

Telehealth and Digital Nursing Care: A Review of Opportunities and Challenges

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Abstract

Telehealth and digital technologies have transformed nursing practice, enhancing care delivery amid evolving healthcare demands. This review synthesizes literature from 2018 to 2025 to evaluate opportunities and challenges in telehealth integration within nursing, particularly in pediatric, medical-surgical, and chronic disease contexts. Objectives include assessing improved access, patient outcomes, and role expansion for nurses while identifying barriers to equitable adoption. A systematic approach reviewed peer-reviewed articles, scoping studies, and reports from databases like PubMed and PMC, focusing on nurse-led virtual care models. Key findings reveal opportunities such as expanded access for rural and underserved populations, reducing travel burdens and enabling real-time monitoring via apps and wearables. Cost efficiencies arise from fewer hospitalizations, with nurse interventions yielding better hypertension control, mental health support, and patient empowerment through self-management tools. Virtual nurse teams foster hybrid care, aligning with evidence-based practices in patient safety and neuroprotective monitoring. Challenges persist, including digital divides from poor connectivity and low literacy, excluding vulnerable groups like the elderly. Regulatory inconsistencies in licensure, reimbursement, and data privacy under evolving laws complicate implementation. Technical glitches and training gaps limit physical assessments, fostering resistance among clinicians. In conclusion, telehealth promises revolutionary nursing advancements but demands standardized training, infrastructure investments, and policy reforms for inclusivity. Future directions emphasize AI-driven optimization and quality assurance, supporting multidisciplinary roles in pharmaceutical and clinical settings. Equitable digital nursing can elevate care reliability and outcomes globally.

Keywords: Digital divide, digital nursing, evidence-based practice, healthcare access, nurse training, patient safety, regulatory challenges, remote monitoring, Telehealth, virtual care

INTRODUCTION

Background of telehealth and digital nursing care

Telehealth involves delivering healthcare remotely using electronic and telecommunication technologies, while digital nursing care encompasses nurse-led applications like video

consultations, remote monitoring, and mobile health (mHealth) apps. Originating from early phone-based triage by nurses, it evolved with internet advancements in the 1990s and video platforms in the 2000s.^[1]

Importance in modern healthcare

Telehealth addresses access gaps in rural areas, reduces costs by minimizing hospitalizations, and supports chronic disease management, mental health, and critical care – vital post-COVID. It enhances patient satisfaction and equity, aligning with nursing roles in quality assurance and safety.^[2]

Purpose of the review

This review synthesizes 2018–2025 literature to explore telehealth opportunities and challenges in nursing, informing evidence-based adoption for professionals in pediatric and medical-surgical settings.^[3]

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TELEHEALTH IN NURSING

Definition and scope

Telehealth in nursing (telenursing) is the remote provision of nursing services through technology, including assessment, education, and coordination across primary, acute, and community care.^[4]

Historical development and evolution

Began with 1950s radio consultations and NASA-linked 1960s experiments; surged in the 1990s with internet portals and 2000s broadband video; COVID-19 accelerated adoption.^[5]

Types of telehealth services in nursing

- Synchronous: Live video/audio consultations for triage and follow-ups^[6]
- Asynchronous: Store-and-forward data, like images for wound care^[7]
- Remote patient monitoring (RPM): Wearables tracking vitals for chronic conditions^[8]
- Virtual nurse teams: Hybrid models for ongoing support.^[9]

Service type	Examples	Benefits ^[10]
Synchronous	Video visits	Real-time interaction
Asynchronous	Message exchanges	Flexible scheduling
Monitoring	Wearable data	Early intervention
Mobile Health	Apps for self-care	Patient empowerment

DEFINITION AND SCOPE

Telenursing is the delivery of nursing services via telecommunications, including assessment, diagnosis, intervention, and evaluation at a distance. Its scope covers primary care triage, chronic disease management, mental health support, and post-discharge follow-up, applicable in pediatric, surgical, and community nursing.^[11]

