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Evolution and Impact of Telenursing and Telemedicine

The healthcare industry is going through a transformation driven by rapid technological advancements and the increasing demand for accessible, efficient, and patient-centred care. In this digital era of healthcare delivery, telenursing has emerged as a crucial component, bridging the gap between patients and healthcare providers through innovative communication technologies. Telenursing is at the forefront of this digital revolution, promising to reshape the landscape of patient care and nursing practice.

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key points

- Telenursing represents a transformative shift in healthcare, prioritising accessibility, efficiency, and superior patient care through technology.
- Virtual nursing programmes have emerged as a viable solution to address critical nursing shortages.
- Telenursing's future success will depend on effectively addressing challenges such as privacy, technology access, and regulatory constraints.
- Telenursing supports various healthcare applications, including home care, case management, and telephone triage.

The Digital Health Landscape

The digital healthcare ecosystem involves integrating cutting-edge technologies and innovative digital solutions across various aspects of healthcare delivery and management. Technological advancements have transformed the healthcare industry, replacing traditional methods of patient care and record-keeping with a more efficient digital landscape. The integration of telemedicine and advanced information systems has ushered in a new era in healthcare delivery, offering significant benefits for both patients and healthcare professionals.

Telehealth, Telemedicine & Telenursing

Telehealth is "the use of electronic information and communication technologies to support virtual clinical healthcare practice, patient and professional health-related education, public health and health administration" (Saudi Health Council 2023). The World Health Organisation defines telehealth as the "delivery of health care services, where patients and providers are separated by distance. Telehealth uses Information and Communication Technologies (ICT) for the exchange of information for the diagnosis and treatment of diseases and injuries, research and evaluation, and for the continuing education of health professionals" (WHO 2022).

Telemedicine is the delivery of health care services, where distance is a critical factor, by all health care professionals using information and communications technologies for the exchange of valid information for diagnosis, treatment and prevention of disease

and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities. WHO refers to telemedicine as "healing from a distance" and defines it as using telecommunications and information technologies to provide remote clinical services to patients. Telemedicine revolutionises healthcare delivery by leveraging information and communication technologies to bridge geographical gaps. This innovative approach enables healthcare professionals to provide remote clinical services, facilitating diagnosis, treatment, and disease prevention across distances.

Telemedicine revolutionises healthcare delivery by leveraging information and communication technologies to bridge geographical gaps.

Telenursing utilises telephone conversations and information technology to provide remote nursing care. Telenursing addresses the increasing shortage of nurses and maintains patient contact after hospital discharge for optimal outcomes. This approach is particularly beneficial for patients who live far from healthcare clinics or face long wait times for doctor appointments (Mohsen 2020).

Telenursing Key Applications:

- **Remote Clinical Care:** Nurses can effectively conduct virtual consultations, monitor patients' conditions, and provide patients with necessary advice using telecommunication technologies (Mohammed 2020).
- **Triage, Assessing Conditions and Prioritising Care:** Remote triage has emerged as a crucial component of modern healthcare systems. It leverages technology to provide initial patient assessments without the need for in-person visits. The core of remote triage revolves around systematically evaluating symptoms through clinically based telephone conversations. Trained nurses play a pivotal role in this process, employing their expertise to conduct thorough symptom assessments (Greenhalgh 2020).
- **Management of patients:** This aspect of telenursing involves the continuous monitoring and assessment of patients' health status through the transmission of vital information to the telenursing centre. This information typically includes vital signs such as blood pressure, heart rate, respiratory rate, and body temperature, as well as more complex data like electrocardiogram (ECG) reports. By relaying this critical health data in real-time or at regular intervals, nurses can effectively track patients' conditions, identify potential health issues early, and make informed decisions about necessary interventions (Mohammed 2020).
- **Home Care During Illness or Recovery:** Telenursing offers significant benefits for patients who are recovering at home or don't require hospitalisation. This innovative approach to healthcare provides essential support through remote monitoring, professional advice, and patient education. Nurses can regularly check in with patients via video calls or phone consultations, assessing their condition and addressing any concerns (Paton 2020).
- **Mental Telehealth Nursing:** Telenursing has emerged as a valuable tool in the realm of mental health care, offering innovative solutions to address the growing prevalence of mental illness in contemporary society. The rising incidence of mental health issues, especially among adolescents and the elderly, underscores the urgent need for proactive measures and systemic improvements in healthcare delivery (Collada 2023).
- **Telenursing in ICU:** The telenursing ICU combines informatics, telecommunications, telemedicine, and telenursing to enhance care for critically ill patients. Evidence-based studies inform cutting-edge services for treatment and monitoring. In ICU telenursing, nurses and physicians use audio and video technology to monitor critical patients remotely. This system allows for the assessment of multiple patients through cameras and continuous monitoring of hemodynamic values while providing access to diagnostics and medical records. Tele-ICU nurses virtually monitor patients and alert bedside nurses to any unusual observations. Telenursing ICU operations have long been associated

