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Digital Ageism

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Abstract
Artificial Intelligence or (AI) has infiltrated our social lives and expanded to AI-based services and tasks, including areas with a large impact on people, such as healthcare. The shortage of manpower in the healthcare and social system requires alternative arrangements to meet the ever- increasing health needs, especially of the elderly population. Streamlining the current health resources and making them more efficient is the need of the hour. Extensive reliance on AI has helped in prevention, diagnosis, drug designs and after-care, and thus, may drive meaningful changes across the entire patient journey.

AI-enabled technologies could help address age-related challenges like physical impairments and cognitive decline. While recent researchers continue to study elderly experiences with specific AI-enabled products (e.g., conversational agents and assistive robots), it remains unknown how elderly population perceive and experience AI-enabled everyday technologies, which could impact their adoption of future AI-enabled products. Surveys and semi-structured interviews were conducted on the elderly to understand their experiences and perceptions of AI. The study resulted that the elderly were enthusiastic about learning and using AI-enabled products, but they lacked learning avenues. Additionally, they worried when AI-enabled products outwitted their expectations, intruded on their privacy, or impacted their decision-making skills. Therefore, they held mixed views towards AI-enabled products . The design recommendations conclude that it helps to make the elderly feel secure, inclusive and in control of themselves without being dependent on their younger generation.

Keywords: *Artificial Intelligence, Ageism, Assisted Technology, AI-enabled Products*

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I. Introduction

Although people from all ages benefit from technological advances, different age groups may have distinct healthcare needs. Thus, in contrast to younger adults, whose priorities are inpatient experiences, the elderly face a number of barriers in reaching the local healthcare doctors and facilities. They even lack standardized information systems and health care centers which are essential to address their complex health care and social care needs. The elderly has much higher prevalence of nearly all major chronic and long-term conditions. In addition, they are more likely to succumb to adverse health events, such as falls or infections, and these can lead to drastic changes in their physical and mental well-being even after an apparently minor incident. However, person and family-focused care, self- management resources, and successful collaborative practice have been all highlighted as facilitators of good healthcare provision both by elderly and their families. All of the above highlight the importance of diagnosis, monitoring of disease risks and their prevention, as well as management and optimizing of geriatric syndromes in the community for elderly living independently or in 24-hour care facilities.

AI technology can make a difference in the health and social care provision for the elderly. AI and virtual reality environments help to improve social isolation, loneliness, anxiety, depression, gait, posture and even pain in older adults. Maintenance of good friendly care, a clean environment, and optimized supply chains could help the elderly indirectly.

The health system has accumulated massive datasets, largely due to the introduction of electronic records, which include demographic information, medical history, laboratory tests and radiological investigations, history of surgical interventions, medication history and allergies, lifestyle etc. Such data can be used productively for improving diagnosis and treatment, prevention, diagnosis and cure of communicable, acute and chronic diseases. Considering information on lifestyle, general health and demographics aid in timely diagnosis and prediction/prevention of disease onset at an early stage. A promising avenue is the secondary use of electronic health records, where patient data are analyzed to conduct

clinical and translational research. One of the advantages of AI is its use in geographically isolated areas, where there is limited access to healthcare, and also overcoming the increasing lack of specialized medical staff. With this, machine learning algorithms are paving way, enabling extensive data sets to be analyzed using algorithms, a set of rules given to an AI program to find patterns which are far too complex or numerous to aid for the elderly

The algorithms help to predict and analyze and predict risk for dozens of diseases including heart failure, several types of cancer, congestive heart failure, diabetes, schizophrenia and attention deficit and disruptive behavior disorders. It will help to prevent and lead to further research in AI.

