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"Dijital Sağlık & Kişiselleştirilmiş Tıp"

Full Text e - Proceeding
ISBN: 978-605-87853-7-3

16 - 19 HAZİRAN 2022

Üsküdar Üniversitesi, İSTANBUL



<http://ihmc2022.ussam.org>

Prof. Dr. Sedat BOSTAN, Kongre Başkanı, sbostan29@gmail.com



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Managing Digital Transformation and Change in Healthcare

Ayşegül TURAN¹

ABSTRACT

Problem of Research: ‘What kind of function do the communication buttons in the virtual environment have in the delivery of health services, to what extent they are used, what kind of arrangements are needed for the future, what strategies can be developed to get better results, how does the virtual environment affect the quality of health services, how can trust and ethical concerns be removed?’ questions such as these reveal the uncertainty in the perception of health services in the virtual environment.

Purpose of the Study: In this study, it is aimed to reveal the stage of the digital transformation of the health field, the applications that are planned to be implemented in the current and future, the functions of virtual platforms in the delivery of health services, the contribution of communication buttons that provide interaction on virtual platforms to change and the issues that should be considered in managing change.

Method: In this study, the literature review method, which investigates the effects of the virtual environment on the delivery of health services, was used. Due diligence was carried out by examining national and international scientific articles in the relevant field.

Results: Technological developments have caused many changes in the field of health as well as in every field. With the influence of globalization, it has become necessary to adapt to this change in order to survive and compete. Today, when Web 3.0 technology is approaching, the health sector is still trying to adapt to web 2.0 in some areas. Dimensions of change, key points of change management, best practices in the field and in academia, and staging of change are among the main topics in change management in health services. In addition, the issues of what kind of regulations are needed for the future and what kind of strategy should be developed should not be ignored. The web pages of health enterprises provide opportunities for public relations activities. Health-related sharing in the virtual environment increases health literacy and facilitates access to health services. Online intermediary websites have an important function in this field in the provision of health services. Thanks to these sites, health service recipients can find information about health issues, help in choosing a doctor or hospital, and even get an appointment. As a result of the doctoral thesis from which this oral presentation is derived, it has been determined that the health service recipients have the perception that the communication buttons in the virtual environment are effective in the provision of health services by facilitating communication, creating trust, increasing recognition, and providing quality service delivery and increasing patient preferences. Elements that provide the interactiveness of the virtual platform are communication buttons such as like, comment, follow, recommend, etc. In order for the change in health services to be managed effectively with stakeholders, it is necessary to make use of the statistics for these buttons and to ensure the continuity of the transformation. Thus, it is thought that quality standards in public health will also increase.

Keywords: Digital transformation, change management, health, virtual platform.

Presentation Language: English

¹ Assistant Professor, Kirsehir Ahi Evran University, Faculty of Health Sciences, Department of Nursing, aysegul.turan@ahievran.edu.tr, ORCID ID: 0000-0002-0451-8611

Note: This study was produced from the thesis named 'Health Care Services Marketing in Virtual Environment and Communication Buttons: An Application on Ahi Evran University Education and Research Hospital'.

Oturum	1. Dijital Oturum: Digital Health	Sunum Tarihi	16.06.2022
Oturum Başkanı	Asist. Prof. Nurperihan TOSUN	Sunum Saati	14.00-15.30

INTRODUCTION

Technological developments have caused many changes in the field of health as well as in every field. With the influence of globalization, it has become necessary to adapt to this change in order to survive and compete. If we explain digitalization in the provision of health services with the metaphor of the unbridled horse, the reins of this horse should be in the hands of those who really care about improving individual and public health. For example, neural link projects aiming to treat neural disorders by implanting a chip in the brain worry humanity.

Health care recipients have limited information about the service. The importance of the communication buttons on the virtual platform should be considered in order to close their information gaps and facilitate access to the service. These buttons also offer opportunities in many areas such as easy communication and health literacy.

Today, when Web 3.0 technology is approaching, the health sector is still trying to adapt to web 2.0 in some areas. Dimensions of change, key points of change management, best practices in the field and in academia, and staging of change are among the main issues in change management in health services.

