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Virtual Nurse–Led Patient Education:

A Public Health Opportunity

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Abstract

Virtual nursing is an evolving care delivery model in which registered nurses use secure telehealth technology to provide remote clinical support that compliments bedside care. Although initially adopted to address workforce shortages and workflow inefficiencies, virtual nursing has emerged as a promising strategy for delivering patient education. Patient education is a core nursing responsibility essential to medication adherence, chronic disease self-management, and continuity of care, yet it is often hindered by time constraints, interruptions in clinical settings, and health literacy. This paper examines virtual nurse-led education as an effective approach to improve patient understanding, engagement, and health outcomes. Virtual education models, delivered through fully remote or hybrid approaches, provide standardized yet personalized instruction, protected teaching time, and continuity of care beyond discharge. Despite challenges related to digital access and health equity, well designed virtual nursing programs offer a scalable, patient centered strategy to enhance education, reduce preventable readmissions, and support public health goals.

Introduction

Virtual nursing is a care delivery model in which registered nurses use secure audio- and video-enabled technologies to provide remote clinical support that complements in-person care. According to the American Nurses Association (ANA), virtual nurses work alongside bedside staff by managing admissions, discharges, patient education, medication reconciliation, documentation, and patient or family inquiries.[1] Rather than replacing in-person nurses, virtual nursing complements onsite care by assuming appropriate time-intensive tasks to allow bedside nurses to focus on hands on care. By shifting these responsibilities to a remote nurse, organizations expand patients' access to education, support, and care coordination resources, ultimately improving continuity and quality of care.

Virtual nursing has been a part of healthcare longer than many realize. The ANAn established a telehealth nursing interest group in 1995 and released formal telenursing standards in 2001, underscoring the longstanding role of remote nursing in clinical practice.[2] In outpatient settings, virtual nurses help patients, especially those in rural or underserved areas, maintain continuity of care, complete follow-ups, and access education without needing in-person visits. In acute care environments, virtual nurses support bedside teams by managing documentation, conducting remote monitoring, and providing patient education. These functions enhance access to nursing expertise, streamline workflows, and strengthen continuity of care. For example, virtual nurses provide remote education on chronic disease management such as diabetes or hypertension, delivering timely and convenient guidance to patients.

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Health systems across the United States are rapidly integrating virtual nurses into their workflows. Originally implemented to address staffing shortages and streamline processes, virtual nurses now support key clinical functions such as admissions, discharge education, medication reconciliation, and ongoing patient education. They also serve as an “extra set of eyes,” offering remote monitoring, symptom assessment, patient guidance, and documentation support across both inpatient and outpatient settings.[3]

The Importance of Virtual Patient Education

Patient education remains a core nursing responsibility and a cornerstone of public health. Teaching patients how to manage medications, monitor symptoms, adopt self-care behaviors, and navigate follow-up care are cognitively demanding and time-intensive tasks.[4] This requires assessment, adaptation, repetition, and reinforcement of key health information to ensure patients can understand, retain, and apply it in real-world settings. Nurses often work in environments characterized by frequent interruptions, and face challenges in securing protected, interruption-free time to deliver patients' education and other tasks.[4] Workforce shortages further strain the ability of nurses to provide consistent, high-quality patient education. However, utilization of virtual nurses may offer a potential solution through the delivery of standardized, timely, and accessible patient education in outpatient and public health settings.

As the use of virtual nurses becomes more well-established, virtual nurse–led education shows promise in reducing re-admissions, by supporting patient understanding and improving patient outcomes, particularly when evidence-based communication strategies such as structured self-management education and teach-back are incorporated.[5] Limited understanding of health education can lead patients to miss critical follow up information, increasing the risk of poor outcomes, higher readmission rates, and longer hospital stays.[5]

Emerging evidence supports the effectiveness of virtual nursing programs to enhance patient education, improve discharge understanding, and reduce readmissions. Virtual nurse supported discharges strengthen comprehension of care plans and reduce errors that can lead to rehospitalization. Studies show telehealth follow ups significantly lower 30-day readmission rates among high-risk patients, decreasing rates from 20.1% to 14.9%.[6] Additionally, virtual models also improve follow-up adherence by eliminating barriers such as transportation. When video visits were not accessible, phone calls were arranged instead, as a result, the no-show rate for follow up visits was less than 5%.[6] While gaps remain in long-term outcome data and comparative implementation models, early findings from tele-nursing interventions suggest meaningful potential for population health improvement.

