

Healthcare technology, innovation and nursing challenges in disruptive era

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Many technologies and innovations have been increasingly introduced into healthcare system to improve the efficiency, effectiveness and quality of care as a result of social and environmental changes. The elderly population needs care from health care providers, health technologies and innovations to maintain their health or support their life as independently as possible. In addition, the increasingly complex chronic illnesses in patients require advanced technology to save patients with complicated illnesses. There is an increase in both non-communicable and communicable diseases, especially emerging infectious diseases, and the digital disruption era which are major causes of an extreme increase in the use of technologies and innovations in every sector, especially the healthcare sector. It is expected that health technologies and innovations would result in better health outcomes, higher quality of care, patient safety, and the increasing of patients' satisfaction. The infiltration of technologies and innovations into healthcare have affected a drastic change in the role of healthcare providers, including nursing professions (Aloini, Benevento, Stefanini, & Zerbino, 2023; Flessa, & Huebner, 2021).

In this rapidly changing context or disruptive era, the role of nurses is more complicated. Besides providing nursing care, nurses are challenged to learn new technologies and innovations inevitably. They need to keep pace with health care technology and innovation through having knowledge, skills and competences in using and administering of healthcare technologies and innovations to deliver the best nursing care to patients. In addition, being in a digital world, nurses need to have another role which is more than just as sophisticated technological users. They might also be a nurse-innovator for nursing practice because nurses understand their own needs better than other

professions (Glasgow et al., 2018). Nurses might be a designer or a creator of new technologies or innovation for nursing practice. Developing new technologies or innovations related to nursing practice can help nurses meet patients' physical and emotional needs because technologies and innovations can bring nurses closer to their patients and give nurses deep and correct data of the patients (Barchielli, Marullo, Bonciani, & Vainieri, 2021). Therefore, nurses should develop characteristics of innovators by thinking outside the box, having positive emotions, and having team synergy (Bahari, Talosig, & Pizarro, 2021). Technologies and innovations in nursing could improve not only quality of patient care, but also quality of work, quality of nursing profession, and quality of organization, such as saving a patient's life, saving working time, and preventing errors in nursing practice.

However, working with a lot of technologies might interfere with nursing practice, workload, data security, and caring behaviors (Glasgow et al., 2018). Over technologic management in patient care affects time limitation to provide nursing practice to patients and can cause work overload, leading to physical and psychological health problems of nurses. Using over technologies and innovations might also affect increased cost of care (Okpala, 2018). In addition, concentrating on a lot of healthcare technologies and innovations might diminish the nurses' ability to demonstrate caring behavior. Caring is the central focus in nursing practice to improve health or well-being of patients. It helps nurses know, understand and perceive problems or needs of patients and their family, leading to appropriate and correct nursing care (Boykin & Schoenhofer, 2001). Therefore, nurses in this disruptive era need to be concerned about advantages and disadvantages of working with healthcare technologies and innovations.

In conclusion, the use of technology and innovation in the healthcare sector is continuously increasing. Nurses are encountering not only the phenomena of technological dependence, but also the demand to develop technology and innovation for nursing practice. Roles of nurses should not remain the users, but should be the developers of technologies and innovations in nursing in order to provide nursing care that meets the patients' needs and covers health prevention, health promotion, and rehabilitation. However, nurses should consider positive and negative impacts of using technologies and innovations in clinical and community setting.

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