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Guest Editorial

Q1 Digital Nursing and Health Care Innovation

Q2 We live in the era of innovation and digitalisation. Over the last couple of decades technology has changed the way we interact, communicate, entertain, and work. Nursing profession which counts for the 50% of the health workforce globally is directly affected by the implementation of new health technologies in the sector.

The World Health Organisation defines health technologies, as the "application of organized knowledge and skills in the form of devices, medicines, vaccines, procedures, and systems developed to solve a health problem and improve quality of lives".¹ Such technologies include remote monitoring and communication devices, sensors and wearables, mobile applications, Artificial Intelligence (AI) and Virtual Reality (VR).

These technologies are reshaping the way health care is delivered, making possible the provision in new settings and with improved ways. With these technologies nurses can reach populations in isolated and remote areas and consult with their patients whilst these are at the comfort of their own home.

These news ways for, and areas of, provision of healthcare affects how nurses currently interact with individuals requiring healthcare and it is expected to impact them further in the future. This impact will lead nurses to explore and develop new roles addressing the challenge of a shrinking workforce, and the drive to deliver more health and preventive care in non-traditional in hospital settings but rather in community-based settings.²

To discuss and address these existing and anticipated challenges for the nursing workforce, organisations around the world published frameworks and charted paths of the future of nursing.

In 2016, the National Health System (NHS) in England published a framework for nursing, midwifery, and care staff, with the title: "Leading Change Adding Value", setting out, nurse's shared ambitions and commitments that demonstrate their leadership potential and the role they can play within the healthcare sector.³ The aim was to close identified gaps in health and wellbeing, care and quality and funding and efficiency:

- Closing the health and well-being gap:

practising in ways which prevent avoidable illness, protect health and promote well-being and resilience.

- Closing the care and quality gap:

practising in ways which provide safe evidence-based care which maximises choice for patients.

- Closing the funding and efficiency gap:

practising in ways which manage resources well including time, equipment, and referrals.

The objective was to "develop a high quality, financially sustainable service that delivers the objectives set out under a Triple Aim" for:

- Better outcomes
- Better experiences
- Better use of resources

The framework included ten commitments to support action of nursing, midwifery, and care staff to focus on narrowing these gaps address unwarranted variation and help demonstrate the Triple Aim outcomes. Among these, commitment no 10 stated, "We will champion the use of technology and informatics to improve practice, address unwarranted variations and enhance outcomes", accepting the benefits of health technologies and identifying the potential positive contribution on achieving the Triple Aim.

More recently, further reports and research published by healthcare organisations in US, including the National Academies of Sciences, Engineering, and Medicine, the Tri-Council of Nursing and a collaborative research project by Johnson & Johnson, American Nurses Association (ANA) and the American Organization for Nursing Leadership (AONL), highlighting "the need for a robust, diverse, and engaged nursing workforce, empowered to innovate and lead transformational change, driving increased efficiency and improved patient outcomes".⁴

The National Academies of Sciences, Engineering, and Medicine published this year the third in a series report, on the future of nursing titled, "The Future of Nursing 2020 2030: Charting a Path to Achieve Health Equity (2021)" pointing out with compelling evidence, that nurses can play a central role in addressing health inequalities across the healthcare sector. The report identifies that "the decade ahead will demand a stronger, more diversified nursing workforce that is prepared to provide care; promote health and well-being among nurses, individuals, and communities; and address the systemic inequities that have fuelled wide and persistent health disparities", demonstrating throughout the crucial effect Technology will have, as one of the evolving trends within healthcare.⁵

The Tri-Council for Nursing, an alliance between the American Association of Colleges of Nursing, the American Nurses Association, the American Organization for Nursing Leadership, the National Council of State Boards of Nursing, and the National League for Nursing, held in 2020 a "Virtual Summit" with the following objectives:

1. Document lessons from nursing's successes and failures during the COVID-19 pandemic;

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2. Identify COVID-19 pandemic implications and opportunities for nursing education, practice, and regulation;
3. Create a framework for post-pandemic healthcare advocacy and change.

To identify the transformational opportunities developed during the Virtual Summit, the Tri-Council's leadership team created a holistic approach focused on a structure that integrated people, process, and technology. Innovation was among the six themes that emerged as essential to the future of nursing education, practice, and regulation.⁶

The recent outbreak of the Covid-19 pandemic exacerbated these challenges. A recent systematic review on nurses' experiences during the pandemic, showed their high level of sense of duty and will to take risks from 1 side, but also their concerns for their personal and family safety, also highlighting the need for further and ongoing support from their employers and the policy makers.⁷ At the same time, the pandemic resulted on a) accelerated adaptation of digital health technologies, and b) significant changes in the delivery of services to free up space and capacity in acute hospitals, enable remote working and reduce the risk of infection transmission in hospital settings. In addition, there has also been a surge in patients' uptake of digital health technologies including mobile apps and access to online services.⁸

Nurses have invaluable hands-on experience on caring for patients and resourcefulness that helps them overcome the challenges faced in everyday practice. It is argued also that nurses are characterised by innate innovative mindset, which is questionable though if it can be generalised to the whole nursing workforce. If we look at Rogers' Innovation Diffusion Theory which described how information technologies (IT) are adopted and how IT innovations spread within and between communities, it defined as one of the four main determinants of success of an IT innovation, the characteristics of the adopters. According to the theory, those with innate innovative mindset, represent only a 2.5% of the population in a social system, with the early adopters comprising 13.5 %, the early and late majority adopters the 68% and the laggards the 16%.⁹ Early studies demonstrated that the theory is useful for conceptualizing how technology is adopted and innovation takes place.¹⁰⁻¹² In addition, research demonstrated that barriers preventing the adoption of technology in the health care sector, among others, are the knowledge and attitudes of staff towards technology and the perceived complexity of adopting new technologies.¹³

So how we can address this challenge so nurses can become further the innovators and digital technologies enablers? The answer is by "bending the curve" as this represented in Roger's theory. In other words, by producing more innovators and in our case more nurse innovators.

The hypothesis is that by having more innovators and early adopters within the healthcare workforce, the adaptation of innovation in health will be accelerated. Back in 2015, during the Annual Meeting of the British Anaesthetic & Recovery Nurses Association, it was the first time I used the term Digital Nursing to describe the nursing

workforce with these characteristics.¹⁴ A workforce which will be trained in the undergraduate curricula to develop the skills and competencies as innovators and entrepreneurs, being the enablers of digital health technologies and enhancing the human touch.¹⁵

In the current issue we get a glimpse of what would be the impact of nurse innovators and entrepreneurs on the health care sector. You will have the opportunity to read about the development of an educational game for children, around intubation. A game that was the idea from a fellow registered nurse working at the frontline and with innate innovative mindset.

Imagine what can be achieved and developed and how innovation can be accelerated if we prepare a future nursing workforce with similar mindset!

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