AI -enabled products, such as online shopping and autonomous driving, are becoming so increasingly integrated into daily lives that people are often unaware of their presence and potential impact on daily lives. Recent researches began to understand people's experiences and attitudes toward AI and showed that age may affect their attitudes and experiences with AI. While younger adults tend to encounter AI products more often and are generally positive about AI, older adults aged 60 years or above tend to have relatively less experience. People may face challenges adapting and using AI products but AI could potentially help the elderly to deal with age-related issues such as physical impairments, cognitive decline, and emotional isolation. It is crucial to understand older adults' personal encounters and experiences with AI so that these technologies add greater value to this section of the population.

II. Objective of the Study

The objective of this study is to explore the experiences, perceptions, and challenges faced by elderly individuals (aged 60 and above) when using AI-enabled products such as Alexa, Google Home smart appliances, and assistive robots. The study aims to understand the elderly's perceptions and expectations of AI technology and its applications in order to identify any barriers or difficulties they encounter. The specific research questions addressed in the study are:

a) What are the personal experiences of elderly individuals with AI-enabled services?
b) Do elderly individuals face any challenges in using AI-enabled products, and if so, what are they?
c) What are the perceptions of elderly individuals regarding AI technology in AI-enabled products?
d) By conducting an online survey targeting elderly individuals who use and have experience with AI-enabled products, the study aims to gather insights into their usage patterns, knowledge levels, and trust issues related to AI. The findings will help identify areas where elderly individuals may require additional support or education to enhance their engagement with AI technology. Additionally, the study aims to investigate the role of personal experiences, perceptions, and product designs in facilitating the acceptance and accessibility of AI products for older adults.

III. Literature Review and Related Works

Technology helps individuals for ordering food, shopping, managing health care, financial and social security services. In this way, technology weaves into the lives of all, including the elderly. Keeping pace with the changing technology becomes crucial for oneself (Delmenhorst et al). Adapting to the rapidly changing technology is often left to an individual's technological capabilities and skill-sets. It has been understood that the elderly deters to adopt new advancements in technology not because of usability issues or cost, but because of their lack of awareness about the benefits or value the technology could provide. Elderly motivation to use and invest their energy in new technology depends on their knowledge of its perceived advantages and worth.

Digital literacy is very important for the individual to understand and determine how one could perceive the use and value of a technology . Digital literacy means individuals' ability to discern the usefulness of a particular technology and their comfort in using it for various purpose (Leahy and Dolan). It applies and helps anyone from a non-technological background, including older adults to get help. However, to attain this skill and proficiency, technology should be usable and accessible to everyone. The elderly experience anxiety, fear, lack of control, and unawareness of existent services while using any technological product, therefore they are hesitant while using them (Long and Maguro). They also encounter ergonomic and usability issues in all technological products like online banking, mobile phones, tablets, computers, and websites (Holder et al).

One can say that the elderly's motivation to use and adapt technology depends on three factors: i) technology's perceived usefulness and potential, ii) digital literacy to experience technology's benefits, and iii) personal apprehensions in using digital technologies. However, these factors were mostly derived based on non-AI technologies. Therefore, it is emphasized that the importance of AI literacy for users and that digital literacy is the prerequisite for it (Holder et al).

AI technology has become part and parcel of our daily lives. AI has revolutionized many sectors like the e-commerce industry, from providing personalized recommendations while shopping, virtual shopping assistants to help with queries, to detecting frauds. Additionally, AI is extensively used in healthcare sectors for early disease diagnosis and in social media to enhance users' engagement. Many times, users are not aware

that they interact with products that use AI, which affects their perception and may create false expectations from AI systems.

AI has been used in enhancing the lives of the elderly. They experience various age-related issues such as loneliness, functional decline impacting their physical and mental abilities hindering them from performing their daily life activities comfortably. Most of the research studies aim at resolving/assisting the elderly with age-related issues through specific AI-enabled technological interventions. For example, how conversational agents like Alexa, smart appliances like a smart cleaner or television, or assistive robots augment their physical or cognitive abilities, alleviate the social isolation felt by elders, and their feelings towards it.

