

BEHAVIOURAL ASPECTS OF THE USE OF TELEMEDICINE SYSTEMS IN HEALTHCARE ENTITIES

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Purpose: Entities operating in the healthcare system, being subject to developmental phenomena on the one hand, and crisis phenomena on the other, face problems that should be solved in the context of efficient implementation of organisational goals and, in the same time, in line with the best interests of the beneficiaries of this system (especially consumer of healthcare services). One of the problems is the development of telemedicine systems. The research objective of the article is to identify (on the basis of the cited cases) behavioural factors that are a condition the implementation of these systems and have their source in the attitudes of stakeholders.

Design/methodology/approach: The study is based on a review of the literature on telemedicine, and mainly the implementation of these solutions in the practise of healthcare entities. An important element of the study is the presentation of specific cases in which problems with the implementation of telemedicine solutions have emerged.

Findings: In the process of implementing telemedicine solutions in healthcare facilities, many different problems can be noticed, which are caused by behavioural factors. These factors are associated with virtually all types of stakeholders focused around the healthcare system. The behavioural factors are not the only ones that weight on the final success of introducing telemedicine solutions of varying technical advancement to the healthcare system, but they are so important that they should be taken into account in the decision-making processes of entities operating in healthcare.

Social implications: The social impact of the considerations made in this article may be manifested in improving the quality of healthcare services and, by taking into account behavioural factors that constitute barriers to development, but also stimulants of development, turn out to be important for individual stakeholders of the healthcare system.

Originality/value: The importance of this article is based on the fact that there are relatively few studies raising behavioural issues in the literature on telemedicine. The recipients of this type of article are decision-makers who should take into account behavioural factors in their strategies for the development of healthcare facilities and practical activities.

Keywords: telemedicine, behavioural factors, health system stakeholders.

Category of the paper: Viewpoint, Case study.

1. Introduction

The events surrounding the Covid-19 pandemic have highlighted quite a few problems that exist in the healthcare systems worldwide. Virtually every country faced challenges that had to be overcome in order to protect citizens from the spread of the virus and, at the same time, not to worsen the situation in terms of the diseases treated so far and in terms of preventive healthcare. The pandemic and its health effects require us to take a close look at the resources allocated to healthcare by individual countries. Even a cursory look at the situation allows us to conclude that funding in healthcare systems is insufficient in relation to the needs of the population – this is true of virtually all countries, with a really bad situation in some regions. The coronavirus pandemic has exposed weaknesses in healthcare systems, but it is not the only crisis that affects them.

Reports describing the situation in the Polish healthcare system emphasise the need to increase competence in risk analysis, systemic challenges, and strategic action planning (Zybala, 2009). Another significant problem, not only in Poland, is the aging of the population and the decline in the availability of physicians and other health professionals (Telemedyczna Grupa Robocza, 2018). The weaknesses of the healthcare system, as well as technological developments, the increasing awareness of individual members of the society of their own needs, and the associated growing expectations towards those entities that can improve the quality of life, result in many challenges for healthcare providers. These challenges must be addressed in the context of an efficient achievement of organisational objectives (including, but not limited to, efficiency), and at the same time be in the best interests of the beneficiaries of the system (mainly consumers of healthcare services). It is also worth mentioning that a well-functioning healthcare system is also of interest to the state as such (state administration) – for it is up to the state to provide adequate medical care and preventive care appropriate in a given situation to give the public in that state a sense of well-being. The tasks of the state and individual entities operating in the healthcare system can be assisted by a variety of entities from other sectors, which, for example, provide the appropriate hardware and software for increasingly complex equipment. Also, higher education, especially in the field of medicine and nursing, but also, for example, biomedical engineering, can contribute in the long run to providing adequate human resources for the healthcare system.

All the above factors are compounded by technical and technological advances, which in the field of healthcare systems result in the rapid development of telemedicine. This development results in entities providing relevant technical and IT solutions entering the healthcare system in search of an attractive growth sector, as they consider telemedicine as an industry that will provide possible economic success for themselves.

One should keep in mind, however, that healthcare entities, with their modern telemedicine solutions, are on the supply side of the healthcare market. On the demand side are first and foremost the consumers of medical services, and their attitude – either of acceptance or of rejection of telemedicine solutions – largely determines the success of the development of a complete healthcare system based on new technologies.

2. Stakeholders in the healthcare system

The healthcare system in a given country is directly responsible for the health of the country's citizens and residents. The basic determinants of human health include (Sygit, 2017):

- individual psychosocial development,
- information, knowledge, and skills necessary to preserve health,
- healthy lifestyles and favourable conditions,
- healthy environment,
- agencies and organisations working to promote health, and
- policies that promote and protect health.