In order to achieve success in the management of change in health services, the legal framework of digital health services should be drawn, health workers should be trained, and feedback from health care recipients on the quality of care, acceptance of technology, and satisfaction should be collected. Thus, digital health services will take their place among evidence-based health practices.

Digital Transformation

Digitalization is the conversion of messages consisting of words, pictures, and letters into data that can be transmitted and stored electronically. Digitization is a factor that accelerates and facilitates communication. Digital transformation, on the other hand, is the digitization of resources and the creation of value and income from them. Blockchain, artificial intelligence, the internet of things, and big data are among the digital systems.

The process of adaptation to technological developments in communication and access to information can be called digital transformation. Looking at the historical development of the Internet, it is seen that in 1969, Massachusetts University of Technology professor Larry Robert and his team established the first computer network called ARPANet with the connection established between four universities. After web 1.0, known as mono internet, web 2.0, which enables interactivity, came to the fore. Elements that provide the interactiveness of the virtual platform are communication buttons such as like, comment, follow, and recommend (Turan, 2018). Communication buttons in the virtual environment also have great functions in the field of health services. Thanks to these communication buttons, interactivity is provided between service providers, recipients, and service recipients/providers.

Delgado (2021) emphasizes that Internet Protocol Version 6 (IPv6) has great benefits in terms of speed and reliability in the transformation of healthcare services and that it is necessary to increase the rate of transition to IPv6 first in digital transformation. According to 2018 Internet Society data, Turkey is among the countries with less than 5% transition to IPv6. Belgium, Greece, Germany, America, Uruguay, India, Switzerland, Japan, Malaysia, and Brazil have a transition rate of over 15% to IPv6 (Internet Society, 2018).

Communication buttons on social media and those in virtual environments should be handled separately. Because if an event is liked on social media, it is shared on the person's own network. In the virtual environment, liking or commenting is allowed if there is a membership to the relevant website, as in social media, since there are no linked people, only sharing can be done on the website (Turan, 2018).

All over the world, people tend to talk about their illnesses with their relatives, friends, and people who suffer from the same illness, and they tend to benefit from each other's ideas. With the widespread use of the Internet, social media offers various opportunities for such conversations. These conversations on social media have revealed the need for counseling on health-related issues. Not only patients but also healthcare professionals feel the need to share their views comfortably on the platform where patients and healthcare professionals are present (Turan, 2018).

In Web 1.0, communication is provided through servers, and in Web 2.0, through platforms such as Facebook, Instagram, and Twitter. It is mentioned today that the technology that provides interactivity without the need for intermediaries is web 3.0. It is stated that with Web 3.0 technology, there will be no need for intermediaries in websites, social media, and mobile messaging. In addition, web 3.0 is expected to carry features such as semantic network, ubiquity, and artificial intelligence.

At what stage in the field of health in digital transformation, what applications are in place, and what kind of applications are planned to be implemented in the future are among the fields that health managers should know very well in order to manage change. Change is a process that does not happen all at once and you need time to adapt. In order to manage this process, the stages of managing change should be determined. The stages of managing change in the field of health services can be listed as planning change, providing resources, team building, monitoring, and evaluation, and ensuring continuity by placing it in the organizational culture.

Dimensions of Change in Health Services

The Covid 19 epidemic has revealed the necessity of regulation in globalization in the field of health. Data such as the number of cases and deaths and vaccination rates of countries were shared instantly. Just like the HES code implementation in Turkey, different countries also had practices regarding the presence of the disease, contact status, risky areas, and vaccination status. Not every country had equal opportunities to use these applications effectively and to publish statistical data on cases quickly and accurately. This raises doubts about the reliability of the data. At the same time, the importance of dominating this field in crisis management during the epidemic has been better understood.

Health tourism has created a competitive environment for countries in the field of health. Reasons such as appointments to distant dates for treatment and examinations, and the high cost of treatment cause some countries to come to the fore in health tourism. It is inevitable to keep up with changing conditions in order to compete in the field of health. According to the data of the International Medical Tourism Association for the years 2020-2021, Canada is in the first place and Turkey is in the thirtieth place in the world ranking (Medical Tourism, 2022), (Table 1).

