Information technology and its benefits in nursing care of the patient

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Abstract

Aim. The aim of this paper is to present the possibilities of application and use of modern information and communication technologies that can improve multidimensional, holistic nursing care of the patient.

Methods. The data was collected from literature reviews.

Results and Conclusion. Tele-diagnosis, teleconsultation and tele-nursing, i.e. services for monitoring the patient's condition and life parameters, and facilitating therapy and rehabilitation at a distance, are a response to the growing demand for modern medical services in the ageing society. This paper discusses e-services as e-consultations, which are a direct and quick possibility for health check, Internet Patient Accounts (IKP), e-prescriptions, e-sick leave and also the project "TeleNrsCare," which creates a network for the exchange of knowledge, technology, experience and best practices. E-health and information and communication technologies can benefit the whole society by improving access to medical services and improving their quality. The ageing society and an increasing number of those who are chronically ill and stay at home result in the need for a highly qualified staff and relevant technology to quickly and efficiently provide them medical assistance.

Key words: telemedicine, telenursing, information technology, eHealth

Introduction

The ageing population, increasing number of chronically ill, mentally disabled and physically disabled patients require health care workers to prepare for new tasks, for example, to secure some medical services at a distance. Medical institutions therefore need continuous technological development of information systems compatible with each other to enable the processing of data contained therein and necessary for patient care. Implementation of electronic medical records, electronic prescriptions, referrals, orders and applications such as the Internet Patient Account is now essential in the exercise of this care. Access to medical records on-line should be given not only to the patients, but all medical professionals involved in the therapeutic process and patient care. In particular, nurses working in a medical team, usually performing most activities with the patient, must have access to digital tools that help them to better diagnose, plan, analyse this care, and educate the patient.

The aim of this paper is to present the possibilities of application and use of modern information and communication technologies that can improve multidimensional, holistic nursing care of the patient.

Tele-diagnosis, teleconsultation and tele-nursing, i.e. services for monitoring the patient's condition and life parameters and facilitating therapy and rehabilitation at a distance, are a response to the growing demand for modern medical services in the ageing society. Electronic registers and software created for managing the work schedule, portable devices for monitoring the patient's condition, the use of robots and 3-D printers in operation rooms, as well as simulation centres for specialised training – all this is slowly becoming an everyday reality. Improving the quality of care standards and the introduction of new technologies allow for progress in medical care.

E-services in the area of health should also apply to the nurse–patient relationship. Patients who are under the care of medical personnel through the Internet (by e-mail) or telephone (connecting with primary care doctors and environmental nurses in a teleconsulting centre) can be provided with constant, high-quality care and a sense of security.

E-consultations, which are a direct and quick possibility for health checks, allow for ongoing evaluation and rapid response to a change in patient's condition by, among others, use of electronic prescriptions. Thanks to digital technology, the nurse is able to assess the patient's vital signs, glucose levels, and respiratory rate, as well as to follow an ECG record and track the wound healing process. Exercising care with the use of interactive video systems allows patients staying at home to contact any specialist at any time. Many studies indicate that people prefer to stay at home, if their condition permits, rather than in health care facilities (Arnaert, 2001).

Telenursing is nothing new in the world. The definitions of telemedicine and telenursing have been known since the end of the 20th century. "Remote communication using electronic or optical transmission capabilities between humans and\or personal computers" is the definition given by Skiba et al. (Majka, 2017) as early as in 1998. In 2004, the American Telemedicine Society defined tele-nursing as the delivery, management and coordination of care through telecommunications technology in the field of nursing. Nurses have been using phones for many years to provide advice and information on health promotion, disease prevention as well as treatment, nursing and broadly understood education. This method of care is extremely useful for adults and chronically ill children staying in their living environment, and especially for those who suffer from cardiovascular and respiratory diseases (Arnaert, 2001). On-line support allows provision of information in a timely manner, avoids frequent calling out of emergency teams and hospitalisations. Patients and their caregivers actively participate in the process of self-nursing and self-care.

The effectiveness of this type of care is expressed, inter alia, in reducing the costs of health services, limiting the stay of patients in hospitals and providing up-to-date, relevant information and advice, regardless of where the patients live. In tele-nursing, the nurse plays the role of a direct main adviser to the patient. It is extremely important, since the deficit of knowledge and self-care skills in patients results in seeking help and information from a variety of sources, not necessarily reliable, which may cause health problems (Maciura, 2014).

New technologies should not only help patients and improve their care, but also allow for the training of nurses and other members of the medical team outside universities (e.g. through e-learning). The main obstacle in the development of computerisation is the lack of adequate funding and training, as well as too little hardware, software, and adequate preparation of people to make changes (Gaworska – Krzemińska, 2018).

Financial expenditure on computerisation in medicine will help supplement staff shortages and obtain cost savings, because the accurate patient data entry, providing fast tele-assistance, as well as verification of the patient's condition will protect against life-threatening conditions or the risk of health deterioration, reduce the need for hospitalisation and shorten hospital stays (Antczak, 2013). When assessing contemporary nursing practice, it should be remembered and ensured that computerisation and telemedicine systems are implemented in Poland so that they influence and improve the safety and quality of patient care.