As can be seen from the above list, the final outcome in terms of people's health is equally dependent on their attitudes related to prevention, taking care of their own health and maintaining healthy habits, as well as the situation in the broader human environment. The important point is that the well-being of people living in a specific country is a function of the assumption that the socio-economic system and, in the health space, the healthcare system exist to serve people and not the other way around (Getzen, 2013, p. 351). Referring to this original assumption, it is worth using the concept of stakeholders when describing the healthcare system and its tasks, as well as the tools with which it pursues its objectives. This concept is not intended solely for the healthcare system and is superior to the system, but explains the goals and attitudes of the entities that have a stake in some part of the socio-economic system or whose activities relate to the existence and development of some specific entity. Stakeholders are those individual entities or groups that can influence or are influenced by the activities of an organisation that is seeking to achieve its goals (Littlewood, 2020).

The healthcare sector is primarily represented by healthcare providers and businesses that offer services, products, and equipment necessary for medical treatment (including the most technologically advanced ones). On the other hand, there are recipients who should be divided into individual clients (they are mainly patients and their families) and collective clients (including the National Health Fund, companies offering occupational health services and additional benefits to their employees, which are considered as a part of an incentive system, as well as insurance entities). Also worth mentioning are the inspection and supervision authorities (e.g., the State Sanitary Inspectorate). Pharmaceutical manufacturers and

pharmaceutical product traders are also important players in this sector. This list should be enlarged by adding any organisation representing the interests of particular groups, whether it be patients, medical entities, or businesses (Klich, 2015).

The basic groups of stakeholders (individual and institutional) that can be distinguished in healthcare – in the broadest sense – are thus formed by the following entities:

- direct consumers of the sector's services – not only patients, but also their families and all (healthy) people who seek to improve their well-being, e.g., through prevention,
- healthcare professionals, who include primarily doctors, nurses, and midwives, but also lower-level staff (including paramedics, medical caregivers, and technical staff with a medical education),
- non-healthcare personnel in healthcare facilities (including managers and administration workers, IT specialists, and technicians with non-medical training),
- healthcare entities (including hospitals, clinics, outpatient clinics, pharmacies – both public and operating in the private sector),
- insurance providers offering both group and individual insurance,
- companies operating in a broadly defined IT sector, which provide hardware and software related to modern technologies used in healthcare entities, and
- state (at both central and local government levels).

The interests of the aforementioned stakeholder groups change depending on what entity is the reference point, which means that the key to a diagnosis of stakeholder needs is to identify the process to be carried out in a given situation and to identify the entities involved in carrying out the process. Stakeholders' expectations toward a specialised hospital are somewhat different from those towards a medical facility offering primary care services (an outpatient clinic), and still different from those towards a medical facility offering, for example, aesthetic medicine procedures. The expectations are also different in the case of a patient who seeks to improve his or her health or a person who thinks about preventive healthcare when his or her health is good and does not require direct intervention by a physician. The situation of a person using the services offered by the healthcare sector is often crucial in terms of the requirements for the supply side. For example, as studies have shown (Calton, Abedini, Fratkin, 2020), patients requiring palliative care highly value the possibility to save time and preserve their strength by using remote care (via video calls) – but this requires the right equipment and willingness on the part of the provider to make such contacts with the patient.

In general, it can be said that there are very different entities in the healthcare system who perform diverse functions, are in diverse situations, and therefore have diverse expectations of the system. Different interests and often conflicting views on solving healthcare problems have specific consequences for the development and processes of implementation of telemedicine tools as well.

3. The essence of telemedicine

The basic definition of telemedicine has been provided by the American Telemedicine Association (ATA). According to ATA, telemedicine is the ‘use of medical information exchanged from one site to another via electronic communications to improve a patient’s clinical health status’ (American Telemedicine Association). WHO, on the other hand, defines telemedicine as ‘the delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities’ (WHO, 1997). There are also opinions that telemedicine, in the narrow sense of the word, does not include, for example, e-patient or e-referral type sites, as well as various phone apps that are used to monitor activities to preserve or improve health. However, given the effects of these tools and their reliance on remote data transmission technologies, it can be assumed that in the long term and indirectly they contribute to improving the health of the population and, therefore, can be considered as telemedicine tools. This consideration is also justified by the perception of these tools by the consumers of healthcare services. For them, telemedicine includes all information technology tools and means of access to such services, which also includes aspects of e-health that are not associated with ‘traditional’ telemedicine.

