

The Role Of Nurse-Led Technology Solutions In Augmenting Patient Monitoring Strategies

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Abstract

Telehealth saw significant expansion and was embraced as an alternative for in-person patient and nurse visits during the outbreak of COVID-19. Nevertheless, there is a lack of research on the mapping of nurse-led telehealth interventions during the epidemic. The objective of this research was to identify and provide a concise overview of the advantages and limitations of nurse-led telehealth treatments for outpatients living in the community during the COVID-19 epidemic. This research used a scoping review technique and followed the guidelines provided by the Preferred Reporting Items for Systematic Reviews and Meta-analyses Scoping Review Extension. A systematic search was conducted across five electronic databases to identify papers published in English peer-reviewed journals from January 2020 to February 2022. Out of the 490 publications that were found, 23 empirical studies were chosen according to the inclusion/exclusion criteria. The analysis included primary studies conducted in nine different nations, using a range of research methodologies. The study revealed four advantages and three disadvantages of nurse-led telehealth treatments for patients during the COVID-19 pandemic. In order to ensure that telehealth services provide effective, efficient, and high-quality patient care, future research and nursing practice must address the limitations that have been discovered in present nurse-led telehealth treatments. Enhancing the quality of patient care may be achieved via the implementation of more rigorous evidence-based research and the development of updated and standardized standards for nurses' telehealth services. The results of this scoping assessment may be used by nurse managers, executives, and legislators to enhance the existing telehealth services system.

Keywords: COVID-19, Nurse, Nurse practitioner, Evaluation, Scoping review, Telehealth.

1. Introduction

The SARS-CoV-2 virus, also known as COVID-19, has resulted in widespread severe illnesses and a significant number of fatalities worldwide.¹ The pandemic put the unprepared public healthcare systems to the test and caused significant damage to them due to an unprecedented health catastrophe. Nurses comprise the biggest healthcare professional population globally.^{2,3} These frontline personnel provide initial evaluations of patients and dedicate time to providing patient care. Due to the elevated risk associated with COVID-19, telemedicine has emerged as a viable alternative to in-person consultations.⁴ Nurses-led telehealth services in patient care are spreading worldwide and

have become more important due to the enormous influence of COVID-19 on the healthcare sector.⁵

Telehealth intervention refers to any intervention where clinical information is sent remotely between a patient and a healthcare professional, regardless of the technology utilized to capture or communicate the information.⁶ Telehealth encompasses three distinct modalities: synchronous, which involves real-time virtual visits; asynchronous, which involves the exchange of store and forward messages; and remote patient monitoring.⁷ In 2021, the World Health Organization issued many recommendations on telehealth services. Numerous research evaluating the impact of telehealth services on patient outcomes have been undertaken and published.⁸⁻¹⁰ Multiple interdisciplinary systematic evaluations have shown the efficacy of telemedicine in the context of the pandemic, despite its lack of connection to the nursing field.^{11,12}

Nevertheless, there is a scarcity of empirical research examining the impact of nurse-led and -managed telehealth services on patients.^{13,14} In addition, there has been no evaluation that has offered a thorough and inclusive analysis of nurse-led telehealth interventions specifically during the COVID-19 epidemic. Telehealth has emerged as a prominent, expanding, and crucial approach for providing healthcare services during the COVID-19 pandemic. The objective of this scoping review was to gather and analyze research findings on telehealth treatments led by nurses that were specifically designed for or implemented on patients during the COVID-19 pandemic. The analysis identified a total of 23 papers that were published during the timeframe of 2020 to 2022. This scoping study provides the first examination of the merits and drawbacks of telehealth treatments conducted by nurses during a pandemic.

2. Nurses and nurse practitioners

Nurses and nurse practitioners have used a range of telehealth activities aimed at delivering efficient and effective healthcare to patients within the epidemic. The study highlighted four key advantages of nurse-led telehealth interventions: The objectives include: delivering care without transferring COVID-19; improving healthcare accessibility; providing continuous and patient-centered care; and enhancing satisfaction among patients and nurses. The first finding demonstrated that telehealth services are beneficial and provide health assurance to both nurses and patients. During past acute respiratory epidemics, such as the SARS or MERS outbreaks, home-based online healthcare services were used as a means to safeguard healthcare personnel and patients from the spread of the virus.¹⁵ The US Department of Health and Human Services actively promoted the use of telehealth by clinicians during the COVID-19 pandemic in order to prioritize safety.¹⁶ The first advantage highlighted in this evaluation corresponds with findings from prior research indicating that telehealth services are a secure and efficient method of organizing healthcare and minimizing the spread of diseases.