Table 1. Country Ranking of the International Medical Tourism Association in Health Tourism for 2020-2021

1	Canada	6	Dubai
2	Singapore	7	Costa Rika
3	Japan	8	İsrail
4	Spain	9	UAE
5	England	10	India

Technological developments affect the field of health in both product and service delivery. Every day, many tools and devices that make the life of patients easier are being introduced to the market. Persistence in producing heavy and unaesthetic orthoses when they are lighter, and more aesthetic is an example of resistance to technological change in the field of materials. The convenience provided by digital x-ray devices to both patients and healthcare professionals are the reflections of technology in the field of health. PACS (Picture Archiving and Communications System), which is also a picture archiving and communication system, has made a breakthrough in the field of health. With this system, X-ray, tomography, and Magnetic Resonance (MR) images of patients are archived and made available to authorized persons. This application also needs to be developed in areas such as Pulmonary Function Test (PFT), NST, Electronic Cardiography (EKG), Electronic Myography (EMG), Electronic Encephalography (EEG), and hearing tests, endoscopy, and colonoscopy. It is impossible to reach these data if the patient or his relatives lose the reports of these examinations. It is important to digitally archive the examinations made with these devices in terms of the diagnosis and course of the disease. Remote patient monitoring systems within the scope of the internet of things and electronic prescription applications can be given as examples of digital transformation applications in health.

When approached logically, it should be easier to please patients today than in previous years. Although the abundance of medical supplies, the ease of access to the service, and the education of healthcare workers seem to be factors that increase the satisfaction of the patients, news about the dissatisfaction of the patients are encountered almost every day, both in real life and on virtual platforms. In the studies conducted around the world, it is possible to reach the information that health-related organizations with high patient satisfaction prioritize patient-centered health management. The patient-centered approach increases the health literacy of the patients, contributes to the correct diagnosis, shortens the treatment process, reduces the cost, reduces the medical errors, and increases patient satisfaction. Patient-centered health management is among the areas of change in health today. Field study of my doctoral thesis named marketing of health services and communication buttons in the virtual environment, the perceptions of health care recipients towards communication buttons were investigated. It has been concluded that these buttons increase patient preferences through reputation, communication, service quality, and trust factors.