The basic types of (‘pure’) telemedicine tools include (KIR, 2016):

- telecare – care for chronically ill or dysfunctional patients involving the measurement of vital signs,
- telediagnosics – which includes telecardiology, tele-ECG, teleCTG, tele-endoscopy, and tele-USG,
- teleconsultation – usually consultation of an image with a specialist (such as a dermatologist),
- tele-education – this tool also includes the exchange of information on treatment options, and
- teleprocedures and teleoperations – performed using remotely controlled robots.

In the covid pandemic conditions of 2020-2022, probably the most popular types of telemedicine were tele-advice, e-referral, and e-prescription (as complementary elements to a basic ‘doctor’s visit’). Undoubtedly, these solutions will continue to be used for a long time because they have worked in practice, but they are not the only telemedicine tools, or even the most relevant ones, from the point of view of the entire healthcare system. It is worth mentioning that based on a survey conducted by the Ministry of Health (Ministerstwo Zdrowia..., 2020), the overall level of satisfaction with the tele-advice option was very high. The satisfaction with the advice received was also high. The level of satisfaction with tele-

advice was certainly influenced by the level of threat associated with in-person visits at medical facilities and the uncertainty about the consequences of face-to-face meetings with healthcare professionals. In this context, the behavioural factors affecting the level of acceptance of telemedicine solutions become evident: as it turns out, the Covid-19 pandemic highlighted specific factors that affect the level of satisfaction with, and acceptance of, the only way to use the services offered by medical facilities that was available during that period.

It is worth noting that the EU's healthcare policy had already recommended exploiting the potential of modern technologies in medical services long before the pandemic (Rossa-Tarchalska, Maśliński, 2021). Already the 1957 Treaty of Rome included the first provisions on the need to coordinate the activities of European countries in the field of public health (Wojtczak, 2017), and the 2004 documents already explicitly mention the inclusion of e-health solutions in both public health policies and the healthcare system of EU countries in general.

As a result of the coronavirus pandemic, tele-advice solutions (technically, but also legally) have often been, and continue to be, implemented in a reactive manner and without adequate tools that have been prepared and preceded by consultation with patients and the medical community. This may (and unfortunately often does) lead to a quality of these services that does not meet the expected standards (Rossa-Tarchalska, Maśliński, 2021).

However, it is not only the need for, and the possibilities provided by, the development arising from technical and technological advances that determine whether telemedicine is used in the activities of healthcare entities. Telemedicine as a subject of consideration concerns a wide area of issues, primarily technical, legal, and economic ones, the aspects of which must be taken into account in a comprehensive manner. An equally important aspect is the attractiveness of telemedicine solutions to users, including healthcare professionals, but especially to the ultimate consumer of healthcare services. The attractiveness to healthcare professionals consists of the availability of the tools at their workplace, their ease of use, the service available during use, the level of streamlining of patient care processes, but most importantly the training that can help overcome the fear of using new technologies. For the consumer, on the other hand, the attractiveness of using telemedicine consists, of course, of its accessibility (especially in the context of the recent restrictions on physical access to healthcare facilities as a result of the Covid-19 pandemic, but also accessibility viewed as a function of the level of skills in using the Internet and IT technologies and equipment in general), the quality of the service itself, and the level of acceptance of remote delivery of medical services related to patient wellbeing. This is because not everyone is ready to the same extent to trust the specific solutions that telemedicine offers. Digital exclusion, as a result of reluctance (or lack of the required skills) to use modern IT technologies, and behavioural aspects (willingness, level of trust, and attitude) are the main psychological factors affecting the use of telemedicine tools.

The pandemic has made it clear to all people concerned that the continued operation of healthcare entities must rely on the use of modern technologies. It is believed that three areas of the healthcare sector will be revolutionised by new technologies in the coming years (KIR, 2021). The greatest technological changes will take place in tele-advice and remote care, digitisation of records and processes, and the area of cyber security in healthcare. The trust of the customers of medical facilities must be earned by ensuring basic cybersecurity standards, which include, first and foremost, protecting sensitive data from unauthorised access, but also safeguarding against tampering with patients' diagnostic data. Data security activities should include activities in the areas of IT (selection of reliable IT system and hardware vendors, systematic risk analysis, detection of unauthorised access, countering such practices, etc.), law (adopting regulations that secure data and allow prosecution of the perpetrators of cybercrimes), international standards, e.g., ISO 27001 (standards for building information security management systems), and the so-called soft-law (industry standards and codes of conduct for individual entities in the healthcare system) (Rojszczak, 2021).

