing measures. They are wary and want to prevent similar circumstances from happening again. However, 44% of caregivers do not feel the need of the solution and still rely on their existing measures. On the other side, rest 45% of the elderly did not face any vulnerable solution. Out of these 45% cases, 23% caregivers anticipate such emergencies in near future and hence are worried about the same. They search for another solution to be extra sure of the safety of their elderly loved ones, whereas the rest 77% do not feel the need of such solution and continue to use their existing measures.

IV. Conclusion

Our society's greatest asset is its senior population. They serve as a link between the past, present, and future. They are in a better position to assess the present and make predictions about the future because they lived their lives, saw the past, and the pace of progress throughout their lives. They are the elder family members who are more knowledgeable about religion, values, and associated customs. They are more aware of social mores and family values. They transmit these familial values and social knowledge to their future generations. To transmit historical values and knowledge, the Indian family system used an automatic system.

Ageing is an inherent biological process. All over the world, the issue of old age has been recognised as a major social issue. People must deal with numerous health issues in their later years that they are unable to resolve on their own. They require proper care and attention, especially in situations where they may be unable to call for assistance on their own at the appropriate time. Therefore, they need a different solution as a backup for the current ones so that they can be helped in delicate circumstances.

References

- [1]. Chen, F., Fang, C.: The functional weakening of family support for the aged and the outlet: the research on the elderly supporting model in the underdeveloped rural areas. *Popul. Dev.* 20(1), 99–106 (2014)
- [2]. Mattie, J., et al.: User perceptions of existing home access solutions and a novel home access device. *Disabil. Rehabil. Assist. Technol.* 11(8), 668–677 (2016)
- [3]. Blackman, S., et al.: Ambient assisted living technologies for aging well: a scoping review. *J. Intell. Syst.* 25(1), 55–69 (2016)
- [4]. Hemavathi U. & Rani. B. S , (2014), “Problems faced by elderly – A Comparative Study of Institutionalised and non-institutionalised”, *International Journal of Science and Research*, 3(12).
- [5]. Mane. B, (2016). Ageing in India: Some Social Challenges to Elderly Care, *Journal of Gerontology and Geriatric Research*, 5(2)
- [6]. Mohapatra. T. (2012). Caring of the Elderly: An Empirical Study from Rural Odisha, *Ageing and Society, The Indian Journal of Gerontology*, 22(3) and 4
- [7]. Larsen, S.M., Mortensen, R.F., Kristensen, H.K., Hounsgaard, L.: Older adults’ perspectives on the process of becoming users of assistive technology: a qualitative systematic review and meta-synthesis. *Disabil. Rehabil. Assist. Technol.* 14(2), 182–193 (2019)
- [8]. Yusif, S., Soar, J., Hafeez-Baig, A.: Older people, assistive technologies, and the barriers to adoption: a systematic review. *Int. J. Med. Inform.* 94, 112–116 (2016)
- [9]. Brims, L., Oliver, K.: Effectiveness of assistive technology in improving the safety of people with dementia: a systematic review and meta-analysis. *Ageing Ment. Health* 23(8), 942–951 (2019)

- [10]. Pedrozo Campos Antunes, T., et al.: Assistive technology for communication of older adults: a systematic review. *Aging Ment. Health* 23(4), 417–427 (2019)
- [11]. MadaraMarasinghe, K.: Assistive technologies in reducing caregiver burden among informal caregivers of older adults: a systematic review. *Disabil. Rehabil. Assist. Technol.* 11(5), 353–360 (2016)
- [12]. Peek, S.T.M., Wouters, E.J., Luijckx, K.G., Vrijhoef, H.J.: What it takes to successfully implement technology for aging in place: focus groups with stakeholders. *J. Med. Internet Res.* 18(5), e98 (2016)
- [13]. Nasr, N., et al.: The experience of living with stroke and using technology: opportunities to engage and co-design with end users. *Disabil. Rehabil. Assist. Technol.* 11(8), 653–660 (2016)
- [14]. Raju, S. S. (2011). *Studies on Ageing in India*. Institute for Social and Economic Change, Bangalore United Nations Population Fund, New Delhi Institute of Economic Growth, Delhi

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