An additional advantage of this scoping study was the enhancement of patients' healthcare accessibility via nurse-led telehealth interventions. Indeed, the treatments not only decreased the prevalence of health inequalities, but also indicated that these interventions might be beneficial for all groups.¹⁷ The primary concern during the COVID-19 pandemic was the heightened susceptibility of susceptible groups to contracting the virus.¹⁸ Indicators of vulnerability and health inequalities, such as poverty, geographic location, racial/ethnic minority status, and age, might suggest disadvantages in accessing healthcare systems.¹⁸ The scoping assessment demonstrated that the provision of telehealth services by nurses allows for widespread patient access and indicates potential for mitigating health inequities.

An additional advantage of nurse-led telehealth is its ability to provide uninterrupted and patient-focused healthcare, a crucial aspect for individuals with chronic conditions,

such as cancer patients as shown in the research conducted by Ferrua et al. 19. This study examines the implementation of individualized care using telemonitoring by nurses, which is guided by patient symptoms. The two acclaimed advantages of telehealth services are face-to-face healthcare and ongoing patient surveillance.^{20,21} Ultimately, this analysis determined that telehealth services had the advantage of boosting satisfaction levels among both patients and nurses. This discovery is consistent with a prior evaluation; the correlation between telehealth services and patient contentment is a crucial determinant of patient results.²²

This scoping study identifies three deficiencies in nurse-led telehealth interventions: lack of evidence-based recommendations; technological difficulties; and difficulties in providing physical and psychological care. While these flaws may hinder efforts to address the ongoing public health crisis, they also have significant consequences for research, practical applications, and the development of health policies.

Initially, it is necessary to develop evidence-based and pragmatic protocols for nurses to follow while providing telehealth services. Public health has seen other global pandemic epidemics in recent years, such as SARS, MERS, and H1N1. Nevertheless, these outbreaks had a lower global mortality rate compared to COVID-19. Nevertheless, the principles and standards of practice for nurses and other healthcare workers remain restricted.^{3, 23} Consequently, the nurses did not comply with these standards.²³ This evaluation also found that the recommendations for telehealth practice were not comprehensive and were vulnerable to quick changes in information due to COVID-19. Nurses are likely to encounter challenges and incur stress when rules are missing or constantly changing.^{3, 24} Therefore, it is essential to consolidate knowledge and develop telehealth delivery methods in order to enhance nurses' practice and provide standardized recommendations for COVID-19. Furthermore, it is crucial to establish protocols for telemedicine and pandemics in general, applicable to both practicing nurses on the frontlines and nursing students.

In addition, our scoping assessment has revealed some technological issues. These results are consistent with prior study conducted by other healthcare professionals on telehealth services. ^{25,26} For instance, the research highlighted certain areas and demographics that had restricted availability of telehealth equipment. Additionally, both patients and nurses had a limited capacity to effectively use telehealth methods. The chosen studies also examined nurses and patients who expressed a preference for conventional exams and encountered challenges in delivering telehealth services. It is advisable to get practical training in Internet use and technology abilities for future research and practical applications. Nurses and nursing educators should undergo regular training to ensure they are sufficiently prepared for such practices.

Five of the research considered in this study used a theoretical framework.^{27, 28, 29, 30, 31} There is a lack of research that has formulated or extended the theoretical framework of telehealth services. By enhancing pertinent theoretical frameworks, it is possible to develop enduring treatments as effective care solutions.²³ This review has several commendable attributes. This scoping review is the first effort to compile and provide information on telehealth interventions led by nurses during the COVID-19 pandemic. The findings of this evaluation may be used to assist both nurses and healthcare administrators in managing the current pandemic and planning for future pandemics. This research used the Arksey and O'Malley³² paradigm to produce a clear and complete review, backed by extensive evidence. This scoping review conducted a comprehensive analysis of research findings to identify and combine evidence, with the aim of highlighting practical implications for telehealth services provided by nurses. It is worth noting that nurses have played a crucial role as the main healthcare providers throughout the COVID-19 pandemic.