Effective patient education plays a critical role in improving medication adherence, strengthening chronic disease management, and promoting consistent self-care. Chronic conditions such as diabetes and hypertension require sustained engagement beyond the hospital stay, which underscores the need for ongoing educational support. Evidence from virtual-nursing research strengthens this connection. For example, a quasi-experimental study examining the effectiveness of patients' education and telenursing follow-ups on self-care practices of patients with diabetes mellitus demonstrated that structured education combined with tele-nursing follow-up significantly improved self-care practices among patients with diabetes.[7] Patients receiving ongoing remote education showed measurable gains in medication adherence, diet management,

and glucose monitoring behaviors. The investigation concluded that a well-designed remote telenursing educational intervention can meaningfully enhance patient knowledge, skills, and self-management among individuals with diabetes.[7] Similarly, evidence from a randomized controlled trial showed that telenursing based self-management interventions significantly improved self-care scores among individuals with hypertension during the 12 week period of structured educational follow up.[8] These findings reinforce a core public health principle: sustained, structured education, particularly when reinforced through follow-up, improves chronic disease management and supports long-term patient engagement.[6]

Why Education is a Logical Task for Virtualization

Education is particularly well-suited to virtualization for several reasons: 1) content can be standardized while allowing personalization; 2) teaching often requires repetition and reinforcement; 3) sessions can be scheduled and protected from interruptions; and 4) follow-up can occur after discharge, bridging the inpatient–outpatient gap.[5]

Unlike tasks requiring physical assessment or procedures, education primarily requires communication skills, clinical knowledge, and structured frameworks, all of which can be delivered effectively through telehealth modalities. A post-COVID study examining ethical and equity issues in virtual nursing underscores that telehealth meaningfully expands patient access, strengthens continuity of care, and enhances monitoring capacity—highlighting that virtual education is uniquely positioned to leverage these advantages.[9]

Models of Implementation

Models of implementation for virtual nurse–led education vary across health care settings, generally falling into fully remote or hybrid approaches. In fully remote models, nurses operate from centralized hubs and interact with patients through secure video platforms, assuming primary responsibility for structured education sessions and follow-up communication.[3] In contrast, hybrid models integrate both bedside and virtual nurses: the bedside nurse initiates care and establishes rapport, while the virtual nurse completes charting, reinforces discharge instructions, and conducts follow-up teaching.[3] Hybrid approaches may offer the greatest flexibility, as they preserve relational continuity between patients and their in-person care team while simultaneously protecting dedicated time for comprehensive education.

Virtual nurse–led education has important implications for patient outcomes and overall care quality. Tele-nursing interventions in patients with diabetes and hypertension have demonstrated significant improvements in self-care behaviors, suggesting enhanced comprehension, retention, and engagement in disease management. These improvements are closely linked to better chronic disease control, reduced complications, and a probable pathway toward lowering hospital readmissions, even though long-term readmission data remain limited. Standardized virtual education can enhance clarity and consistency of information delivery, but its effectiveness depends on thoughtful personalization that accounts for literacy levels, cultural context, and comorbidities.

Patient experience also appears favorable; technology-enhanced education models have been associated with increased satisfaction and usability, indicating that patients value clear, structured, and accessible digital instruction, particularly when it extends into outpatient follow-

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up.[6] While communication strategies such as structured comprehension checks can be integrated into virtual platforms to reinforce understanding, successful implementation requires reliable infrastructure, technical support, and skilled communication training. Challenges to virtual nurse interventions persist, particularly for patients in rural areas where limited connectivity and low health literacy can hinder access and continuity of care. In addition, technology-based approaches can be difficult to implement for vulnerable populations due to limited digital literacy, language barriers, sensory impairments, and inadequate broadband access—all of which may restrict patient participation and engagement. As emphasized in telehealth literature, digital transformation must be implemented intentionally to avoid widening disparities, ensuring that improvements in patient education translate into measurable and equitable public health gains.

Implications for Nursing

While virtual nursing is not new, it continues to evolve. Amplified during COVID, it allowed nurses to continue to care for patients in the virtual space. Post-COVID, this transformation continues as patients welcome virtual engagement vs in-person encounters. From a public health perspective, virtual nursing presents several opportunities to expand access to care, particularly for underserved and rural populations. By leveraging telehealth platforms, nurses can improve accessibility to health services, reduce barriers such as lack of transportation, and promote health education and disease prevention at the population level. Additionally, virtual nursing can help address workforce gaps and improve patient experience by allowing experienced nurses to continue contributing to care delivery in non-traditional settings while supporting safe, patient centered care.[2] These opportunities speak to public health goals of improving access, strengthening care coordination, and supporting equitable healthcare delivery.

Conclusion

Virtual nursing is an increasingly effective strategy for strengthening patient education, improving care coordination, and supporting measurable health outcomes. Through telehealth, virtual nurses provide structured, uninterrupted education that improves understanding of medications, self-care, and follow-up needs. Evidence from chronic disease management demonstrates tele-nursing improves adherence, engagement, and self-care, contributing to fewer complications and preventable hospital readmissions. Although challenges related to digital literacy, connectivity, and equity persist, well-designed virtual education models can expand access to care and support population health goals. As telehealth becomes routine practice, virtual nurse–led education is increasingly positioned as a key component of patient-centered care that fosters long-term self-management. Moreover, virtual nursing offers a scalable public health approach to reducing health care disparities by reaching patients beyond traditional clinical settings. By addressing service gaps that contribute to avoidable illness and health inequities—particularly among rural, underserved, or mobility-limited populations—virtual nursing supports the delivery of population-level interventions capable of improving health outcomes across diverse communities.

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