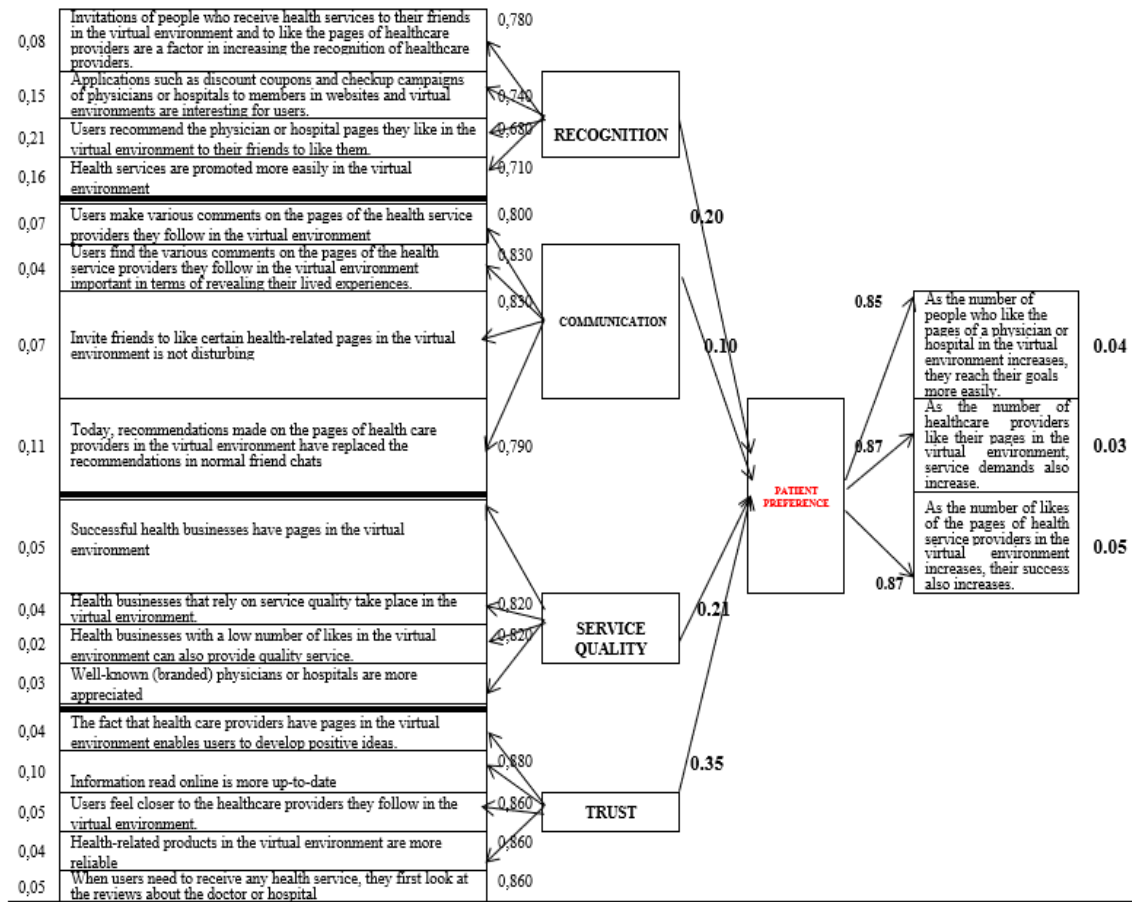


Figure 1. The Effect of Communication Buttons on Patient Preferences on Virtual Platforms

In summary, it is possible to list the dimensions of change in health services as adapting to globalization, competitiveness in health services, the effects of technological developments on product and service delivery in the field of health, and patient satisfaction.

Examples of Applications for Digitalization in Healthcare

Digitization in health services provides opportunities for multi-channel health information search, increasing the health literacy of patients and their relatives, and advanced data collection (Kraus et al, 2021). Digital transformation in health will prevent the waste of human resources. This is particularly important for the digital transformation of public hospitals in developing economies (Tortorella et al., 2022).

The type of research called netnography is a study that evaluates the cultures, attitudes, and social interactions of different human communities in environments where there is interaction (Facebook, Twitter, Instagram, etc.). Health care providers follow their health behaviors and attitudes on virtual platforms in order to understand patient expectations and to provide services in accordance with their expectations. De la Peña and Quintanilla (2015) conducted a netnography study to investigate how social networking sites motivate their users to participate in a healthy diet program, participate in physical activities, and achieve other health goals. Their study revealed that Facebook communities not only provide virtual tools that allow people to track their physical activity levels and calorie consumption, but also encourage users to join a community of like-minded people who are willing to share success secrets and answer questions.

Google analytics, Boom Social Row Feeder, Tweet level and Blog level, and Alexa are among the websites that measure the virtual environment. Health institutions can access statistics for their institutions' web pages through these websites. They can make more accurate managerial decisions with the data they obtain.

In a study conducted by Syn (2016) with an eye-tracking technique to investigate the awareness and attention level of health information on Facebook by readers, it was concluded that users' information and the number of likes, and comments attract more attention than the content of comments. It has been concluded that users give importance to health-related resource information rather than subject sensitivity.

Spazic et al. (2015) developed a web-based treatment and exercise application that can be accessed via Facebook for patients with knee disorders, and they provided an evaluation of the application by patients and staff.

Access to the Internet is getting easier day by day and the time people spend on the Internet is increasing day by day. For this reason, the use of this area should be specially addressed in order to create a correct perception of health and develop correct health behaviors in users. In his doctoral thesis, Lee (2015) investigated how users react to the number of likes in the virtual environment and revealed that the number of likes in messages promoting alcohol consumption and anti-drinking messages in terms of health affect the motivation of Facebook users.

In his doctoral thesis, Kang (2017) sought the answer to the question of 'how should skin cancer messages be designed in social media in order to increase the awareness of individuals about the risk of skin cancer and to develop sun protection behavior. According to his study, the most common type of cancer in the United States is skin cancer, accounting for half of all cancer cases. In his study, it is stated that sunbathing, use of a tanning salon, and not using sunscreen are risk factors for skin cancer, and therefore, encouraging practices for the use of sunscreen creams are made on social media, and awareness is created as a result.

