

Review Article

Digital Technology in Nursing Research

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Abstract

In the last century, digital technology has transformed our society; from online shopping to managing our income and access to entertainment, our lives have undergone a technological revolution which continues to stay on fast-track till date. These changes have given enormous opportunities for various industry to adopt new technologies. Modern nursing is all about combination of “high tech and high touch”, in other way to describe is traditional nurturing through comprehensive nursing care in combination with advanced technology. Nurses of 21st century are not only learning nursing care but also are learning how to use technology in every aspects of nursing. Currently nurses are not sufficiently trained in utilizing digital technology and informatics potential, but this is not true with future nurses, who belong to the new generation with access to modern technology from their early age, who are otherwise called as “Net-generation”.

Keywords: Digital technology, Nursing, Research

1 Introduction

In the last century, digital technology has transformed our society; from online shopping to managing our income and access to entertainment, our lives have undergone a technological revolution which continues to stay on fast-track till date. These changes has given enormous opportunities for various industry to adopt new technologies [1], among them was our health care system which did not shy away from adopting it either. Healthcare system is undergoing extensive digital transformations that many of us could not have even imagined as recently as 10 years ago. This boom in technological advancement emphasized on quality patient care [2].

Digital technologies that define modern day health care are telehealth, tele monitoring, tele medicine, pocket digital monitoring devices, mobile applications for tracking patients and knowledge sources and wide data base in the form of informatics.

Modern nursing is all about combination of “high tech and high touch”, in other way to describe is traditional nurturing through comprehensive nursing care in combination with advanced technology. Nurses of 21st century are not only learning nursing care but also are learning how to use technology in every aspects of nursing. When I say every aspect of nursing it includes nursing education, practice and research. Nursing as a profession, which started out as compassion to provide care has changed completely in present time with its own body of knowledge, and all the

credit goes to the nurse researchers who are working tirelessly to improve quality of nursing care through integration of information with practice [3].

Currently nurses are not sufficiently trained in utilizing digital technology and informatics potential, but this is not true with future nurses, who belong to the new generation with access to modern technology from their early age, who are otherwise called as “Net-generation”. These net-generation nurses will value exploration and investigations. They will be our curious investigators empowered to change. New generation nursing professionals will be vigilant to ensure “think outside the box” and challenge the boundaries of nursing care through research.

Nursing research in today’s time is limited to the university or at college level and very few researches are conducted in the hospital settings. The digital technology which is not only about smart machines but are also about the smart people who combine technology with creativity, who can bring breakthrough in our traditional nursing research and cultivate new ideas.

2 Role of digital technology in Nursing Research:

The uses of digital technology in nursing research are vast and they are enlisted below:

- **Availability of computers and online libraries** can make hospital a better place for conducting research
- **Digital library** like CINHALL, Pubmed, Sage, ProQuest and many more including various nursing journals can be

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accessed through mobile phones. Some are even available in the form of mobile applications. This makes our nurse researchers to review, retrieve and utilize various research related literatures.

- **Involvement of study participants:** involving the study participants is a huge challenge for the researchers, digital technology will reduce this burden by

- Maintaining registry helps to select study participants from various places advances enrolment, improving diversity of population

- Improving retention of study participants through proper tracking system

- Reduces investigators effort in managing repetitive task like record checking or tracking study subjects [4].

- **Data Collection and analysis:**

- Traveling to the research setting, in some studies several times in a month can be a burden for the study participants. Digital technology like emails, telephonic interviews, telehealth, telemedicine, skype, social medias and other communication platforms has made it easy to collect active and passive data from the participants who are residing in distance place.

- Nursing informatics has created a pathway between the nurse researchers and nurse practitioners to exchange data, information and knowledge

- Modern day mobile application and text messages engage study participants continuously through out the study, especially in clinical trials for taking treatment or recording health data, answering participants questions in real time and planning repeated interviews.

- Modern day gadgets and sensors has enhanced the accuracy of data collected from study subjects. For instance, earlier Sahli's haemoglobinometer and laboratory examination to estimate haemoglobin percentage to rule out anaemia in the study subjects. Both the methods had their own share of advantages and disadvantages, first method was easy to carry out but less accurate and consecutive method had high accuracy but expensive. In today's time, digital hemoglobinometer yields accurate results and it's not even expensive, which can be an added advantage for the researcher. Another advantage of the modern equipment's is portability, which makes its usage and transportation easier during community trials [5].

Digital technology has increased the quality and quantity of data. As a result, researcher can produce result with high statistical power

- A researcher can get new insight or fresher perspective from an existing data in digital media through meta-analysis and systemic review methods

- Analytic tools like SPSS, JMP statistical software, Tableau and other statistical software packages have made analysis of complex data easy [4].

- **Digital technology for communication or dissemination of research results:** Digital technologies like research

related websites and social media platforms, emailing and research summaries on various sites were the main ways in which technology was used by researchers for dissemination and public engagement activities. This has not only helped researchers to communicate results instead it has made recent evidences available for application in the clinical nursing practice, hence encouraging evidence based practices [5].

3 Challenges and issues of digital technology in nursing research:

Nursing community is going through a rapid phase of change in nursing research. Many young researchers are engaging in research related activities and are utilizing recent technologies for the benefit of research. Yet, there is a lacking for clear understanding of utilization of digital technology to its optimum level. Those challenges and issues are discussed below:

- **Varying level of digital knowledge and expertise:** digital literacy and practices vary among the nurse researchers. Very few researchers are practically involved in the use of technology and many are unaware of utilizing digital platform

- **Nurse researcher has varying perceptions about digital technology as part of research process:** some nurses has a perceive digital is a less appropriate and play very little role in research related activities.

- **Lack of institutional support and training:** many institution in India, have no facilities for training nurses and enhancing digital literacy. Sources like digital library, tele medicine facilities and others not available in every facilities

- **Validity of digital technology:** some of the mobile application developers are not from the field of health care or even from nursing. Such people lack the understanding and need of the nurse researchers, this reduces the validity of the digital technology. Its not only limited to application instead it also includes other equipment's or devices that are not validated

- **Regulatory barriers:** many mobile apps will not see the light due to lack of licensure and regulatory laws from the government [6].

4 Conclusion:

Digital technologies role in research is vast. It has greater potential in the coming future. It is a boon for the researcher and the study subjects both receive benefits which in-turn generating valid research outcomes promoting evidence based quality nursing care to patients. For researchers, it has made accessibility of research literature easy, identifying and tracking study subjects, data collection procedures, analysis of complex data and finally, dissemination of re-

search. Though, it has lot of benefits in research process, still it is not adopted extensively due to lack of awareness, support from the institutions, and availability of resources [7]. It is important for nurse researcher to learn, adopt, practice and utilize digital tech to its optimum level so that quality research can be conducted in this field of science

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