

The Era Of Digital Health And Its Impact On Human Psychology

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Abstract

The healthcare sector, one of the sectors that is developing by using the opportunities of ict, is already constantly innovating in the digital age. In particular, the steps taken in the direction of improving the quality of life of people by using the capabilities of artificial intelligence give impetus to the creation of new services. Telemedicine, electronic health records, wearables are some of them. In the article, the development of healthcare in the digital era, the services and devices provided, and the impact of digital healthcare on human psychology were reviewed.

Keywords: ict, artificial intelligence, digital health, data, social psychology.

The current era is called the "digital era" and includes the widespread application of information and communication technologies (ict) in every sector - from daily life to huge industries. The primary concept that forms the basis of the digital era, as well as ict, is the concept of "information". With digitalization, it became possible to process, use and transmit information in a virtual environment - in other words, in a computer environment - through communication technologies, which in turn brought the era of digitalization together with ict.

Along with the "information age" of the period, an extreme increase in information in all fields was also observed. On the other hand, it is more convenient to access this information now than it was in the last century. Data overload has both positive and negative aspects. The main disadvantage is which information is true and false.

At this point, 3 concepts stand out: data, information and knowledge. Although at first glance they seem like similar concepts, the fundamental differences between them make them the most important tools of the current era. Data (also called data): raw values obtained from various sources using various methods. In other words, it is a set of values obtained from the original source, but not yet processed (unprocessed). Access to such a set of values in any sector is quite easy, and the number is overwhelming.

Information: the second concept that comes after data is a set of data obtained by processing (processing), interpreting or structuring data within a specific content or field. In other words, information is a set of processed data. Knowledge: the last and most important concept is the collection of information derived and personalized from information – what we know. Basically, knowledge with a more specific purpose is directed in a specific direction. This is mainly about decision-making and so on. It is a direction that has a final goal and requires a specific act (movement). The relationship between these concepts can be shown as follows: information - knowledge - data, information or knowledge, each has always existed in various sectors and has grown tremendously with this era. One of these sectors is healthcare.

The human factor at the core of healthcare has evolved over time into a data set with the integration of it. In other words, a person is a whole set of data that exists together with both physiological functions and behaviors. The main issue was the correct processing of this data set. This became possible with the help of it.

In general, if we look at the history of health care, the view of the human being as a set of data began from the moment when the study of the human body began. The human body remains the most complex creature in the world. There is more information about man that is still not fully studied than in previous centuries. This is related to the development of technology, especially smart technology. The illustration below shows a person's transition to a digital data set.



Figure 1. Human As The Main Source Of Information

Man has always existed as a source of information. All human organs, in general, hold information that is necessary for the health of the person as a whole, and that will have a great positive impact on the development of health. With the "ability to store knowledge for a long time" which is one of the main characteristics of human dna, man is a treasure trove of information. The information obtained about this entity, which has been studied since ancient times, has never been enough to fully understand it. Information obtained before technological development was stored on various paper carriers or simply in the oral speech that still exists, but formed the basic database for the development of health care today. Today, along with having more information about the human body, the correct processing of this information has also become possible due to the digital era. On the other hand, human learning has become possible in the virtual environment in addition to the concrete-real environment. Currently, the information available in health care is obtained from different signals as well as in the real environment - as the human body stores information mainly in signals. This includes electroencephalogram (eeg), electrocardiogram (ecg), electrooculography (eoq), etc. Includes. On the other hand, 80% of data in healthcare is mainly descriptive data. Which is information derived from signals.

Proper management of the data set - data collection, storage, processing, proper use, etc. - finally, it allows the development of the healthcare field.

3. Digital health

3.1. Healthcare in a digital environment

The healthcare sector can be divided into two parts. Classical healthcare and modern healthcare

Classic healthcare can mean the period that lasted until the last century (the integration of smart technology into the healthcare sector). Modern healthcare is the era that began with the integration of artificial intelligence-based technologies into the healthcare sector. The relationship between these two distinct eras of healthcare, known as pre- and post-technology, manifests itself in a variety of areas. Data management – as mentioned, data is one of the most important elements for the healthcare sector. The main goal here is the correct management of this data. Data management refers to all operations performed on data. On the other hand, this process differs in classical and modern healthcare.