In Fiacco's (2017) doctoral thesis investigating the effects of hospitals' websites on patient satisfaction, it was determined that patient portals play an important role in the education of patients and sharing of useful information. As a result of the study, the expectations of the patients to have useful and high-quality e-health tools were revealed.

Physicians or individual users add a 'share' button to direct visitors to their websites. They are of the opinion that this button makes it easier to announce their activities and view the content of their services (Boyd and Ellison, 2008). They facilitate promotional activities by placing various links in these contents. Since the share button provides access to other social media areas, extensive promotional activities are provided.

Yayla and Çizmecı (2022) stated in their research on the awareness of Turkish mobile health applications that e-Nabız, MHRS, and Hayat Eve Sığar are widely known, while the rates of other applications are lower. From this result, it can be deduced that society has the digital transformation infrastructure and that the service recipients and providers can manage the change in cooperation with the digital transformation activities to be carried out in the field of health.

Key Points of Change Management in Healthcare

Change is the process of transforming an existing situation into a different one, willingly or unwillingly. In general, the need for change is felt in order to keep up with the changing environmental conditions. Although the concept of change includes the meaning of evolution to bad and negative, it generally evokes the concepts of innovation, development, and revolution.

It is possible to define change management as a process that includes planning, organizing, directing, coordinating, and controlling the activities to be carried out in order to announce the situation aimed with the change, to ensure the correct understanding, acceptance, and implementation. In which area to make the change, why it is needed, what is aimed, and how and when it will be made are the subjects that should be explained to the target audience at the first stage of change management. Determining the necessary strategies against the possibility of resistance to change should also take place at this stage.

Reengineering, which is called the redesign of business processes, systems, structures, and policies in organizations, enables the transformation of defined business activities with inputs and outputs into organizational processes with special arrangements and focuses on the process, not the function (Pira and Kocabaş, 2003).

Change management in the field of health is of greater importance due to a large number of stakeholders. The change to be made should not adversely affect the patients and their relatives, product and service providers, intermediaries, country policies, community culture, and competitive environment. For this reason, change managers are expected to be knowledgeable, resourceful, experienced, and devoted to human and community health.

Another difference between the virtual environment and the real world is the concept of digital footprint. While every moment experienced in real life cannot be remembered with all its details, every action taken in the virtual environment is recorded. Considering this issue by health service providers will enable them to be more careful in communication in the virtual environment. In addition, paying attention to individuals while sharing their health-related information will prevent their information from being used in unwanted areas by unwanted people.

The processing of personal data comes first among the issues to be addressed in the management of change in the field of health. The data of people registered in the health system are archived and shared with certain people in order to facilitate diagnosis, treatment, and emergency response. Despite the many benefits, the possibility of this data being in the hands of malicious people raises the issue of cyber security. For the security of data, the development of domestic and national high-reliability software should be supported. An issue that needs to be corrected in digitalization in the healthcare field is the integration of information systems. The fact that the data of

the patients in public and private health institutions can be accessed with a general application (such as e-government) with a reliable application will facilitate diagnosis and treatment.

Unfortunately, there is no fully competitive environment between private and public institutions in terms of effective use of the virtual platform in the field of health. While public health institutions are less involved in virtual platforms, private health institutions make full use of the functions of the virtual environment. It is difficult to say that public health institutions can fully keep up with digital change. When comparing public and private health institution web pages and social media platforms, the differences can be easily seen. It would not be correct to describe this change as difficult to implement in the public sector, as some public hospitals can also see beneficial applications.

Many of the changes in the field of health aim to facilitate the access of patients and their relatives to services and to receive high-quality services. The questions of whether all members of the society will be able to benefit equally from the changing service provision, will it only cover big cities, or will it be necessary to pay extra costs to receive these services reminds us that the ethical aspect of change should also be considered. In order to maintain good relations with society and to prevent resistance to change, it is thought that it would be the right decision to establish an ethics commission in this area.

Artificial intelligence applications also contribute to the field of health. Human beings are increasing their expectations from machines day by day. In some cases, it is expected to reach certain results with certain algorithms, rather than just doing certain tasks. For example, devices with alarms developed for certain pathological findings in x-ray examinations can be counted among useful applications. There are also applications (carescore) where people can get information about their health status and risk factors by uploading their demographic, clinical, and laboratory information to the system. Benefiting from software developed in this field or developing appropriate software is one of the requirements of health transformation.