A few recent studies studied people's awareness, applications, challenges, benefits, and drawbacks of AI. A survey study showed that respondents of 60 years and above have limited AI knowledge and limited exposure to AI products as compared to younger adults. Most of the studies were disoriented towards studying the elderly perceptions of general AI technology, experiences and needs in using an AI-enabled product(s) effectively. Further, these studies have not focused on how elderly perceptions impact their usage or vice-versa.

IV. Methodology

To understand elderly experiences in using AI-enabled products and their perceptions about AI technology, an online survey was conducted to recruit participants aged 60 or above, a common age threshold for the elderly. Google form was administered after explaining the details for the research. Elderly experiences in using AI-enabled products and their perceptions about AI technology survey method and in-depth interview schedule was followed. To identify older adults aged 60 or above with experience in using AI-enabled products, questionnaire was administered where questions were open and closed ended. It was taken for granted that the respondents were using AI in their daily chores. Examples of AI-enabled services were used to probe their perceptions and understanding of AI: (i) customer service chat-bot (ii) email spam filter (iii) navigational maps like Google Maps (iv) search engines like Google (v) video recommendation and thumbnail features on YouTube, Netflix (vi) online shopping recommendation features on Amazon (vii) personal finance like mobile-check deposit (viii) ride-sharing applications like Ola, Uber (ix) robotic vacuum e.g. e-Robot (x) social-network applications like Facebook and (xi) voice-assistants like Alexa.

The questions were centered around collecting: (i) demographic information (older adults' age and gender), (ii) their perceived AI knowledge level, (iii) frequency of AI-enabled services used by them and iv) their sources, if any used to learn AI.

Further, to gain qualitative insights into the experiences of older adults in using AI-enabled products, and their feelings and attitudes towards AI technology, online interviews were conducted. Semi- structured interviews were designed to learn participants': i) understanding of AI technology, ii) feelings towards AI and reasons for those, iii) experiences using AI-enabled product(s), iv) barriers in embracing AI technology, and v) perspectives on making AI more accessible and usable for older adults, and follow-up questions on participant's survey responses. Semi-structured interviews were conducted on Zoom. The sessions were recorded for data analysis with the consent of the participants.

The researcher interviewed the participants, and their demographic details and then understood the perceived AI knowledge level, and AI-enabled products used by them. A list of the most frequently used AI-enabled products reported by the elderly was made.

V. Observation and Analysis

Respondents were asked to report about their perceived AI knowledge level. Most of them reported having some knowledge about AI.

The survey revealed that most of the respondents prefer using various AI products irrespective of their age and have some knowledge of AI. Moreover, respondents leverage search engines, newspapers, and depend on families and friends to learn about AI. However, the elderly had limited knowledge of AI technology and their sparse use of certain AI products.

The survey study did help to identify the elderly who use AI-enabled products but could not give a proper understanding of the reasons for the elderly facing difficulties in using AI-enabled products, how were their experiences if they used it or what were their expectations from the AI technology.

The research explores how elders adopted and learned about various AI-enabled products and their unique insights into how such products changed their interaction behavior. Researcher discussed that the elders use various AI-enabled products. However, one did not know how they gain knowledge about a product and learn how to use a product. The interviews revealed that while using the search engines, navigational maps, and email spam filter etc. the products have become part and parcel of their lives. However, they were happier to share their experiences about other AI-enabled products like videos, shopping platforms, and voice-assistants. Few of the respondents relied on using AI services while booking air travel tickets as it guided them in the process from selecting flights with lowest or moderate fares and also in the process of payment.

The study reveals that the p articipants adopted an AI-enabled product not because of their active choices but rather accidentally discovering those. For instance, they either received such products as gifts or bought the AI-enabled products because other conventional non-AI products were out of stock.

Alexa, artificial conversationalists , communicating via auditory or textual methods, are other methods of care delivery that reduce people's loneliness by providing social support. The survey results highlight that elders need several types and uses of robotics embedded in the environment that is different set of furniture, walls, ceiling to offer enhanced support and maintain activities of daily living. Voice-controlled intelligent personal assistants - Amazon Echo and Google Home similarly can provide companionship, reminders, emergency communication and even entertainment for elders living alone, while also reducing caregivers' burden. However, these services should be used in early-stages and need to be both standardized and properly validated for large- scale industrial manufacture.