Nurses, together with family members and primary caregivers, are closest to the patient, thus becoming a key link in health care. Within the therapeutic team, they perform main tasks related to improving or maintaining health. They

have the greatest potential in reducing disparities in access to health care. In Poland, nurses often use the Internet or mobile phones in their practice to collect information, share their knowledge and give advice to patients. They use telecare in a very limited way, mainly due to the lack of established and routinely used systems, but they can really help their patients at a distance. The 21st century in nursing means the professionalism, the pursuit of lifelong learning, flexibility to changes in the environment, and the ability to make decisions based on clinical trials (Evidence-Based Nursing). It also means expressing their own opinions, formulating conclusions, the ability to communicate with others and working in an interdisciplinary team. Considering these features of nursing, the last one is the most important element in ensuring the safety of the patients under care. Taking also into account the possibilities of telemedicine, the exchange of knowledge, experience, discussion of problems arising from patients, and joint decision-making by the members of the therapeutic team, all these factors contribute to the holistic care. The development of information technology should lead to improvement of the situation in health care. Telenursing services can help nurses in the implementation of a number of functions such as prevention, diagnostics, rehabilitation, caring and health promotion.

It should be noted that e-health services can be useful not only in home care. The development of telenursing could contribute to the improvement of the hospital's functioning (Majka, 2017). Telecare would allow categorisation of patients, divided into groups or stages in order to identify those who should be immediately admitted to the hospital and those who only require consultation or advice and may stay in their homes. By using telecare, nurses can prepare patients both physically and mentally for surgery, follow them after treatment to combat pain, solve problems associated with wound healing and monitor their vital signs.

In Poland, the project "TeleNrsCare – Telenursing network to integrate care for the elderly and chronically ill people" (Kilańska, 2018) was carried out by Dr. Dorota Kilańska from the Medical University of Łódź in cooperation with the University of Iceland in Reykjavik. The main objective of this project was to create a network for the exchange of knowledge, technology, experience and best practices, aiming to establish a reference centre for the cross-border telenursing in cooperation with the Iceland-based institution, in order to improve access and the quality of nursing care for the elderly and chronically ill patients in Poland. The development of such projects indicates the existing demand in this area. On-line care requires continuing education, cooperation, trust and continuous evaluation from the therapeutic team and the patient itself. The benefits of this type of care can be achieved by both the patient and the nurse. Patients and their carers have constant help and access to

information at any time of the day, and the medical staff, in addition to safety, full control and reliable information, gains and saves time. The use of modern information technologies in order to support activities in health care is called "e-health system," which currently gives patients and medical professionals in Poland only incomplete and random access to important information. To help patients in getting access to important information about their health, an Internet Patient Account (IKP) will be created. This application will include: a) information about prescriptions and patient referrals issued, b) information on the amounts to be reimbursed for specific medicinal products, and granted benefits under the National Health Fund (*Service Polish Government*, 2018).

The web application, after creating a trusted profile, gives a number of possibilities. It will allow patients to receive prescriptions necessary to continue their treatment without the need to visit a doctor, to receive prescriptions from a nurse or midwife (either after a personal examination or remote telemedicine consultation), as well as to authorise another person to have access to their medical records or information about their health. In the future, creating an IKP account will enable patients to download and check their full medical records.

E-prescriptions, e-referrals, e-sick leaves, and information on treatment dates or pharmacies accepting prescriptions online are a great improvement and facilitation of health care activities and services.

E-health and the development of technology is conditioned by the Law on the information system in health care, which defines the organisation and principles of this system.

Summary

The constantly changing health needs of patients force us to look for new solutions and methods of work. The members of the therapeutic team, including nurses, should be open to new technologies and bear in mind that telemedicine and telenursing bring many benefits. They allow, among others, for professional development, more efficient, constant and current care of the patient, and these result in further optimisation of the quality of care. Telenursing is an excellent complement to the optimal nursing practice. Each nurse can provide this kind of patient care, and the recipient can be anyone who has an access to the Internet. Nowadays, this applies to almost the entire population. Telemedicine, from the collection of patient data to the evaluation of the applied therapy, gives the opportunity to ensure continuity of care and to increase the level of health safety. Ongoing information about the patient's condition allows updating of the nursing process of care. Telenursing, in addition to measurable benefits for the patient and his carers, can also be a valuable source of information and a tool for conducting scientific research.

E-health and information and communication technologies can bring

benefits to the whole society by improving access to medical services and improving their quality. The ageing society and an increasing number of those who are chronically ill and stay at home result in the need for a highly qualified staff and relevant technology to quickly and efficiently provide them medical assistance. The introduction of videoconferences and virtual visits will help patients in everyday functioning and, on the other hand, it will help nurses and other members of the therapeutic team to extend their competences, professional development and to improve the quality of services provided.

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