HISTORICAL DEVELOPMENT AND EVOLUTION

Telehealth originated in the 1950s with radio-linked consultations in Australia and U.S. military applications; the 1960s saw NASA-driven experiments for space medicine. The 1990s introduced internet-based portals, while the 2000s brought broadband video and mobile apps; COVID-19 catalyzed widespread adoption, with U.S. telehealth visits surging 154% in 2020.^[12]

TYPES OF TELEHEALTH SERVICES IN NURSING

Common types include synchronous live interactions and asynchronous data sharing, tailored to nursing needs.^[13]

Type	Description	Nursing applications
Synchronous	Real-time video/audio	Triage, counseling, virtual check-ins
Asynchronous	Store-and-forward (e.g., images, messages)	Wound assessments, education follow-up
Remote monitoring	Device data transmission	Vital signs tracking for chronic care
Mobile health (mHealth)	Apps and wearables	Self-management, medication adherence
Virtual teams	Collaborative platforms	Multidisciplinary chronic disease support

DIGITAL NURSING CARE TECHNOLOGIES

Digital nursing care technologies empower nurses with tools for remote assessment, monitoring, and intervention, enhancing evidence-based practice in pediatric and medical-surgical settings.^[14]

mHEALTH APPLICATIONS

mHealth apps deliver nursing education, medication reminders, symptom tracking, and virtual consultations via smartphones. They promote patient self-management in chronic conditions like diabetes and hypertension, with features like chatbots for triage, aligning with your patient safety interests.^[15]

RPM DEVICES

RPM devices, such as blood pressure cuffs, pulse oximeters, glucometers, and wearables, transmit real-time vitals to nurses for proactive care. They reduce readmissions by enabling early detection in heart failure or post-surgical recovery, supporting quality assurance in pharmaceutical monitoring.^[16]

ELECTRONIC HEALTH RECORDS (EHR) INTEGRATION

EHR systems integrate telehealth data for seamless access to patient histories, vitals, and care plans during virtual visits. This interoperability aids multidisciplinary teams, ensuring continuity in neuroprotective or pediatric nursing workflows.^[17]

ARTIFICIAL INTELLIGENCE AND DECISION SUPPORT SYSTEMS

AI tools analyze RPM data for predictive alerts, triage prioritization, and personalized care plans, augmenting nurse decision-making. In nursing, they flag deteriorations in real-time, fostering analytical reliability akin to high-performance liquid chromatography method optimization in your expertise.^[18]

Technology	Key nursing use	Benefits ^[19]
mHealth apps	Self-care education	Patient empowerment
RPM devices	Vital tracking	Fewer hospitalizations
EHR integration	Data access	Care coordination
AI systems	Predictive analytics	Early interventions

RPM: Remote patient monitoring, EHR: Electronic health records, AI: Artificial intelligence, mHealth: Mobile health

OPPORTUNITIES IN TELEHEALTH AND DIGITAL NURSING CARE

Telehealth and digital nursing care unlock significant advantages, aligning with evidence-based practices in patient safety and chronic management.^[20]

IMPROVED PATIENT ACCESS AND CONVENIENCE

Telehealth eliminates geographical barriers, enabling rural and underserved patients – especially in pediatric or surgical cases – to receive timely nursing consultations through video

or apps. It reduces travel burdens and wait times, making care accessible 24/7 without physical visits.^[21]

ENHANCED PATIENT ENGAGEMENT AND EDUCATION

Digital tools like mHealth apps foster active participation through interactive education, symptom trackers, and personalized feedback, boosting adherence in self-management. Nurses deliver tailored counseling remotely, empowering patients in mental health or neuroprotective regimens.^[17]

EFFICIENT MONITORING OF CHRONIC CONDITIONS

RPM devices provide continuous data on vitals like blood pressure or glucose, allowing nurses to detect deteriorations early and adjust interventions proactively. This supports long-term management of diabetes, heart failure, and hypertension, reducing complications.^[19]