with excellent critical care outcomes. Tele-ICUs operating under a centralised hub with auxiliary resources can significantly improve family-centred care outcomes. Coordinated patient visits, collaboration, patient education, and care coordination are among the connected health options available for intensive care (Collada 2023).

Benefits of Telehealth Nursing

Numerous studies highlight significant advantages associated with telehealth nursing (Deering 2022; VirtualNurse RX 2024):

Addressing Nursing Shortages: Virtual nursing programmes have emerged as a viable solution to address critical nursing shortages and workforce challenges.

Efficiency in Healthcare Delivery: Telehealth can streamline workflows, enable faster decision-making, and enhance the coordination of patient care.

Challenges in Implementing Telehealth Nursing

Despite the benefits, the implementation of telehealth nursing is not without its obstacles (Deering 2022; Qadir 2022; Mohammed 2020):

Patient Privacy and Confidentiality: Telemedicine encounters are more vulnerable to privacy and security risks than face-to-face encounters. While most telehealth platforms use high-level encryption and comply with Health Insurance Portability and Accountability Act (HIPAA) standards and regulations, no platform is entirely immune to hackers or data breaches.

Telenursing represents a significant advancement in healthcare delivery, offering numerous benefits for both patients and healthcare providers.

Enhanced Access to Care: Telehealth services improve access for patients in rural and underserved areas, thus breaking down barriers to healthcare.

Cost-Effectiveness: Both patients and healthcare providers can save on transportation costs, time away from work, and establish more efficient healthcare delivery pathways.

Chronic Condition Management: Telehealth nursing facilitates better monitoring and management of chronic health conditions, improving patient outcomes and reducing hospital readmissions.

Increased Patient Engagement: Telehealth empowers patients by allowing them to engage actively with their health management, leading to improved adherence to treatment plans.

Promotes Preventative Health: Technology enables patients and healthcare providers to monitor various health metrics, including weight, blood sugar levels, and mental health indicators. User-friendly smartphone and tablet applications enhance accessibility to health information and increase the likelihood of adherence to medical guidelines.

Ability to Implement it in All Situations: Telehealth may not be suitable for patients with certain medical conditions or injuries that require physical examinations, hospital stays, or ongoing face-to-face care. Additionally, some states mandate an in-person visit or physical examination before prescribing medication.

Payment Confusion: Conflicting insurance policies regarding coverage for telehealth services pose barriers to widespread adoption in some areas.

Technological Disparities: There is a significant digital divide, particularly among vulnerable populations lacking access to reliable internet or the requisite technological literacy.

Regulatory Obstacles: Telenursing, like telehealth in general, faces numerous legal, ethical, and regulatory challenges. Many countries prohibit interstate and international tele-nursing practice; the attending nurse must be licensed both in their home state/country and in the patient's location.

Conclusion and Future Implications

Overall, the implications of telenursing in the coming years highlight a transformative shift in healthcare that prioritises accessibility, efficiency, and superior patient care through technology. Addressing the accompanying challenges will be crucial for successfully integrating telenursing into mainstream nursing practice.

Telenursing represents a significant advancement in healthcare delivery, offering numerous benefits for both patients and healthcare providers. As technology continues to evolve, telenursing is poised to play an increasingly important role in the future of healthcare. However, the future success of telenursing will depend on effectively addressing challenges such as:

- Privacy and security concerns in digital healthcare platforms
- Legal and regulatory issues, particularly regarding interstate and international practice
- Limitations in certain medical conditions that require physical examinations or in-person care

As healthcare continues to evolve, successfully integrating telenursing into mainstream nursing practice will be crucial for realising its full potential in improving healthcare accessibility, efficiency, and patient outcomes.

Conflict of Interest

None.

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