4. Behavioural determinants of the implementation of telemedicine systems in the healthcare sector – practical aspects

When considering the feasibility of implementation of telemedicine solutions in healthcare systems, behavioural aspects prove to be very important. They concern the attitudes of individual institutional entities or, more specifically, the persons involved in the provision and use of telemedicine tools, as well as their consumers, towards the phenomena associated with these tools and, more broadly, with the functioning of the healthcare system as a whole.

Some of the basic theoretical models that can have practical relevance in understanding the behavioural aspects of the conduct of individual entities in the implementation of telemedicine solutions in the healthcare system are the Theory of Planned Behaviour (TPB) (Ramirez-Correa et al., 2020) and the Technology Acceptance Model (TAM), as well as the Unified Theory of Acceptance and Use of Technology (UTAUT) which constitutes a generalisation and development of the latter (Harst, Lantzsch, Scheibe, 2019). These models identify the basic variables that are the behavioural factors that influence the level of acceptance of technologies and their use in specific situations, in this case the use of telemedicine solutions in the healthcare system. These include attitudes, subjective norms, and a sense of control, as well as expected performance (the degree of belief that a technology will benefit the user), expected effort (the degree of difficulty of using the technology), social impact (the strength of a person's belief that people who are important to him or her would also use the technology), and favorable circumstances (the strength of the belief that there is adequate infrastructure and support for the use of the technology) (Sołtysik-Piorunkiewicz, Zdonek, 2015).

Healthcare is a complex economic system, which, through organised activities carried out with the use of financial, material, and informational (including legal) resources, serves the purpose of ensuring, most importantly, the good health of the population and an adequate quality of life in general (Suchecka, 2016). Due to the imperfect mechanisms for allocation of scarce resources, the system suffers from a permanent imbalance, which leads to an escalation of discontent and differing attitudes, often radical, towards the system as a whole. Differing attitudes also apply to telemedicine systems and their implementation. As research conducted in Ghana's health care system has shown, the propensity to implement telemedicine systems increases as both physicians and patients become more satisfied with the use of these systems. The following reasons may prevent the effective use of telemedicine systems: unavailability of services, information security issues and privacy concerns, organisational shortcomings, but also socio-cultural factors and lack of motivation on the part of hospital managers (Kissi et al., 2020). The latter two obstacles are strictly behavioural.

An additional problem is that in the healthcare system the patient only to a marginal extent has the characteristics of a rational human being; it can even be argued that, driven by fear for his or her health and a lack of specialised knowledge, the patient has fewer characteristics of *homo economicus* than the average person in other sectors of the economy. Such a completely irrational attitude also characterises the physician who is the provider of a service with an uncertain ultimate effect on the consumer. Therefore, in his conduct the physician must use his or her knowledge and experience, but fear and uncertainty of the outcome also come into play. The above aspects are also compounded by the individual values that guide both patients and physicians, as well as other healthcare professionals in their lives (Golinowska, 2015).

The individual, personal characteristics of those using telemedicine systems are also important to the effectiveness of the implementation of telemedicine systems for widespread use. The level of acceptance of technological innovations tends to decline with age and depends on the level of education and social status: the lower the level, the greater the delay in using telemedicine solutions (Dorsey, Topol, 2020).

Another behavioural aspect of the activities of healthcare entities, manifested mainly in the allocation of resources in that sector, is the issue of a sense of fairness in the distribution of costs and benefits. Due to permanent resource limitation, it is of paramount importance that the distribution of costs and benefits be done on the basis of social consensus; however, anyone who analyses the availability of public and private healthcare, both financially and in terms of staff, is aware of how difficult it is to achieve it. Nevertheless, it must be said that in the Polish healthcare system this consensus is guarded, most importantly, by the constitution, but also by state institutions and finally by individual service providers. The latter have the responsibility to ensure the right cost/effect ratio (Rudawska, 2007). In general, the conflict between the solidarity-based approach in the society with the sovereignty and individual expectations of the consumer is most fully revealed in the healthcare system (Nojszewska, 2011). This problem is the basis for the design of a country's social policy, but also must be considered as a starting

point for the country's strategy for the provision of healthcare services in individual healthcare entities.

One of the challenges faced by healthcare managers is to prepare a strategy for the implementation of telemedicine systems based on the organisational culture of the entity in such a way that the benefits for the stakeholders of these systems can be precisely defined (Khodadad-Saryazdi, 2021). This perspective applies to both the healthcare entity itself (internal stakeholders) and the benefits to external stakeholders.