Data storage, transmission, and processing were limited in terms of time in classical healthcare. As such, each of these data was mostly stored on different paper carriers, and when it was necessary to review them later, it took some time to find each one. In terms of security, it had both positive and negative sides. Keeping them in paper or local carriers had the positive effect of keeping them safe for a long time as long as no accident occurred. And there were no cases of these data being stolen or distorted by a third party.

On the other hand, in modern healthcare, data management is preferred both in terms of time and cost. Mostly recently, data storage from cloud technologies offers a more convenient environment to work with them. The main problem here is related to security, but it is possible to solve this problem as a result of the right security policy of companies offering cloud services. Contact with patients - remote patient monitoring, remote doctor contact, remote personalized treatment became possible with the integration of artificial intelligence technologies in healthcare. Unlike traditional treatment methods, remote treatment also shows its positive aspects. Unlike hospital treatment, home treatment is more beneficial for the patient

from a psychological point of view.

On the other hand, remote communication is more advantageous for people living in remote areas. However, healthcare can access any area where the internet is available.

Another advantage of this is the time limit. Coming to the hospital and waiting in line at the hospital is a waste of time, so remote treatment is useful. Also, taking an online appointment while coming to the hospital is another advantage. These were the advantages available to the sick side.

On the part of the hospital - i.e. for the staff, assigning shifts, transferring the patient's information directly to the doctor, and performing all internal processes without the need for time loss and physical effort are more easily implemented thanks to robotic process automation technologies.

In general, not only the above, but in addition, improving the quality of service in healthcare, conducting treatments, testing new drugs, predicting diseases, conducting training operations in a virtual environment for medical candidates, saving both costs and time by automating continuous processes. , increasing efficiency and effectiveness has become possible and convenient with the integration of artificial intelligence-based technologies into the healthcare environment.

World Health Organization – Global Strategy For Digital Health

The World Health Organization Has Presented A Global Strategy For Digital Health Covering The Years 2020-2025.

The world health organization's global strategy for digital health aims to support countries to strengthen their health systems and achieve the vision of health for all through the application of digital health technologies. [3]

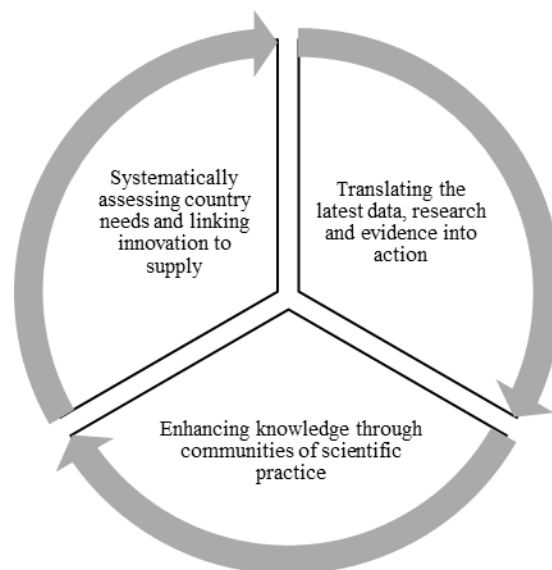


Figure 2. The Main Goals In The Global Strategy

Technology patterns in digital health

Improving the quality of life, improving well-being, disease prediction, prevention, healthy living of the elderly, prevention of child mortality, related to the provision of proper, high-quality services to people in poverty, without racial discrimination, as well as increasing efficiency, effectiveness, time and costs in health care. Digital development has an important place in the healthcare environment in order to save money and solve similar problems. The integration of ai-based technologies in healthcare is the main helper

in solving the current problems.

Artificial intelligence technology, other related technologies: internet of things, computer vision, big data, virtual and augmented reality, blockchain, rpa, etc. Has an important role in the development of health care. With their integration into healthcare, various medical services, personalized medical services as well as various digital devices have been created in the field of medicine.

Digital health technologies can be viewed in two parts: services and devices. Telemedicine is a service in itself and involves the distribution of other medical services as well as medical information through communication and information technologies. Telemedicine is the provision of medical services at a distance. So, remote communication between the patient and the doctor, remote monitoring of the patients, notification related to taking medicines, etc. Contains.

Individualized treatment (service) is a high-quality type of service, and the main issue is a complete analysis of the patient and preparation of an individual treatment plan. Various capabilities of artificial intelligence, data analytics - especially big data analytics are used here.