VI. Constraints and Conclusion

The number of single-person families over the age of 50 is expected to increase, and problems such as health, safety, and loneliness may occur due to aging. According to a research report by the National Health Insurance Service the total medical expenses for the elderly over 65 years of age would increase.

Vulnerable people are relatively alienated from information and service benefits compared to the general public, and they face psychological alienation. All this leads to loneliness and depression. Many institutions are using daily care and welfare AI robots, still, the vulnerable are facing challenges and find it difficult to sign up for AI-enabled products and so they do not have access to the service benefits. It is necessary to expand advanced daily care services and integrate control management through an open platform linked with the government/local government.

There is always a need for continuous supervision and quick diagnosis in the case of the elderly. The promise of modernizing the health system by delivering efficient, precise, person-centered and cost-effective healthcare has been a main cause to implement new technologies. However, very little has been delivered to date in terms of direct patients' care and benefits. The ethical issues remain unaddressed and without this regulated the wider AI implementation within the healthcare system cannot proceed. Health care professionals should not blindly embrace technological advances but instead take them carefully when discussing algorithm-driven clinical decisions. Understanding and learning new skills in statistics and computer science to help develop the clinical algorithms and their evaluation in routine clinical practice would need time and experience. This will require evolving the general healthcare culture, updating current medical curricula and training future doctors with new diagnostic and management concepts. In addition, acceptance of digital clinical decisions should be approved by healthcare regulatory organizations, so that legal and clinical backing is required. Considering the novel and potential impact of AI on future healthcare systems, consideration must be given to legal, ethical and social implementation with all stakeholders before its implementation including patients, public, and a wide range of healthcare providers need to be aware of it.

In this study, it was possible to analyze the empirical data of the vulnerable class through an open platform and predict anomalies. Through future studies, it will be possible to eliminate blind spots in welfare services, provide proactive health care and active welfare services for the helpless by linking with the government welfare system through preemptive care of daily care services tailored to the elderly living alone.

References

[1]. Daoust J. F. (2020). Elderly people and responses to COVID-19 in 27 Countries. PLOS ONE. Doi: 10.1371/journal.pone.0235590

[2]. Debanjan, B. (2020). Age and ageism in COVID-19': Elderly mental health-care vulnerabilities and needs. Asian Journal of Psychiatry, Vol.*51*, 102154.

[3]. Hur, H. L., & Park, M. C. (2020) Design of Monitoring System based on IoT sensor for Health Management of an Elderly Alone. Journal of the Korea Society of Computer and Information, Vol. *25*(8), 81-87. doi:10.9708/jksci.2020.25.08.081

[4]. Kwak, Y. S., & Kang, M.S. (2020). A Study on Methods to Prevent the Spread of COVID-19 Based on Machine Learning. Korea Journal of Artificial Intelligence.

[5]. Jiang F, Jiang Y, Zhi H, Dong Y, Li H, et al. Artificial intelligence in healthcare: past, present and future. Stroke Vasco Neurol. 2017; 2: 230-243.

[6]. Hargreaves DS, Simmer S, Viner RM. Do young and older adults have different health care priorities? Evidence from a national survey of English inpatients. J Adolescent Health. 2012; 51: 528-532

[7]. LaFortune C, Huson K, Santi S, Stole P. Community-based primary health care for older adults: a qualitative study of the perceptions of clients, caregivers and health care providers. BMC Geriatric. 2015; 15: 57.

[8]. Miotto R., Li L, Kidd BA, Dudley JT. Deep patient: An unsupervised representation to predict the future of patients from the electronic health records. Sci Rep. 2016; 6: 26094.