3. Repercussions for the field of nursing and the development of health policies

It is essential for nurse managers and leaders to provide backing and financial resources for both telehealth services and research endeavors in order to identify the most effective evidence-based practices and establish protocols for telehealth treatments. The scarcity of research funding hinders the development and implementation of telehealth services.⁵ In addition, several nations still have poor preparedness for or are cautious in adopting telehealth services.^{1, 5, 50} Healthcare executives and politicians in these nations should establish processes and build infrastructure for telehealth services. As of March 6, 2020, healthcare policy in the United States was modified to provide funding for both in-person and telehealth visits, specifically in response to the COVID-19 pandemic.⁵ Nevertheless, several nations have not provided clear guidelines on reimbursing nurses' telemedicine services and have been cautious in embracing telehealth consultations as a replacement for in-person clinic appointments.⁵⁰ Healthcare officials and nurse leaders in these nations should authorize the extension of telehealth services' payments for nurses.

Healthcare professionals and organizations, including the World Health Organization, should collaborate globally to create rules and practices specifically for telehealth services. Furthermore, it is crucial to formulate these recommendations in order to be ready for forthcoming outbreaks and global health crises.

4. Summary

This comprehensive study is the first attempt to examine nurse-led telemedicine therapies specifically designed for patients with COVID-19. It emphasizes the advantages and disadvantages of nurses' telehealth techniques. Telehealth has gained global recognition as a vital and acceptable method for delivering efficient and effective healthcare. The research included in this study demonstrated the significant advantages of telehealth interventions by nurses as an alternate form of treatment during the pandemic. Hence, it is imperative for healthcare authorities worldwide to endorse and widely implement telehealth services in order to enhance patient care.

References

1. Jackson D Bradbury-Jones C Baptiste D, et al.. Life in the pandemic: some reflections on nursing in the context of COVID-19. *Journal of Clinical Nursing*. 2020;29(13–14): 2041–2043.
2. World Health Organization . Listings of WHO's Response to COVID-19. World Health Organization.
3. Joo JY, Liu F. Nurses' barriers to caring for patients with COVID-19: a qualitative systematic review. *International Nursing Review*. 2021;68(2): 202–213.
4. World Health Organization . Implementing Telemedicine Services During COVID-19: Guiding Principles and Considerations for a Stepwise Approach. World Health Organization.
5. Frey MB, Chiu SH. Considerations when using telemedicine as the advanced practice registered nurse. *Journal for Nurse Practitioners*. 2021;17(3): 289–292.
6. Hanlon P Daines L Campbell C, et al.. Telehealth interventions to support self-management of long-term conditions: a systematic metareview of diabetes, heart failure, asthma, chronic obstructive pulmonary disease, and cancer. *Journal of Medical Internet Research*. 2017;19(5): e172.
7. Centers for Disease Control and Prevention . Using Telehealth to Expand Access to Essential Health Services During the COVID-19 Pandemic. Centers for Disease Control and Prevention.
8. Ghai B, Malhotra N, Bajwa SJS. Telemedicine for chronic pain management during COVID-19 pandemic. *Indian Journal of Anaesthesia*. 2020;64(6): 456–462.
9. Krenitsky NM, Spiegelman J, Sutton D, Syeda S, Moroz L. Primed for a pandemic: implementation of telehealth outpatient monitoring for women with mild COVID-19. *Seminars in Perinatology*. 2020;44(7): 151285.
10. Xu J Hamadi HY Hicks-Roof KK, et al.. Healthcare professionals and telehealth usability during COVID-19. *Telehealth Medicine Today*. 2021;6(3).

