Artificial Intelligence in Long-Term Care: Benefits and Concerns

Editorial

Kallol Kumar Bhattacharyya[1], MBBS MA PhD

[1]*School of Public Health, University of Memphis, Memphis, TN, USA*

Corresponding author: Kallol Kumar Bhattacharyya, kkbhttch@memphis.edu

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Editorial

Long-term care (LTC) is an essential component in the management of individuals, including older adults, with chronic conditions. In recent days, artificial intelligence (AI) has emerged as a valuable tool to reshape the LTC industry. Integrating AI into LTC facilities is a revolutionary achievement in supporting the growing aging population. However, AI's ethical perspectives are still debatable.

Long-Term Care and Quality of Care

LTC services provide a range of medical and personal care to support people who need assistance with daily activities because of age, chronic diseases, or disabilities. These services range from assisting with personal care, such as bathing and dressing, to home-based support, such as meal delivery, and to institutional care for more vulnerable individuals in settings like assisted living facilities (ALFs) or nursing homes (NHs).[1,2] The specific services vary according to individual needs and can be delivered to their home, community, or facility.[1,2] In recent years, due to an increasing aging population and changing lifestyle patterns, LTC residents' care needs have become more intricate.[3]

LTC quality measurement is a multidimensional domain,[4] in which resident satisfaction is an integral part of quality of care (QOC). Loneliness, helplessness, and boredom are three factors that can further deteriorate residents' mental health conditions, giving rise to insufficient satisfaction with care.[5] Despite technical competence being a fundamental aspect of healthcare delivery, autonomy, environment, meaningful activities, and interpersonal quality of professionals are found to be the most crucial predictors for residents' satisfaction with NH QOC.[6] However, subjective satisfaction is only possible if the needs of all the stakeholders, such as caregivers and care recipients, are adequately addressed.

Quality of Life and Person-Centered Care

Maintaining quality of life (QOL) in LTC requires supporting individuals to remain healthy, comfortable, and engaged in, or to enjoy, daily life events. Although QOL is closely related to the QOC the residents receive, it is not equivalent to clinical care alone. The Omnibus Budget Reconciliation Act (OBRA) of 1987 was introduced to improve the QOL of LTC residents by identifying their rights and ensuring optimal services to maintain their biopsychosocial well-being.[7] A series of legislative efforts were implemented; however, none have comprehensively achieved the goal; the current system requires meeting increased care preferences and needs of numerous older adult residents in LTC.[8]

Contextually, a person-centered approach to care aims to recast care partners' outlook from an orthodox medical model to a potential social model while managing chronic conditions, including dementia, in LTC.[9] LTC staff roles in person-centered care (PCC) are crucial in maintaining residents' autonomy, dignity, and purposeful living.[9] Although many demographic and morbidity profiles seem similar in the two LTC settings, i.e., NHs and ALFs, residents' vulnerability regarding physical and cognitive functionality varies, as well as the services provided and staffing resources.[10] Contextually, staff burnout and job dissatisfaction are major barriers, limiting the effective implementation of PCC, in LTC facilities, especially when caring for residents with dementia.[11] Despite the PCC approach being viewed as a two-way process,[8] integrating both care recipients' and caregivers' perspectives to improve care recipients' QOL outcomes and, consequently, a growing regulatory focus on NH residents' QOL, regulations have not fully addressed LTC workers' burnout and job dissatisfaction. Unless we improve the QOL of LTC staff, we cannot expect optimal personalized care.[12]

Workforce Shortage

Currently, the United States LTC workforce is deficient by about 4.6 million direct care workers, including nearly 735,000 residential care aides in ALFs and 566,000 NH staff, to support around 10 million older adults.[13] Additionally, fewer than one percent of registered nurses, physician assistants, and pharmacists are considered to have geriatrics specialization.[14] Moreover, a dearth of curative treatment for dementia, as well as geriatric education and training, is a global problem, creating challenges for caregivers, considering a dire need for tailored and individualized approaches.[8] Improving residents' QOL through their total involvement needs active human support, including support from direct care workers and LTC administrators, and residents and family members.

Role of Artificial Intelligence and Its Benefits

In recent days, AI is increasingly being utilized in LTC to enhance resident well-being and improve operational practices by automating administrative tasks, designing individualized care plans, supporting residents' routine health monitoring, including medication management, supporting caregivers, and promoting better communication between staff, residents, and families. AI is being used in software systems, by monitoring virtual spaces such as facial recognition systems, or in hardware, by strengthening physical environments, such as robot operations.[1,2] Furthermore, by analyzing health data, AI can predict possibilities of residents' impending health risks, such as fall risks, that enable healthcare providers, researchers, and policymakers to design and implement personalized preventive measures, such as allowing for timely technology interventions.[2] Additionally, AI-assisted wearables can help track residents' regular physical and mental health status, thereby further enhancing accessibility and equity of healthcare services. Recent trends in AI-assisted mHealth, including telehealth facilities, utilize AI in mobile apps to better manage care for non-emergency patients, allowing healthcare institutions to focus more on serving emergency patients.[15]

Theoretically, AI also appears to fit perfectly into any component of Donabedian's Structure-Process-Outcome (SPO) model in LTC,[6] as "Structural" factors that entail physical factors, such as guiding modifications to facilities' architectural environments and aiding or replacing staff. Regarding the "Process" factors, indicating the guidelines to care providers to follow the delivering protocol of care, such as medication management, and can be used for staff training and education purposes, and, finally, as "Outcome" monitoring through objective, such as health status monitoring, and subjective, such as enhanced resident well-being indicators.[16]

Potential Concerns

However, integrating AI into regular care plans poses challenges related to data privacy, cost, and ethical aspects. Because LTC facilities deal with sensitive personal information, including financial data, protecting resident data from breaches is a primary concern. Also, the initial cost of implementing and maintaining AI-powered technologies in facilities is a major challenge for the LTC industry, as it can create a substantial burden on residents and their families. Although facilities may reuse the devices, this allows potential participation by multiple individuals. Additionally, technological challenges and staff resistance are other barriers that could be addressed by providing, even AI-assisted, proper training and support to ensure the smooth adoption of technology. However, given that AI's expertise in data-driven tasks fails to consider subtle human qualities, such as empathy and holistic adjustments, it is an amazing complementary technology, not an alternative, for human brains when dealing with intricate emotional and ethical situations.[17] Finally, the biggest concern regarding AI is the fear of replacing staff rather than aiding them, which may further impact the economics of LTC, especially the way regulatory oversight and consumer choice in the LTC market affect biopsychosocial health outcomes.

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Conflict of Interest
The authors declare no conflicts of interest.

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