

The Convergence of Artificial Intelligence and Robotics in Elderly Nursing Care: A Novel Perspective Based on Nursing Philosophy

Marzieh Ziaeirad¹, Maryam Radmehr¹, Masoumeh Rostami², Sasan Navkhasi^{1,2*}

¹Community health research center, Isf.C., Islamic Azad University, Isfahan, Iran

²Department of Nursing, Asadabad School of Medical Sciences, Asadabad, Iran

*Corresponding author: Sasan Navkhasi, Email: Sasan.navkhasi@gmail.com



Please cite this article as follows: Ziaeirad M, Radmehr M, Rostami M, Navkhasi S. The convergence of artificial intelligence and robotics in elderly nursing care: a novel perspective based on nursing philosophy. *Avicenna J Aging Healthc* 2025;3(1):45-46. doi:10.34172/ajah.4035

Received: June 6, 2026, Accepted: August 16, 2026, ePublished: August 29, 2026

Population aging is a global issue that is rapidly increasing due to significant gains in life expectancy (1,2). According to the latest projections and demographic estimates by the United Nations Population Division and the World Health Organization (WHO), the proportion of people aged over 60 is expected to rise from 1 billion in 2020 to 1.4 billion by 2030, equivalent to 16.7% of the global population, and to reach 2.1 billion by 2050 (1,2). Aging increases care needs among older adults (1), placing substantial pressure on healthcare systems, eldercare services, and current healthcare infrastructure (1,2). Under these circumstances, identifying sustainable solutions to improve care for this age group is critical (1).

Technological advancements are transforming many sectors, including healthcare services for older adults (2). Among these developments, the widespread use of artificial intelligence (AI) in health care and related research in elderly care is rapidly expanding in the medical literature (1). However, technological progress in robotics and AI also raises important ethical and practical concerns. One key question is how these technologies can be designed to align with the ethical principles of care, particularly the preservation of dignity, compassion, and human support (3).

Several studies suggest that nurses generally hold positive attitudes toward the use of AI in nursing care and its application across different domains (4-6). Nevertheless, most believe that AI lacks sufficient flexibility to be applied universally to all patients and that its use in contentious situations remains challenging; however, overall, they agree that implementing AI in healthcare services is beneficial (4).

AI- and robotics-based systems, as promising technologies, can play five key roles in addressing the health

and care needs of older adults: rehabilitation therapists, emotional supporters, social facilitators, monitors, and cognitive promoters. These roles may enhance older adults' independence, enable the early detection of emergencies and behavioral changes, support vital signs monitoring, facilitate personalized treatment plans through telemedicine, reduce social isolation, and improve mental health (1,2). In robotics, the use of "robopets" or companion robots to provide psychological relief and support for elderly individuals living alone or in care facilities aims to reduce loneliness and depression (7).

However, findings indicate that despite the promising impact of AI technologies on elderly health care, integrating AI and robotics in eldercare raises significant and sensitive ethical concerns (1,2). Although companion robots may be used as therapeutic aids for restless or isolated older adults, AI-based robopets should not be considered a complete substitute for human interaction (7).

Concerns regarding the replacement of elderly nurses, the automation of caregiving roles, the reduction in the quality of personalized care, and the weakening of therapeutic relationships due to the absence of human emotions in robots have also emerged. Additionally, threats to older adults' privacy, the potential disclosure of personal information through home or remote monitoring, and adverse effects on elderly autonomy have raised ethical concerns regarding the integration of AI and robotics in eldercare (8).

In summary, findings from various studies on the use of AI in elderly nursing care suggest that AI technologies can positively impact elderly health care and address many unmet care needs. Thoughtful acceptance of these



technologies may empower older adults to lead more independent and successful lives. Nonetheless, to more precisely define the role of these technologies in eldercare, future high-quality randomized controlled trials are recommended.

Authors' Contribution

Conceptualization: Marzieh Ziaeirad, Sasan Navkhasi
 Data Curation: Maryam Radmehr, Masoumeh Rostami, Sasan Navkhasi
 Formal Analysis: Maryam Radmehr, Sasan Navkhasi
 Funding Acquisition: Marzieh Ziaeirad, Maryam Radmehr, Sasan Navkhasi
 Investigation: Marzieh Ziaeirad, Maryam Radmehr
 Methodology: Maryam Radmehr, Masoumeh Rostami
 Project Administration: Maryam Radmehr, Sasan Navkhasi
 Resources: Sasan Navkhasi
 Software: Maryam Radmehr
 Supervision: Marzieh Ziaeirad
 Validation: Marzieh Ziaeirad, Maryam Radmehr
 Visualization: Masoumeh Rostami
 Writing–Original Draft: Marzieh Ziaeirad, Sasan Navkhasi
 Writing–Review & Editing: Sasan Navkhasi

Competing Interests

None declared.

Ethical Approval

Not applicable.

Funding

None declared.

References

1. Ma B, Yang J, Wong FK, Wong AK, Ma T, Meng J, et al. Artificial intelligence in elderly healthcare: a scoping review. *Ageing Res Rev* 2023;83:101808. doi:[10.1016/j.arr.2022.101808](https://doi.org/10.1016/j.arr.2022.101808)
2. Padhan S, Mohapatra A, Ramasamy SK, Agrawal S. Artificial intelligence (AI) and robotics in elderly healthcare: enabling independence and quality of life. *Cureus* 2023;15(8):e42905. doi:[10.7759/cureus.42905](https://doi.org/10.7759/cureus.42905)
3. Pirni A, Balistreri M, Capasso M, Umbrello S, Merenda F. Robot care ethics between autonomy and vulnerability: coupling principles and practices in autonomous systems for care. *Front Robot AI* 2021;8:654298. doi:[10.3389/frobt.2021.654298](https://doi.org/10.3389/frobt.2021.654298)
4. Sabra HE, Abd Elaal HK, Sobhy KM, Bakr MM. Utilization of artificial intelligence in health care: nurses' perspectives and attitudes. *Menoufia Nurs J* 2023;8(1):243-57. doi:[10.21608/menj.2023.297411](https://doi.org/10.21608/menj.2023.297411)
5. Fast E, Horvitz E. Long-term trends in the public perception of artificial intelligence. *Proc AAAI Conf Artif Intell* 2017;31(1):963-9. doi:[10.1609/aaai.v31i1.10635](https://doi.org/10.1609/aaai.v31i1.10635)
6. Elsayed WA, Sleem WF. Nurse managers' perception and attitudes toward using artificial intelligence technology in health settings. *Assiut Sci Nurs J* 2021;9(24):182-92.
7. Abbott R, Orr N, McGill P, Whear R, Bethel A, Garside R, et al. How do "robopets" impact the health and well-being of residents in care homes? A systematic review of qualitative and quantitative evidence. *Int J Older People Nurs* 2019;14(3):e12239. doi:[10.1111/opn.12239](https://doi.org/10.1111/opn.12239)
8. O'Connor S. Artificial intelligence for older adult health: opportunities for advancing gerontological nursing practice. *J Gerontol Nurs* 2022;48(12):3-5. doi:[10.3928/00989134-20221107-01](https://doi.org/10.3928/00989134-20221107-01)