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THE DIGITAL CAREGIVER: REDEFINING ELDERLY MENTAL HEALTH THROUGH ARTIFICIAL INTELLIGENCE TECHNOLOGIES

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ABSTRACT
India is undergoing a demographic transition marked by a significant rise in the elderly population. This increase is expected to intensify the challenges faced by society in providing basic healthcare, adequate nutrition, and addressing the socio-economic needs of older adults. Ageing is often accompanied with physical and cognitive decline and factors like loneliness, bereavement, reduced mobility, emotional frailty compounds the difficulties faced by the Elderly. They need sustained support and care for the physical, cognitive, emotional and social concerns. With changing demographics in Indian society and the transition away from the traditional joint family system, an increasing number of elderly now resides in isolation, forcing them to be on their own for their daily care. In such a scenario effective use of Artificial Intelligence (AI) Technologies can play a pivotal role in providing the required support and thereby enhancing the mental health of the Elderly. The present paper reviews various AI Technologies that can be used to address the mental health challenges faced by the elderly. It aims to explore how AI Technologies can intervene to help the elderly combat the social, emotional and cognitive challenges. The paper evaluates the benefits and challenges of using AI Technologies for the Elderly.

Keywords- *Artificial Intelligence Technologies, Mental Health, Elderly*

INTRODUCTION
India is witnessing a demographic shift in its Elderly population. The population of people aged 60 years and above are on a rise. According to the India Ageing Report 2023 of the United Nations Population Fund, New Delhi, this population which once constituted only 8.7% as per the 2011 census has reached around 10.5% in 2022 and is projected to rise up to 20.8% by 2050. This stark increase in the population of the elderly will pose serious health care challenges to society and the Government.

Old age is often associated with physical limitations, cognitive decline, social challenges and emotional pain. During this stage of life, the elderly require greater love, support, care, and assistance. Traditionally the Indian families comprising of the children, grandchildren, extended relative, would provide the required love and care during these years. However, with changing times and structural shifts in the Indian society, providing this social and emotional support is a growing challenge. The rapidly changing family dynamics in India are likely to exacerbate this concern as transformations in the family system, individual values, and broader social structures have increasingly compelled older adults to live independently, often away from their children who traditionally fulfilled their physical, cognitive, social, and emotional needs. Consequently, the erosion of family-based support, combined with a shortage of trained caregivers and limited healthcare infrastructure, has intensified the need to identify alternative mechanisms to address the growing healthcare demands of India's expanding elderly population. In this scenario, Artificial Intelligence (AI)–based technologies can prove to be a significant boon, offering scalable and innovative solutions to support elderly healthcare, enhance their mental health and mitigate the human resource constraints.

REVIEW OF LITERATURE
Recent years have seen a surge in the research conducted in the field of Artificial Intelligence. Many of these studies have focused on how the Artificial Intelligence Technologies can be used for improving health care of the elderly population. Studies show that Artificial intelligence Technologies can help in supporting the Elderly with their physical, Social, emotional and cognitive challenges. Research reveals how these Technologies can prove beneficial for enhancing the mental health of the Elderly.

A study conducted by Wen Fang, et. al (2025) shows how healthcare of the elderly can be enhanced using Artificial Intelligence Technologies for physical support, psychological support, cognitive rehabilitation, and targeted cardiovascular and musculoskeletal interventions. The study shows how cognitive function, emotional regulation, and physical resilience among the Elderly can be improved with the Artificial Intelligence Technologies.

A review of various AI technologies in health care have studied the application of Machine Learning and Artificial Intelligence based approach to geriatric mental health. It shows that many studies reveal application of

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Artificial Intelligence tools to Dementia but emphasizes the need for future research to understand AI applications in other areas of Geriatric Mental health (Chowdhury, M., et. Al., 2021).

A study conducted on application of Artificial intelligence technology for evaluation and analysis of Elderly mental health, emphasizes its use for understanding the depression status in the community (Li, X. 2023). Yet another research aimed to improve the mental health of the Elderly based on big data methods explores monitoring and intervention methods based on big data. Results show how analysing mobile device data and social media data can identify the social activities, emotional states and daily behaviour patterns of the elderly, to provide a basis for prediction and intervention of mental health problems (Chen, Q., & Sheng, N. 2024).

RESEARCH GAP:

Recent literature shows that Artificial Intelligence has significant potential for the analysis, monitoring, and evaluation of diverse mental health conditions among the Elderly. Prior studies indicate the effectiveness of AI-driven interventions in improving cognitive functions and assisting Elderly in coping with serious mental health conditions like Dementia and Depression. Building on these insights, the present paper aims to study the role of Artificial Intelligence in enhancing mental health of elderly, thereby improving their daily functioning and quality of life.

AIMS AND OBJECTIVES:

To explore the effectiveness of Artificial intelligence Technologies in enhancing mental health of the Elderly and evaluate the benefits and challenges associated with them.

METHODOLOGY

The present research is a theoretical paper based on secondary data. English-language articles published between 2020 to 2025 based on the theme of the research were selected and additional sources were identified through manual screening of reference lists of relevant articles. Original studies, review papers that addressed the role of AI Technologies in healthcare of elderly populations were included in the present paper.

