

IMPACT OF DIGITALISATION ON THE ORGANISATION AND MANAGEMENT OF HEALTHCARE IN HEALTH FACILITIES

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Abstract: With the rapid development of digital technologies, enormous benefit from the introduction of digitalization in health care is reported. It contributes considerably to the improvement of the quality of healthcare and ensuring the safety of the patients. There are certain risks related to its implementation which could exert influence on its effectiveness.

In the present article some of the essential aspects related to the application of digital technologies in healthcare institutions are described.

Despite some obvious disadvantages, digitalisation has the potential to reduce to the minimum the total amount of critical events which endanger patient safety. It provides simultaneously the technical support and control, creates organisation of the workflow and optimum working conditions. Improvement of the overall activity of the medical teams, effective organisation and management of the healthcare institutions is reported as a significant result of its effective functioning.

Keywords: digitalisation, health care, patient safety

1. INTRODUCTION

The rapid development of informational and communication technologies began at the end of 20th century. Nevertheless, the interest in them in the field of healthcare rises significantly several years later [1]. The reasons for this are mainly due to the established benefit from them after their long-term testing mainly in the economic and technical sectors of public life. The world health organisation (WHO) appreciates enormously the possibilities of digital technologies and predicts that they can significantly encourage the achievement of the aims for the sustainable development in the field of healthcare [2]. The intended purpose for mass introduction of digitalization in the health care sector is the organisation of the whole information into network informational and technological systems. Through their application success in several directions can be achieved - faster processing of all data (information), automation of work processes, improvement of the quality and effectiveness of health care, considerable reduction of the possibilities for errors etc. [3]. Additionally, a reliable and rapid connection between all structural levels of the healthcare institutions is provided [4]. Although digital technologies can improve health care systems, they cannot replace human interrelationships [5].

Some significant aspects related to the application of digital technologies in healthcare institutions are described in the present article.

The nature of the work in pharmacies includes not only the preparation and dispensing of medicines, but also interaction with patients and other health professionals to provide pharmaceutical care [6]. Through the establishment of a national digital infrastructure and electronic documentation, possibilities for exchange of professional information with specialists from other healthcare institutions on the patient's condition, treatment plan etc. are provided. The permanent storage of personal data related to medical history, some risk factors, possible need for personalised health care (e.g., dietary restrictions or reduced mobility etc.) can be used in every stay or visit of patients in a health care institution. Thus, many unnecessary activities can be avoided, and the specialists' attention will be focused mainly on current diagnostics, administration of successful treatment, medication intake etc. Furthermore, some mandatory medical manipulations (e.g., vaccination schedule) would not require reminding [7].

Within the framework of the medical institutions, the electronic record, and the continuous update of the patient's information in real time reduces to the minimum the possibility for medical errors especially after the digital record of the history. Thus, the duplicate and unnecessary examinations can be considerably reduced which also alleviates the stay of the patients. This is also related to the provision of more effective healthcare on the side of the staff [8].

One of the most significant prerequisites for digitalisation is the presence of patient documents in electronic form. In most healthcare institutions the gathered data are not used in a structural manner, or the individual departments/sectors are not digitally connected with one another [9]. The exchange of data between them is frequently insufficient, some documents are still in paper form and digitalisation has not been finalised. In this

regard, the applied methods and tools for quality management have a great potential. Therefore, we assume that the overall introduction of IT-maintained systems will considerably influence the administration of the whole information. Some problems related to calculations which still take much time (since they are often generated manually), as well as the different combinations in invoicing due to the diversity of cost units will be completely solved. All changes in documents (bills, reports, HPI, treatment plan, investigations etc.) can be saved and generated automatically which will significantly facilitate the activity of the administrative staff [10].

In the field of outpatient services, the digital system will analogically ensure flexible access to patient files irrespective of the location. This will allow general practitioners to correct the treatment plan, medication intake, the administration of additional examinations for patients in need. There is a certain risk in electronic consolidation of the personal and health information. This calls for the development of additional protection systems concerning patient care and the protection of their personal data.

To ensure safe drug therapy digitally managed organisation of drug intake can be created which will reduce the errors in administering medications (e.g., creation of a digital plan for medicaments); electronic labels for preparation of medicinal agents, Medication Event Monitoring System by activating all drug doses and registering their use [11]. The introduction of an automated system for warning, when there is a risk from side effects due to polypharmacy or in case of inadequate dosing, can reduce significantly the classical medical mistakes [12]. Furthermore, patients can use mobile applications to show the OTC drugs taken by them, to inform their doctor and to increase additionally their safety through an optimally controlled and individually adapted plan for drug treatment [13].

The unified digital documentation will allow utmost coordination of the activity of the interdisciplinary teams (physicians, nurses, physiotherapists, midwives, speech therapists, psychologists etc.) which is extremely important in multiple pathologies and the provision of complex medical help [14]. Thus, transparency of the processes in every day clinical practice, in which quite frequently a communication deficit between medical specialists is reported, is provided to a maximum extent. All this significantly reduces the unwanted consequences and increases patient safety. Digitalisation could partially compensate for the negative factors related to teamwork of the health care staff when the information is standardised, stored and traceable.

Working processes at medical institutions can be performed with the help of electronic protocols with mechanisms of management which give a signal in case of irregularities (anomalies). Digital input systems, new sensor technologies (e.g., smartphones) and protocols could sometimes have negative impact during treatment due to language or communicative peculiarities of patients, their personality and social factors which could be compensated for by the introduction of obligatory standardization. Furthermore, interactive means for decision making and control lists for patient-doctor interaction can prevent the lack of sufficient information [15].

The complications due to the constantly expanding scope of the new technologies in medical processes need to be perceived as a possible risk. The number of the electronic elements in the complex systems increase the possibility of spontaneous occurrence of malfunctions or failure of the whole system to function [16]. Therefore, we need to bear in mind the fact that the use of electronic mechanisms for control does not mean that it will not be imposed on by the respective staff.

By using programmes for intelligent planning of work force in the future, a better distribution of working activities of the different medical specialists could be achieved. With the help of automation, it is possible to skip certain working processes and thus, to ensure better speed and effectiveness. Additional sensor systems could signalise for improper concentration or overload of medical staff. Having in mind the fact that there is a constant rise in the number of patients and healthcare institutions, an increase in the work intensity and the shortage of healthcare professionals, digitalisation and mechanization could provide significant saving of time. Thus, we can assume, that greater job satisfaction of the staff will be achieved due to the flexible working hours and coping with overload. All the above-mentioned would significantly improve communication with patients and interpersonal relationships among the members of medical teams.

2. CONCLUSION

The introduction of digitalisation in all aspects of public life is inevitable. Therefore, political, and economic experts often suggest its use to solve the existing problems and future challenges in the field of healthcare. Digital work methods and technologies aim at balancing the increasing necessity for medical specialists, to optimise their professional activity and at the same time to enhance the quality of healthcare [17].

The development and introduction of communicative healthcare networks, electronic files, various mobile devices, and applications will guarantee in the future timely access for medical specialists to the necessary information for patients, irrespective of the time and place.

Due to the variety in informational technologies, the requirements towards the employees in the healthcare sector will be altered [18]. Furthermore, the necessity for “technological mediator” for patients is increasing which presents a serious challenge for healthcare specialists. As a main recommendation for successful professional realisation, the creation, resp. the expansion, of “digital health literacy” among medical staff is necessary in the future.

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