Given the market-related context, the strategy of healthcare entities concerning the use of telemedicine tools should also take into account marketing issues. Marketing of telemedicine services can be based on the promotion of their ease of use or the belief that some well-known people have already used certain tools. It is also important to keep in mind that what is allowed and what is forbidden in the promotion of medical services is strictly regulated by law. The contemporary healthcare market is competitive at the level of services of both public and non-public entities (both sectors can in fact serve the same patients, because they can be financed directly from public funds through contracts with the National Health Fund), which makes it necessary to build competitive advantages. In this context, providing a facility with modern equipment and facilitating the use of healthcare services by patients thanks to telemedicine or, more broadly, e-health solutions become the basis for building long-term relationships with the community. One of the entities that are actively developing telemedicine services and constantly expanding the scope of their applications is Medcover. This entity also promotes itself at industry events (e.g., congresses) where it presents its achievements, the level of its use of modern technologies, and the relationships with patients built on the basis of the use of telemedicine solutions (Okoniewska, 2022).

Intentionally built long-term relationships result in patient loyalty, which should be an important area of interest for healthcare providers. In order for this to be possible at all, healthcare facilities should hire people who understand the need to build relationships with the community (and have relevant training) and are able to work creatively and effectively with each other. This demonstrates the need to focus on the motivation of employees and to manage them appropriately so that the staff adopt certain organisational solutions that benefit the efficiency of the healthcare facility with understanding and commitment (Chalimoniuk-Nowak, 2022). Limited motivation is also a behavioural factor that determines acceptance of the implementation of telemedicine systems in healthcare facilities.

Attitudes toward the use of telemedicine systems in healthcare entities are also influenced by the availability of adequate infrastructure: sometimes the Internet is simply too impaired to permit the realisation of the full potential of telemedicine. As shown in a study carried out in Indonesia, about 50% of the users of telemedicine systems believe that the quality of the Internet connection needs to be improved in order to get the full benefits of telemedicine tools (Indria, Alajlani, Fraser, 2020). The situation in Poland in terms of the availability and quality of the Internet is slightly better. According to Statistics Poland, 92.4% of households in Poland had

Internet access in 2021 – an increase of 2 percentage points compared to 2020. It is worth noting that access of households depending on the place of residence did not differ substantially: the rate of access was 93.8% in large cities and 91.8% in rural areas (Statistics Poland, 2021). These overall figures show that the level of digital exclusion in the Polish society is not very high. However, it cannot be expressly stated that households' access to the Internet means that Poles easily and willingly use tele-advice services. One must be aware that a large percentage of households use the Internet only for remote learning. This is evidenced by the fact that 99.7% of households with children had Internet access, compared to 88.8% of households without children (Statistics Poland, 2021). One should also keep in mind that in addition to remote learning and access to the healthcare system, Poles have become active online largely for the purpose of dealing with the public administration.

5. Conclusion

As is evident from the processes of implementation of telemedicine solutions in the healthcare entities that are described above, the situation of reduced availability of face-to-face doctor's visits as a result of restrictions related to the Covid-19 pandemic has created a great need for tele-advice services. However, it also drew widespread attention to telemedicine as a whole. It turns out that telemedicine is not an innovation that first emerged during the pandemic, but has been developing for many years (with varying intensity and in diverse directions) and applied with success in many areas of healthcare. It is also a high-value market that is still in a growth phase; therefore, it is a good idea to identify more and more accurately both the drivers of its development and the barriers that stand in the way of that development.

The growth of telemedicine and its applications in the practice of the operation of healthcare systems faces various problems, including those of a behavioural nature. Individual stakeholders in healthcare systems are not willing to accept to the same extent all aspects of the use of telemedicine solutions. The willingness to use specific advances in telemedicine technology depends on a number of factors, but what is very important is the fact that it is not only patients who are sometimes distrustful or reluctant to undergo medical interventions using telemedicine. There are people, including physicians and those who work with them in offering healthcare services, who are reluctant about or even actively resist the implementation of telemedicine systems in their workplaces. Some of these barriers, which are present on both the demand side and the supply side, are strictly behavioural. These barriers stem from, among other things, an attitude of aversion to modern technology, the separation between the patient and the doctor, the lack of faith in the effectiveness of 'remote treatment', and lack of knowledge about the full use of technological advances in improving health. On the other hand, physicians and nurses, as well as all kinds of paramedics and technicians operating telemedicine

systems demonstrate resistance that is due to their low motivation to use technological innovations. This resistance is often also the result of their lack of knowledge about the effectiveness of the impact of telemedicine on patients' actual well-being. All this means that technological, financial, and behavioural barriers alike must be overcome in order to develop telemedicine systems and streamline their implementation in healthcare entities.

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