There are certain standards that must be followed in the delivery of health services. More service can be provided, but the prevention of service provision below is under the guarantor of the state. In real life, auditing compliance with standards is easier than on virtual platforms. Content published in the virtual environment, especially on video-sharing sites, can cause wrong habits related to health. These videos, which are watched especially by children or people in need of protection, can harm their health. With the Law No. 5651 published in the Official Gazette on May 23, 2007, on 'regulating the broadcasts made on the internet and combating the crimes committed through these broadcasts', practices such as removing the content from the publication and blocking access came into force (Official Gazette, 2007). Despite the difficulty of controlling the virtual environment, these rapidly spreading harmful contents pose a great risk to public health. Dietitians, physiotherapists, pharmacists, psychologists, and physicians are among the professional groups that provide services in the virtual environment. Health service providers using the virtual environment should be registered with the Ministry of Health and obtain a license. Otherwise, it is inevitable that the so-called healthy life videos that are harmful to health will negatively affect the health of society.

Digitalization in health generally focuses on diagnosis, treatment, and rehabilitation services. The realization of activities to benefit from technology in preventive health services will provide a balanced digitalization process. In his article he wrote in 2015, Olszewski mentions the use of social media tools in public health practices and the necessity of benefiting from social media in preventive health services. Practices aimed at improving health (hygiene, nutrition, immunization, etc.), preventing chronic diseases and early diagnosis are useful to practice recommendations in terms of public health and reducing disease costs.

People receive services from health services by making an appointment on the phone or on the internet, or by applying directly to the health institution. Just as telephone and internet appointments were not known in the past, many applications software will be produced to facilitate appointments in the coming years. In order to alleviate the burden of the outpatient clinics in the hospital, having an artificial intelligence assistant in each polyclinic will make a positive contribution to the outpatient services, by taking the preliminary information about the patient and creating a preparation folder for the physician before the examination. It is another matter that these practices are of a nature that will facilitate the access of all segments of the society to health services.

As explained above, there are many issues that need to be addressed in the health transformation process. The prolongation of the average life expectancy and the increase in population make digital transformation in health compulsory. It is expected that investments to be made in digital transformation in health will contribute to the health systems of countries in the long run, with the right strategies, in terms of economy and quality of life (Solmaz et al., 2020).

Stages of Implementing Change Management in Health Services

When considered from a macro perspective, first of all, due diligence should be done in order to manage the change in health throughout the country. The strengths and weaknesses of the health system and the opportunities and threats in the environment should be determined very well. Following due diligence, strategies, objectives,

targets, and performance indicators for the field should be determined. Performance indicators should consist of measurable parameters. Change management is teamwork. An employee who does not feel himself in the team will resist change. For this reason, job descriptions should be made and all health personnel should be contributed to the process according to their position. Ensuring the motivation of health workers is also important in adopting the big goal. Successes of healthcare workers should be rewarded. Pilot applications covering a certain area prevent major mistakes and provide benefits in designing the future. A monitoring and evaluation committee should be established to monitor change implementations.

While rapid changes develop resistance, the spread of change over time will facilitate acceptance. Human nature tends to fear and reject what he doesn't know. Therefore, the education of health personnel is an important factor in the acceptance of the change. In order to achieve success in the management of change in health, a support team consisting of experts in the field should be established. The support team will accelerate the resolution of problems that may arise and facilitate the adaptation of employees to change management. It is thought that it will be easier to manage the change with motivated health workers who see themselves as a member of the change team, who are provided with the training they need, and whose problems are solved in a short time.

CONCLUSIONS

Technological developments have caused many changes in the field of health as well as in every field. With the influence of globalization, it has become necessary to adapt to this change in order to survive and compete. In this study, it is aimed to reveal the stage of the digital transformation of the health field, the applications that are planned to be implemented in the current and future, the functions of virtual platforms in the delivery of health services, the contribution of communication buttons that provide interaction on virtual platforms to change and the issues that should be considered in managing change. For this purpose, the literature review method was used, and the situation was determined by examining national and international scientific articles in the relevant field.

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