

From Telemedicine to eHealth and mHealth: The Impact of Technology on Nursing

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Review Article

When searching about telemedicine and telehealth there were two points that sparked our attention. Firstly the early start of telemedicine and telephone nursing which became possible almost immediately after the invention of telephone. And secondly the huge research work emerging after 2010, where there can be found more than 3500 papers just by researching telemedicine, telehealth and nursing. Although we are familiar with the term telemedicine what is the exact meaning of the word? The prefix 'tele' derives from the Greek 'at a distance' and so telemedicine means delivering health care at a distance. We mentioned above how telemedicine started immediately after the invention of the telephone, however we need to emphasize that telemedicine, has been practiced at a distance for centuries, for instance, a physician assessing a plague patient across a river.

The importance of telemedicine increased dramatically with the Covid-19 pandemic effects. Before the coronavirus (COVID-19) pandemic, it was estimated that care delivered through telehealth would grow at an annual rate of 16.8%; however, growth in 2020 is now anticipated to reach 80.0%. Recent reports predict that 30.0% of all visits will be delivered virtually postpandemic, and as many as 65.0% of health care consumers plan to use telehealth after COVID-19 (Rutledge, et al, [1]). Accordingly, to these predictions' nurses and all healthcare professional might need to review their relationship with technology and telemedicine. While reviewing technology and telemedicine in nursing more conceptual explanations and definitions related to the topic need to

be understood. We need to know teleservices which in general use telecommunication technology to transmit information from one site to another. Its applications in clinical practice, research, and administration include telephone consultation, triage, follow up, e-mail inquiries and advice, distance learning, videoconferencing, videomonitoring, and digital photography are well known. The delivery of health services over distances, has replaced telemedicine as the inclusive term used to describe the wide range of services delivered by all health-related disciplines. Although broadly defined as medicine practiced at a distance, telemedicine can be defined as the electronic transfer of medical information to remote sites in order to support patient care and medical education. The delivery of nursing care and services using telecommunications, increases access to nursing care interventions for patients in remote or distant locations. In the near future telehealth will be defined as currently implemented and the legal ramifications of practice across state lines, national borders, rural, and in remote and hazardous locations (space environments: orbital, Moon and Mars bases) will be delineated. Because care delivery of this kind raises concerns about confidentiality and ethics. Privacy, intimacy, informed consent, ethics and deontology, competencies, roles and responsibilities issues related to telemedicine's medico legal aspects requires institutional research in order to protect patients and healthcare professionals.

One of the most debatable topic still ongoing is the roles and responsibilities of telemedicine nurses. Communication skills,

coaching skills, the ability to combine clinical experience with telehealth, clinical knowledge, ethical awareness and a supportive attitude were seen as the most important competencies for nurses that provide telehealth. Nurses need in the first case, to define their ability to meet patients' needs via telehealth otherwise they should be able to ask for assistance, review and help from other healthcare team members if needed, so to lead the patients according their needs. Nurses should work on reducing the risks related to the disadvantages of not interacting face to face with the patients and this requires to be fully educated, willing to learn continually, be updated with the latest information and technology and able to transmit the practice and knowledge to their patients. They should be able to show professional skills like analyze and process the data received from patients. Surely we are all familiar with the advantages that telemedicine provides for healthcare professional (HCP), patients and their families. Advantages as cost- effectiveness, recordings for later use in teaching, patients' comfortability (being in a known environment like home), fast delivery of care, hospitalization decrease, delivery of care even in distances, easier acces to healthcare services, acces to healthcare for elderly and patients with chronic diseases are only a few of them.

Beside those we need to mention the disadvantages related to this innovation as well. The most well-known disadvantages are: technical problems, problems of installation, inability for proper physical examination (ear, throat,), the psychology of "Big Brother is watching", inability to offer direct manual assistance, medico-legal considerations, inadequate development, unavailability due to geographic separations or lack of necessary utilities, familiarisation and training, HCP acceptance/nonacceptance, elderly patients inability to suit to the technology, physical inability of patients (chronic conditions) to benefit, caregivers willingness to take on the responsibility of additional equipment in the home (even though it can support home caregivers), hidden costs, lack of understanding and insufficient feedback. Although it looks like to much of disadvantages, we need to emphasize that many of the barriers in using telehealth can be avoided with better planning and collaboration (Taylor, et al. [2]).

As the penetration of the internet continues to grow, it is not surprising that increasing numbers of patients, as well as healthy individuals, are turning to the internet for health information. It is a rare physician who has not encountered a patient who comes to an appointment armed with a question, or a stack of printouts, that arose due to medically related searches on the net. The companies that provide search engines for the Internet report that health-related sites are among the most popular ones being explored by consumers. However on the other hand, much of the health information on the Web lacks peer review or is purely anecdotal. People who lack medical training can be misled by such information, just as they have been poorly served in the past by printed information in books and magazines dealing

with fad treatments from anecdotal sources. From the beginning nurses have been leading the telemedicine process, in patients education, assesment, triage, follow up etc. This charges us with responsibilities to lead the patients toward safety and trustful resources.

The newest technology that nurses need to embrace is mHealth. Defined as the use of mobile technology in the provision of health care delivery or health promotion, mobile health (mHealth) is one of the most promising new advances in health care technology. Use of mobile device applications such as cell phones or tablets to enhance health outcomes, improve health care services, and advance health research is seen as the future of telemedicine. The era of technology has effected nursing deeply yet interestingly we struggle to embrace the change. We need to know that digital transformation has been making its mark on organizations in healthcare and beyond over the last few years, with no signs of stopping. Nursing is seen as one of the most important, most requested and growing profession of the future, consequently its growth need to be in parallel with technology which needs to be implemented mainly and firstly in nursing education. This emphasizes the importance of adequate telehealth education for nurses. Adequate education could accelerate the widespread use of telehealth and as a result support patients to age in place by receiving care remotely (Houwelingen, et al. [3-15]). The age of information is now here, and the age of communication is beginning. Telehealth is and will be an important mean of providing communication links and healthcare to clients and providers alike [15-20]. Healthcare professionals need to be aware of important concepts related to telehealth for their current and future practice because as Guyton said: 'If we do not embrace innovation we will become its victims [21-29].'

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