[9]. Irie R, Otsuka Y, Hagiwara A, Komagata K, Kamiya K, et al. A Novel Deep Learning Approach with a 3D Convolutional Ladder Network for Differential Diagnosis of Idiopathic Normal Pressure Hydrocephalus and Alzheimer's Disease. Magn Reason Med Sci. 2020.

[10]. Costantino G, Flanigan G, Spoliate M, Casagranda I, Sun BC, et al. Neural networks as a tool to predict syncope risk in the Emergency Department Euro pace. 2017; 19: 1891-1895.

[11]. Ho L, Legere M, Li T, Levine S, Hao K, et al. Autonomic nervous system dysfunctions as a basis for a predictive model of risk of neurological disorders in subjects with prior history of traumatic brain injury: Implications in Alzheimer's Disease. J Alzheimer's Dis. 2017; 56: 305-315.
[12]. Pekkala T, Hall A, Lehtonen J, Mattila J, Soininen H, et al. Development of a late-life Dementia Prediction Index with supervised machine learning in the population-based CAIDE Study. J Alzheimer's Dis. 2017; 55: 1055-1067.
[13]. Patterson BW, Engstrom CJ, Sah V, Smith MA, Mendonça EA, et al. Training and Interpreting Machine Learning Algorithms to Evaluate Fall Risk After Emergency Department Visits. Med Care. 2019; 57: 560-566.
[14]. Ambetter RC, Hafizabad N, Dent E, Sei both C, Beilby J. The application of artificial intelligence (AI) techniques to identify frailty within a residential aged care administrative data set. Int J Med Inform. 2020; 136: 104094.
[15]. Ozaki K, Kondo I, Hirano S, Kaaya H, Saito E, et al. Training with a balance exercise assist robot is more effective than conventional training for frail older adults. Geriatric Geritol Int. 2017; 17: 1982-1990.
[16]. Bustamante Valles K, Montes S, Madrigal Med J, Burciaga A, Martínez ME, et al. Technology-assisted stroke rehabilitation in Mexico: a pilot randomized trial comparing traditional therapy to circuit training in a robot/technology-assisted therapy gym. J Neuron Relabel. 2016; 13: 83.
[17]. Forrester LW, Roy A, Hafer-Macko C, Krebs HI, Macko RF. Task-specific ankle robotics gait training after stroke: a randomized pilot study. J Neuron Relabel. 2016; 13: 51.
[18]. Chen TL, Bhattacharjee T, McKay JL, Baranski JE, Hackney ME, et al. Evaluation by Expert Dancers of a Robot That Performs Partnered Stepping via Haptic Interaction. Plops One. 2015; 10: e0125179.
[19]. Gutter J, Georgoulas C, Linner T, Bock T. Towards a future robotic home environment: A survey. Gerontology. 2015; 61: 268-80.
[20]. O'Brien K, Liggett A, Ramirez-Zohfeld V, Sunkara P, Lindquist LA. Voice- Controlled Intelligent Personal Assistants to Support Aging in Place. J Am Geriatric Soc. 2020; 68: 176-179.
[21]. Robinson H, Macdonald B, Keres N, Broadbent E. The psychosocial effects of a companion robot: a randomized controlled trial. J Am Med Dir Assoc. 2013; 14: 661-667.
[22]. Lukasik S, Tobis S, Wieczorowska-Tobis K, Suwalska A. Could Robots Help Older People with Age-Related Nutritional Problems? Opinions of Potential Users. Int J Environ Res Public Health. 2018; 15.
[23]. Cortellessa G, Fracasso F, Sorrentino A, Orlandini A, Bernardi G, et al. ROBIN, a telepresence robot to support older users monitoring and social inclusion: Development and evaluation. Telemid J E Health. 2018; 24: 145-154.
[24]. Takaeda K, Kamimura T, Inoue T, Nishiura Y. Reliability and acceptability of using a social robot to carry out cognitive tests for community- dwelling older adults. Geriatric Geritol Int. 2019; 19: 552-556.