

Integrative review

Developing nurse-friendly digital technology can enhance its use in healthcare

10.1136/ebnurs-2020-103332

Sumeeta Kapoor , Lynn Acheson 

Acute Pain Services, Department of Anesthesia, Foothills Medical Centre, Alberta Health services, Calgary, Alberta, Canada

Correspondence to: Sumeeta Kapoor, Acute Pain Services, Department of Anesthesia, Alberta Health Services, Calgary, Alberta, Canada; sumeeta.kapoor@ahs.ca

Commentary on: Brown *et al.* Issues affecting nurses' capability to use digital technology at work: An integrative review. *J of Clin Nurs.* 2020; 29:2801–2809

Implications for practice and research

- ▶ Technology experts, policy-makers and health managers should engage nurses while developing and implementing digital technology in healthcare.
- ▶ Nurse-friendly digital technology and automation should be factored in future research.

Context

Digital technology is increasingly used in healthcare for assessment, diagnosis, clinical decision-making, communications, care planning, and direct patient care.¹ Nurses' proficiency in the digital technology is critical in a dynamic healthcare environment.^{2,3} As a result, nurses are expected to adapt to new technology at an unprecedented pace.^{1,2} Brown *et al.*'s integrative review illuminated factors that influence nurses' ability to learn and use digital technology.³

Methods

Brown *et al.* completed a systematic search of academic literature in 2019 and included studies from 10 countries, spanning the years 2008 to 2019, from a variety of databases: Cumulative Index to Nursing and Allied Health Literature, Embase, PsychINFO, Medline (Ovid) and PubMed. Qualitative, quantitative and mixed methods studies were integrated in the review. Studies were included if they were related to nurses' digital technology capacity development or its use in healthcare. Two of the authors independently evaluated the quality of the reviewed studies using standardised instruments of the Joanna Briggs Institute (JBI).⁴ The authors determined independently what influenced the development of nurses' digital capacity or what facilitated its integration into nursing care or both. Discrepancies were resolved with mutual discussion and the data were categorised into themes.

Findings

The authors identified 640 studies in the academic literature, of which 17 were included for the integrative review: 7 quantitative, 8 qualitative and 2 mixed-method records. The data analysis indicated three factors influencing nurses' capacity and their use of technology: (1) varied because of the differences in user proficiency and competence, which inversely correlated with nurses' age and was facilitated by their personal use of the technology, (2) increased with the frequent need of a point of care

access to policy and procedure and the health information of the patient, and (3) decreased when nurses were hesitant to use the technology for concerns such as the risk of patient's confidential information breach, increased workload and reduced time at the bedside, and technological malfunctions resulting in job stress.

Commentary

Brown *et al.*, in their integrative review, examined the factors influencing nurses' capacity and skills to use digital technology at work. The authors employed JBI's established tools to extract, analyse, synthesise and categorise the data from 17 studies selected from a pool of 640 identified records. Brown *et al.* concluded that nurses' use of technology is determined by their proficiency based on their age and related personal experiences, need to access information and medical records, and their trust in the technology to ensure the safety of patient data. The authors recommended the involvement of nursing staff in the process of developing technology and investing in continuous education resources for nurses to enhance their proficiency. The authors underlined two factors to address the challenges of capacity building and the implementation of the digital technology in nursing care: (1) involving senior nurses in the development of a new technology system and (2) staff orientation.

This review highlighted nurses' challenges to learn and use digital technology at work. While digital technology can enhance nurses' proficiency, its rapid evolution can be demanding for nurses,¹ interrupt their work routine, decrease productivity and delay work when system updates or technology-related issues arise,⁵ and limit nurse-patient interactions.³ Including technology-related courses in the nursing curricula could help new staff for the short term; however, rapid technological changes may pose challenges for them in the long term. The authors concluded enhancing nurses-friendly user experience in healthcare digital technology by involving nurses in the process of developing it. One way to achieve this is to develop innovative solutions to save time in the nursing processes of using digital technology such as password-less secure authentication and introducing wearable devices for patients and nurses.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Not required.

Provenance and peer review Commissioned; internally peer reviewed.

© Author(s) (or their employer(s)) 2022. No commercial re-use. See rights and permissions. Published by BMJ.



ORCID iDs

Sumeeta Kapoor <http://orcid.org/0000-0002-6164-5262>Lynn Acheson <http://orcid.org/0000-0003-1524-8044>

References

- 1 Powell-Cope G, Nelson AL, Patterson ES. *Patient care technology and safety: an evidence-based Handbook for nurses*. Rockville, MD: Agency for Healthcare Research and Quality, 2008.
- 2 Mathews SC, McShea MJ, Hanley CL, *et al.* Digital health: a path to validation. *NPJ Digit Med* 2019;2:38.
- 3 Brown J, Pope N, Bosco AM, *et al.* Issues affecting nurses' capability to use digital technology at work: an integrative review. *J Clin Nurs* 2020;29:2801–19.
- 4 Jordan Z, Lockwood C, Munn Z, *et al.* Redeveloping the JBI model of evidence based healthcare. *Int J Evid Based Healthc* 2018;16:227–41.
- 5 Ibrahim S. *Registered nurses' intention to use electronic documentation systems: a mixed methods study*, 2019.