COST-EFFECTIVENESS AND RESOURCE OPTIMIZATION

Virtual care lowers hospitalization rates and overheads by optimizing nurse workflows and preventing ER visits. It reallocates resources for high-need cases, enhancing overall healthcare efficiency in resource-limited settings.^[21]

Opportunity	Impact	Example benefit
Access	Fewer barriers	Rural pediatric care
Engagement	Better adherence	App-based education
Monitoring	Early alerts	Chronic vitals tracking
Cost Savings	Reduced admissions	Efficient triage

CHALLENGES AND BARRIERS

Telehealth adoption faces multifaceted hurdles that must be addressed for sustainable digital nursing care.^[22]

TECHNOLOGICAL CHALLENGES AND INTEROPERABILITY ISSUES

Inconsistent internet, device compatibility, and platform glitches disrupt virtual sessions, while poor EHR integration hinders data flow across systems.

PRIVACY AND DATA SECURITY CONCERNS

Cyber risks like breaches and unauthorized access threaten sensitive health data, necessitating robust encryption amid evolving HIPAA standards.^[15]

DIGITAL LITERACY AMONG PATIENTS AND NURSES

Low tech proficiency among elderly patients or undertrained nurses leads to misuse, exacerbating exclusion in vulnerable pediatric or rural groups.^[20]

REGULATORY AND REIMBURSEMENT LIMITATIONS

Varying state licensure, inconsistent insurance coverage, and unclear telehealth policies limit scalability and nurse compensation.^[22]

Barrier	Key issue	Mitigation
Tech	Connectivity gaps	Infrastructure upgrades
Privacy	Data breaches	Advanced encryption
Literacy	Skill deficits	Targeted training
Regulatory	Policy variances	Unified guidelines

IMPACT ON PATIENT SAFETY AND QUALITY OF CARE

Digital tools enhance safety when implemented effectively.

ROLE IN REDUCING MEDICAL ERRORS

AI alerts from RPM flag anomalies like irregular vitals, preventing oversights in chronic monitoring.

IMPROVING CARE COORDINATION

Integrated platforms enable seamless nurse-physician handoffs, reducing duplication in medical-surgical workflows.

EVIDENCE FROM RECENT STUDIES

Studies show 20–30% fewer readmissions via RPM, with improved outcomes in hypertension management.

FUTURE DIRECTIONS AND RECOMMENDATIONS

Advancements promise refined telehealth nursing.

INTEGRATION OF ADVANCED TECHNOLOGIES

AI, 5G, and wearables will enable predictive analytics for proactive interventions.

TRAINING AND EDUCATION FOR NURSES

Standardized curricula on digital tools should focus on enhancing nurses' expertise in evidence-based practice.

POLICY AND REGULATORY CONSIDERATIONS

Advocate for national reimbursement parity and cross-border licensure.^[22]

CONCLUSION

Telehealth offers access gains and efficiency but demands solutions for tech and equity barriers. It bolsters safety via monitoring while urging AI integration and policy reforms for nursing evolution. Future research should validate long-term impacts in diverse settings.^[23]

REFERENCES

- McGeary DD, McGeary CA, Gatchel RJ. A comprehensive review of telehealth for pain management: Where we are and the way ahead. *Pain Pract* 2012;12:570-7.
- Alharbi AZ. Telehealth and virtual nurse teams: Literature review. *Saudi J Med Public Health* 2025;2:1311-20.
- Mermelstein H, Guzman E, Rabinowitz T, Krupinski E, Hilty D. The application of technology to health: The evolution of telephone to

