



## Letter to Editor

**Application of communication technologies in ensuring patient safety in home care: Pros and cons**Sahar Keyvanloo Shahrestanaki<sup>1</sup>, Zahra Amrollah Majdabadi Kohne<sup>2</sup>, Tahereh Najafi Ghezjeljeh<sup>3\*</sup><sup>1</sup>Department of Community Health Nursing and Geriatric Nursing, Nursing and Midwifery Care Research Center, School of Nursing and Midwifery, Tehran University of Medical Sciences, Tehran, Iran<sup>2</sup>Department of Community Health Nursing and Geriatric Nursing, School of Nursing and Midwifery, Tehran University of Medical Sciences, Tehran, Iran<sup>3</sup>Cardiovascular Nursing Research Center, Rajaie Cardiovascular Medical and Research Center, Iran University of Medical Sciences, Tehran, Iran

The need for home care has become increasingly important due to the growing elderly population and the subsequent rise in chronic diseases (1). Home care provides patients with the necessary care in the comfort of their home environment, which allows for a greater sense of peace and avoids the high costs of hospitalization (2). On the other hand, the use of modern technologies has become an integral part of patient care, including home care (3). The integration of technology is expected to improve the efficiency, quality, safety, and cost of healthcare (4). However, studies have shown that despite these benefits, technology can also lead to errors and adverse events in patient care, especially in home settings (5).

In some countries, advanced communication technologies are used among home care specialists to ensure patient safety (5). Health Information and Communication Technologies (ICT) refer to digital technologies and applications aimed at improving healthcare by preventing illness, treating diseases, managing chronic conditions, and enhancing overall healthcare delivery (6). These technologies provide efficient ways to access, communicate, process, and store information, ultimately improving patient care and system efficiencies. Examples of health ICT include Electronic Health Records, Telehealth services for remote consultations, E-Prescribing systems, Blockchain-based apps for secure data exchange, and Remote Patient Monitoring for real-time health tracking (7, 8). These technologies help bridge gaps in healthcare access and delivery,

especially in developing and newly industrialized countries, enabling better communication and coordination between healthcare providers, patients, and caregivers (6). However, in countries like Iran, the use of such technology in home care is relatively new. Currently, most technologies employed in home care in Iran are designed for training and increasing access to services for recipients (For example, some apps and websites in Iran are being used to connect patients with caregivers for home care services) (9, 10). The use of communication technologies to ensure patient safety in home care is not yet widespread in Iran. Home care team members require extensive communication among themselves due to the unstable and changing conditions of patients at home (11). However, some members of home care teams in Iran use social messaging networks instead of dedicated communication technologies. This is done by creating a group with all members involved in care to establish communication networks among specialists (11). Using this communication method in home care may lead to the risk of patient information being revealed, lack of transparent data exchange, lack of error recording and detection, as well as the inability to remotely monitor the patient for real-time tracking of healthcare interventions and initial interventions. Despite the need for communication technology among home care specialists to ensure patient safety, they resort to alternative communication technologies due to inefficiency and the unfulfillment of initial plans. Health information technology plays a crucial role in enhancing

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patient safety in home care. It helps in reducing errors, improving clinical outcomes, coordinating care, increasing efficiency, and tracking patient data over time (11). It is imperative to intensify efforts to design and use appropriate technologies in clinical home care in Iran. Addressing this issue and developing technologies tailored to the country's needs and cultural context can play a substantial role in ensuring patient safety. Further research and development in the field of communication technologies for home care in Iran is necessary to meet the needs of home care specialists.

The benefits of utilizing communication technology in home care can be listed as follows: A. It increases the speed of transferring information related to medication orders and care processes, ensuring better patient safety at home (12). B. The team can continuously review medication orders, reducing medication and healthcare errors (13). C. It lowers the chances of misunderstanding or misinterpretation of medication orders between nurses and doctors, increasing the speed and accuracy of execution (14). D. Medication dosage can be evaluated and readjusted as required. E. It helps prevent medication errors, particularly in patients with complex conditions and polypharmacy, such as elderly patients with chronic diseases (12). F. The patient's condition can be reassessed and dynamically evaluated to ensure timely prescription or discontinuation of medications and other care orders, preventing medication and care errors (12). G. Colleagues can be consulted, and their suggestions received to decrease the occurrence of adverse health effects such as drug reactions or life-threatening conditions, particularly in emergencies until the ambulance arrives (15). H. Experts and medical equipment managers can be communicated with quickly in case of issues with any equipment at home, and the resulting problems are resolved (15). I. Messages can be stored, and the patient's entire medical history can be available at any time for reviewing the disease course and documenting it for future legal cases, ensuring the safety of the patient and care providers (5, 15).

Despite the numerous benefits of communication technology in home care, this system also has some drawbacks, being aware of them can greatly help to maintain patient safety in

home care. These disadvantages include A. Lack of constant access to specialists due to their busy schedules or unwillingness to use modern technologies (15). B. Concerns of those involved in care about the high probability of their sent messages being unread or ignored in the communication network (12). C. Poor technology design leads to technical problems (12). D. Lack of compatibility of the technology with the cultures of different countries in the home care setting (3). E. lack of comprehensive coverage and inadequate planning to address all safety needs in home care (12). F. Sudden technical issues that could disrupt communication among specialists and threaten patient safety (11). G. High maintenance and upgrade costs (15). H. The need for implementation of training programs and staff empowerment to use the technology (15). I. Interruption and lack of access to the Internet (15).

Based on conducted research and personal experiences, it is evident that utilizing modern and advanced communication technologies can significantly enhance patient care and ensure safety at home. These technologies serve as a solution to minimize or eliminate errors and adverse events, reduce stress for home care providers, identify errors early to prevent harm and mitigate the effects of mistakes to minimize harm (12). However, the proper use of modern communication technologies, especially in home care settings in Iran, presents challenges and obstacles. The key obstacles include technical limitations such as internet restrictions, network instability, and limited access to modern equipment, economic limitations due to the high costs of modern technologies and the inability of some individuals to afford them, and significant cultural and educational challenges including insufficient familiarity with modern technologies, concerns about losing human connection and personal care, and a lack of involvement of home care providers in the design and implementation of communication technology (5). To effectively utilize technology in home care, solutions such as improving internet infrastructure, using local technologies to compensate for internet limitations, providing support for obtaining and maintaining modern equipment, promoting the use of more economical and accessible technologies, selecting appropriate and quality technology suitable for each country's setting,

considering alternative methods in case of problems, conducting educational and awareness-raising courses for the public and training home care personnel, promoting a culture of participation in the design and use of technology in home care, utilizing social media and educational platforms for information dissemination and education to the community, establishing a culture of error prevention and safety, fostering strong interdisciplinary collaboration, and conducting further research to evaluate the impact of technology on home care are recommended (12).

It should always be noted that the use of technology should be done thoughtfully and intelligently, taking into account the specific needs and circumstances of each individual. Using technology also requires continuous learning and awareness. Overall, using technology with these principles in mind can lead to increased productivity and help maintain the safety and peace of mind of patients at home. In the future, there should be a greater focus on researching and implementing advanced technologies to improve patient safety and increase awareness and knowledge about it. Additionally, home care nurses, based on their experiences, should be directly involved in developing policies related to the production, maintenance, training, monitoring, and reporting of adverse events related to communication technology to enhance patient safety at home.

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