MENTAL HEALTH CONCERNS OF THE ELDERLY

With the rise in the Elderly population, their health concerns are growing. Countries across the world are encountering the challenges of chronic and degenerative diseases in their ageing population. Cognitive conditions of Dementia, Delirium, Alzheimer's and Chronic health issues like Cardiovascular Diseases, Osteoporosis, Diabetes and Cancers are serious challenge faced by the ageing population. Anxiety, Depression, cognitive decline are also few issues faced commonly by the geriatric population (Bai, W., 2022). As people age and look back to their life, concerns like ruminative thoughts, automatic negative thoughts, frustration, regret, guilt, etc. disturb them on day-to-day basis (Sharma, G., & Morishetty, S. K. 2022). Lack of confidence, social isolation, daily forgetfulness, memory loss, lack of emotional control, anger issues may look trivial but have severe negative impact on the mental health of the Elderly. The grief and bereavement associated with loss of spouse and loved ones is irreparable and may become a mental health concern. These psychological stressors are further exacerbated by limited mobility and diminished social networks. It is thus important to address these issues by providing the necessary attention, love and care. Such consistent, customized, social, emotional and cognitive support can be provided effectively using Artificial Intelligence Technologies.

ARTIFICIAL INTELLIGENCE TECHNOLOGIES FOR ENHANCING MENTAL HEALTH OF ELDERLY:

Reducing loneliness and enhancing social engagement- Artificial Intelligence Technologies can prove effective in reducing isolation and loneliness of the elderly by being a very caring, supportive and cooperative companion for them. AI Tools such as Conversational Agents such as Replika, ElliQ, and GPT-based chatbots can provide emotional support through text or voice. Such AI tools offer a safe space for self-expression, can encourage reflection and mindfulness. They promote a good routine and emotional engagement. These tools have demonstrated reduced feelings of loneliness among older adults (Alotaibi & Alshahre, 2024: Chou et al., 2024: Rodriguez-Martinez et al., 2024). These tools listen empathetically, provide companionship and maintain daily and regular interactions that create a sense of consistency and care. Such consistent engagement with voice assistants or chatbots may be related to improved mood and lower perceived loneliness. AI Tools like Amazon Alexa Care Hub sends immediate alerts to the care givers when the elderly are in need. Thus, making a best solution to be in touch when with physical distance.

Fostering emotional expression and mental stimulation- Old age is often associated with emotional frailty. Limited social networks, bereavement and mobility constraints often reduce the opportunity to meet the closed people. As a result, the Elderly are left with very few opportunities to express their emotions freely. In absence of the physical presence of such companions to vent their emotions, AI Tools like Chatbots can help them to

express freely, prompt elderly to recount memories, reflect on their emotions, and engage in light humour. These programs can recognize mood shifts and respond accordingly providing emotional support and cognitive engagement which can prove therapeutic for them. They encourage dialogue, provide empathetic responses, and prompt reflection. Such emotional and cognitive engagements can delay cognitive decline in the elderly (Garg, R.,2025).

Providing Cognitive support- Cognitive concerns are a part and parcel of ageing. Memory loss, forgetfulness, Degenerative disorders like Dementia, Alzheimer's etc. are seen in the elders. Emotional suppression seen as a result of loneliness can worsen depression, anxiety and cognitive decline. AI technologies in form of Robots can help deal with such cognitive difficulties. Social Robots like 'Stevie', or 'PARO' a therapeutic Robot can prove effective especially with patients of Dementia. AI Technologies can provide support for giving reminders for daily tasks, medications, etc. End-User Development (EUD) and Retrieval-Augmented Generation (RAG) AI techniques enable geriatric caregivers to design, deploy and adapt customised cognitive intervention plans for the Elderly. These techniques can make patient profile, conduct screening and generate tailored cognitive exercises that delivered via a mobile application featuring a conversational agent who guides patients through daily cognitive tasks (Valtolina, S. & Pugliese, A., 2025). Such tools help elderly combat cognitive decline in an effective way.

Benefits and Challenges of using Artificial Intelligence technologies for enhancing Mental Health of Elderly:

Artificial Intelligence offers significant benefits in healthcare, psychoeducation and daily living by enabling personalized support, early detection of risks, and improved efficiency in service delivery. AI Tools are known for their efficiency in providing personalized treatment and care. They can help with continuous monitoring of the elderly in the absence of human beings. Remote monitoring and telehealth care is possible due to the AI technologies. These AI technologies can thus help in proving a dignified, independent living for the elderly.

However, these advantages are often accompanied by challenges such as ensuring data privacy and security (Vercruyssen, A., et. al. 2023). Digital literacy and accessibility are yet another challenge faced while using AI Technologies. Age-related physical changes such as reduced vision, hearing, and motor dexterity, make it harder to interact with AI devices that are not designed keeping these aspect in mind. (Piper, A. M., et. Al. 2017). The use of AI in health care raises serious ethical questions regarding decision-making autonomy, informed consent and accountability for errors that may prove dangerous.

Thus AI technologies needs to be used wisely and carefully for enhancing the Elderly Mental Health.

CONCLUSION:

Artificial Intelligence Technologies are transforming the landscape of Elderly care. They have demonstrated significant effectiveness in the social, emotional and cognitive domain of elderly care, thereby paving a way for a comprehensive approach to enhancing the mental health of the Elderly. However, it is crucial to recognize that Artificial Intelligence can complement human caregiving and not replace it. Maintaining the right balance between Artificial Intelligence and human expertise is essential to preserve empathy, maintain quality of care so as to ensure that advancements in AI truly enhance the mental health and well-being of the Elderly.

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