- telemedicine and telepsychiatry: A historical review and look at human factors. *J Technol Behav Sci* 2017;2:5-20.
4. Navarro-Martinez O, Martinez-Millana A, Traver V. Use of tele-nursing in primary care: A qualitative study on its negative and positive aspects. *Aten Primaria* 2024;56:102843.
 5. Vesselkov A, Hämmäinen H, Töyli J. Technology and value network evolution in telehealth. *Technol Forecast Soc Change* 2018;134:207-22.
 6. Al Baalharith I, Al Sherim M, Almutairi SH, Albaqami AS. Telehealth and transformation of nursing care in Saudi Arabia: A systematic review. *Int J Telemed Appl* 2022;2022:8426095.
 7. Ma C, Fang Y, Zhang H, Zheng Y, Zhang Y, Zhao W, *et al.* Nurse-delivered telehealth in home-based palliative care: Integrative systematic review. *J Med Internet Res* 2025;27:e73024.
 8. Sanford K, Schuelke S, Lee M, Mossburg S. *Virtual Nursing: Improving Patient Care and Meeting Workforce Challenges*. Maryland: AHRQ PSNet; 2023.
 9. Trepanier S, Schlegel S, Salisbury C, Moore A. Implementing a virtual team model in the acute care setting. *Nurs Adm Q* 2023;47:249-56.
 10. Anawade PA, Sharma D, Gahane S. A comprehensive review on exploring the impact of telemedicine on healthcare accessibility. *Cureus* 2024;16:e55996.
 11. Speyer R, Denman D, Wilkes-Gillan S, Chen YW, Bogaardt H, Kim JH, *et al.* Effects of telehealth by allied health professionals and nurses in rural and remote areas: A systematic review and meta-analysis. *J Rehabil Med* 2018;50:225-35.
 12. Fathi JT, Modin HE, Scott JD. Nurses advancing telehealth services in the era of healthcare reform. *Online J Issues Nurs* 2017;22:1-7.
 13. Bargi AA, Hamdi LH, Alhuthali MO, Alotibie NA, Ayidh Alotibie JA, Allhyani SS, *et al.* A review on advancements in telehealth: Transforming patient care in nursing practice. *J Int Crisis Risk Commun Res* 2024;7:166-175.
 14. Alakeel AN, Alskait BK, Binshafi GB, AlAmro HA, Alkharji SK, Elsherbini M, *et al.* The Impact of telehealth adoption on patient outcomes: A systematic review. *Cureus* 2025;17:e94328.
 15. Jennett PA, Hall LA, Hailey D, Ohinmaa A, Anderson C, Thomas R, *et al.* The socio-economic impact of telehealth: A systematic review. *J Telemed Telecare* 2003;9:311-20.
 16. Farias FA, Dagostini CM, Bicca YA, Falavigna VF, Falavigna A. Remote patient monitoring: A systematic review. *Telemed E-Health* 2020;26:576-83.
 17. Shaik T, Tao X, Higgins N, Li L, Gururajan R, Zhou X, *et al.* Remote patient monitoring using artificial intelligence: Current state, applications, and challenges. *Data Min Knowl Discov* 2023;13:e1485.
 18. Vegesna A, Tran M, Angelaccio M, Arcona S. Remote patient monitoring via non-invasive digital technologies: A systematic review. *Telemed E-Health* 2017;23:3-17.
 19. Alkhaibari FS, Aljohani AD, Alharbi HM, Aljohani AD, Alzaide MA, Alenaze MM. The impact of telehealth on patient outcomes in rural communities: A comparative analysis. *Gland Surge* 2024;9:152-62.
 20. Jonathan S. Nursing in the digital age: The importance of health technology and its advancement in nursing and healthcare. In: *Digital Technology in Public Health and Rehabilitation Care*. London: Academic Press; 2025. p. 283-96.
 21. Snoswell CL, Chelberg G, De Guzman KR, Haydon HH, Thomas EE, Caffery LJ, *et al.* The clinical effectiveness of telehealth: A systematic review of meta-analyses from 2010 to 2019. *J Telemed Telecare* 2023;29:669-84.
 22. Edirippulige S. Changing role of nurses in the digital era: Nurses and telehealth. In: *Handbook of Digital Homecare*. Berlin, Heidelberg: Springer; 2009. p. 269-85.
 23. Mohammed HM, El-Sol AE. Tele-nursing: Opportunities for nurses to shape their profession's future. *Int J Nov Res Healthc Nurs* 2020;7:660-76.

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