Electronic health records are patient information histories, digital versions of records previously stored on paper carriers. Here, all the patient's treatments, progress, medications, etc. All reports are saved.

Mobile health apps – these smart apps based on artificial intelligence help people understand what disease they have with their symptoms without first consulting a doctor by having real databases. Still, for the current period, such applications are somewhat unable to make a complete and real diagnosis, but it is possible to encounter a completely different situation in the future.

Devices: wearable devices are one of the key innovations for healthcare. Using wearable devices, it is possible to measure heart rate, pulse rate, step count, monitor sleep patterns, remind patients of medication time, exercise time, meal time, etc. Performed.

The possibilities of artificial intelligence, internet of things, and big data technologies are used in providing these services.

4. Social psychological aspects of digital health

Humans are social beings and they constantly interact with each other. By the social psychology of a person, it is meant how his inner world, behavior and thoughts affect himself and others. In other words, it is understood as the influence of a person's thoughts and behavior on others.

Man as a social being constantly affects and is affected. The role of social psychology in human life is important. It manifests itself in various areas of human life and health behaviors. While the human factor plays an important role in classical and modern health care, the influence of human will and human behavior on medical services is great. On the other hand, digital healthcare in turn affects human behavior. Social psychology has the potential to make valuable contributions to important medical issues, including the etiology, prevention, management, and treatment of disease, and issues of health care delivery. [4]

The digital health service identifies three social influence factors that influence users' health behaviors as social capital, social support, and social value. [5]

First, social capital can be defined as tangible or intangible capital accumulated by an individual or group (jang et al., 2011); second, social support refers to the various types of resources that an individual receives in social relationships; includes love, recognition, information and material, and support from family, relatives, friends, supervisors, or peers within the organization (cohen, 1983); third, social value contributes to public welfare and community development in all areas, including society, economy, environment and culture. Such value is given by society and shared with others. Thus, the whole society aims to realize desirable and rightly promoted values (balliet et al., 2009). [5]

The impact of digital health services on patients' behavior can be appreciated from a psychological point of view. The main issue is related to the trust of the user-patient in the service. Another concept of social psychology in medicine is health psychology. It is possible to look at the impact of digital healthcare on patients in the direction of health psychology. Health psychology, health improvement and protection and

disease prevention; understanding how people react, cope with illness and recover; personalization of treatment and interventions; covers health systems development and health policy. [6]

Among the services offered by digital health services are early identification (prediction) of diseases, their prevention, and personalization of services provided to patients. Services offered with the help of technologies in digital healthcare are related to areas covered by health psychology.

A high level of psychology, especially motivation, plays an important role in the healing of diseases. The patient can get a more effective result in a place where he feels more comfortable (this is mainly at home), with more correct treatment (this is mainly possible with personalized treatment). Through personalized treatment, the patient begins the process of getting rid of the disease with a correct treatment method that is necessary for him and affects his body and psychology. Basically, creating personalized rooms for the hospital patient is also an advantage. Because the human brain is always looking for a place where it can feel comfortable. For this purpose, personalized rooms (a room similar to the patient's own room) or even treatment in the patient's own home are more appropriate. The services offered by digital healthcare are mainly aimed at improving the patient's quality of life. On the other hand, for health care, a number of previously mentioned social aspects are important, which is reflected in digital health and health care services.

Conclusion

The new era change that started with the integration of smart technologies in various sectors is also manifested in the healthcare sector. Unlike classical healthcare, modern healthcare tries to incorporate many possibilities of ICT and includes artificial intelligence, internet of things, big data, computer vision, machine learning, deep learning, virtual and augmented reality, etc. Integrates many such technological capabilities. With this, the development of healthcare in the digital era continues. In the digital age, with the help of it, in healthcare, a person becomes a database. The information obtained from it is analyzed, improved and the internal and external environment of a person is studied. In addition to being a source of information, people are an important capital for healthcare. One of the main goals of health care is to improve the quality of life of a person and to provide the right service in this direction. This is where digital health: smart technologies come to the rescue.

The services provided by digital healthcare are more improved than classic healthcare. Proper management of data, improvement of communication with patients, implementation of drug testing in a more convenient environment, forecasting, outsourcing of repetitive tasks to smart technologies, integration of robotic assistants in healthcare, application of personalized treatment methods, etc. Services like these are the benefits of digital healthcare. The impact of digital healthcare on human psychology is again closely related to the services it offers.

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