11. Garfan S Alamoodi AH Zaidan BB, et al.. Telehealth utilization during the COVID-19 pandemic: a systematic review. *Computers in Biology and Medicine*. 2021;138: 104878.
12. Monaghesh E, Hajizadeh A. The role of telehealth during COVID-19 outbreak: a systematic review based on current evidence. *BMC Public Health*. 2020;20(1): 1193.
13. Lim ST, Yap F, Chin X. Bridging the needs of adolescent diabetes care during COVID-19: a nurse-led telehealth initiative. *Journal of Adolescent Health*. 2020;67(4): 615–617.
14. Sutter R, Cuellar AE, Harvey M, Hong YA. Academic nurse-managed community clinics transitioning to telehealth: case report on the rapid response to COVID-19. *JMIR Nursing*. 2020;3(1): e24521.
15. Keshvaridoost S, Bahaadinbeigy K, Fatehi F. Role of telehealth in the management of COVID-19: lessons learned from previous SARS, MERS, and Ebola outbreaks. *Telemedicine Journal and E-Health*. 2020;26(7): 850–852.
16. US Department of Health & Human Services . Telehealth: Delivering Care Safely During COVID-19. US Department of Health & Human Services. <https://www.hhs.gov/coronavirus/telehealth/index.html>
17. Serino-Cipoletta J, Dempsey C, Goldberg N. Telemedicine and health equity during COVID-19 in pediatric gastroenterology. *Journal of Pediatric Health Care*. 2022;36(2): 124–135.
18. Hooper MW, Nápoles AM, Pérez-Stable EJ. COVID-19 and racial/ethnic disparities. *JAMA*. 2020;323(24): 2466–2467.
19. Ferrua M Mathivon D Dufлот-Boukobza A, et al.. Nurse navigators' telemonitoring for cancer patients with COVID-19: a French case study. *Supportive Care in Cancer*. 2021;29(8): 4485–4492. 10.1007/s00520-020-05968-y
20. Ondra S. Why Telehealth and Continuous Remote Patient Monitoring Has Staying Power Beyond COVID-19. *Managed Healthcare Executive*.
21. Thornton L. Telehealth Ensures Continuous, Patient-Centered Care. Kennedy Krieger Institute. <https://www.kennedykrieger.org/stories/potential-magazine/summer-2020/telehealth-ensures-continuous-patient-centered-care>. Summer 2020.
22. Kruse CS, Krowski N, Rodriguez B, Tran L, Vela J, Brooks M. Telehealth and patient satisfaction: a systematic review and narrative analysis. *BMJ Open*. 2017;7(8): e016242.
23. Gilissen J, Pivodic L, Gastmans C. How to achieve the desired outcomes of advance care planning in nursing homes: a theory of change. *BMC Geriatrics*. 2018;18(1): 47.
24. Mahoney MF. Telehealth, telemedicine, and related technologic platforms: current practice and response to the COVID-19 pandemic. *Journal of Wound, Ostomy, and Continence Nursing*. 2020;47(5): 439–444.
25. Kichloo A Albosta M Dettloff K, et al.. Telemedicine, the current COVID-19 pandemic and the future: a narrative review and perspectives moving forward in the USA. *Family Medicine and Community Health*. 2020;8(3): e000530.
26. Nittari G, Khuman R, Baldoni S. Telemedicine practice: review of the current ethical and legal challenges. *Telemedicine Journal and E-Health*. 2020;26(12): 1427–1437.
27. Birkhoff SD Nair JM Bald K, et al.. Facilitators and challenges in the adoption of a virtual nurse visit in the home health setting. *Home Health Care Services Quarterly*. 2021;40(2): 105–120.
28. Brunelli VN, Beggs RL, Ehrlich CE. Case study discussion: the important partnership role of disability nurse navigators in the context of abrupt system changes because of COVID-19 pandemic. *Collegian*. 2021;28(6): 628–634.
29. Dempsey CM Serino-Cipoletta JM Marinaccio BD, et al.. Determining factors that influence parents' perceptions of telehealth provided in a pediatric gastroenterological practice: a quality improvement project. *Journal of Pediatric Nursing*. 2022;62: 36–42. 10.1016/j.pedn.2021.11.023
30. Ross L, Meier N. Improving adult coping with social isolation during COVID-19 in the community through nurse-led patient-centered telehealth teaching and listening interventions. *Nursing Forum*. 2021;56(2): 467–473.
31. Serino-Cipoletta J, Dempsey C, Goldberg N. Telemedicine and health equity during COVID-19 in pediatric gastroenterology. *Journal of Pediatric Health Care*. 2022;36(2): 124–135.
32. Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *International Journal of Social Research Methodology*. 2005;8(1): 19–32. 10.1080/1364557032000119616