


# The Patient Perspective of Telemedicine in the Context of COVID-19 Pandemic

Bulletin of Science, Technology & Society  
2022, Vol. 42(1-2) 39–53  
© The Author(s) 2022  
Article reuse guidelines:  
sagepub.com/journals-permissions  
DOI: 10.1177/02704676221094735  
journals.sagepub.com/home/bst



G Altinisik Ergur<sup>1</sup> , S Nuhoglu<sup>2</sup>, C Cobanoglu<sup>2</sup>,  
M Sengul<sup>2</sup>, N Eryildiz<sup>2</sup>, and A Ergur<sup>3</sup>

## Abstract

COVID-19 Pandemic might be considered as a catalyst for transformation in healthcare experience via the use of video consultation as a method for telemedicine. The aim of our qualitative study is to understand the patient perception of video consultations in telemedicine, which has been used by a single pulmonologist in only one university hospital in Turkey since the first three months of the pandemic. Research findings are essential when it comes to a more effective and widespread future use of telemedicine, as it focuses on patient experience about a medical technology that is newly introduced. Totally 30 patients were randomly chosen and interviewed who get healthcare support via telemedicine. A semi-structured questionnaire was used to learn the experiences and opinions of the interviewees. The expressions of the patients highlight some advantages of using telemedicine such as being free from risk of contagion caused by exposure in the hospital, being able to save time and money while reaching to the physician online whenever needed, and success in technical details even though they were experiencing it for the first time. A very few of the patients are feeling discomfort to be in front of the screen. Almost all patients are applicants to suggest to other individuals the system they used, in conditions to be appropriate, and continuity after the pandemic period. Since the pandemic has propagated from one patient, the worldwide implementation of telemedicine might be catalyzed by following in the footsteps of the sporadic examples of decisiveness nourished from patient experiences.

## Keywords

telemedicine, video consultation, patient perspective, pulmonary medicine, medical sociology

## Introduction

COVID-19 is a disease with a process from an epidemic propagated in China at the end of the year 2019 and announced as a ‘pandemic’ by World Health Organization in March 2020 (WHO). A prevention strategy consists of early diagnosis of patients (via effective triage and medical surveillance activities), strict isolation of patients, symptomatic monitoring for both the contacts and all classifications of patients under isolation, personal protection interventions as a trio of face mask-physical distancing-hygiene, and public health quarantine was implemented to the battle globally. One of the most effective measures taken in this direction is to minimize the spread of the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) by reducing interaction and contact between individuals by introducing restrictions (Askitas et al., 2021). For instance, due to the rapidly increasing cases in the pandemic, real-time monitoring of transmission has gained priority in order to control the risk of spread of the virus (Yuan et al., 2020). In this direction, telemedicine has taken an active role in preventing the spread of the disease during the pandemic period by reducing the risk of transmission.

The use of technological discoveries to combat COVID-19 can be considered in relation with the emergence of new technologies or adaptation of the existing ones as a response to crisis, mostly in times of environmental threats (Ardito et al., 2021). The pandemic has brought about new and rapid changes in various fields, especially in the health system, health technologies and vaccine research (Coccia, 2021-a), and the use of telemedicine makes an example of these transformations. Vidal-Alaball et al. have addressed telemedicine especially during, but also after the pandemic, as a new channel that might be implemented to make patient and physician communication more fluent, easy, and efficient (2020). Additional to ‘forward triage’

<sup>1</sup>Faculty of Medicine Pulmonology Department, Pamukkale University, Denizli, Turkey

<sup>2</sup>Center for Sociological Research, Galatasaray University, Istanbul, Turkey

<sup>3</sup>Sociology Department, Galatasaray University, Istanbul, Turkey

## Corresponding Author:

Goksel, Altinisik Ergur, Faculty of Medicine Pulmonology Department, Pamukkale University, Pamukkale Universitesi Hastanesi, Gogus Hastaliklari Anabilim Dalı – Denizli - Turkey.  
Email: gaergur@gmail.com

(Hollander & Carr, 2020; Vidal-Alaball et al., 2020), the examples of telemedicine use in daily clinical practice have been listed as checking and informing laboratory results to patients, shortening the waiting queue to see a specialist physician, and with a little more sophisticated device support and monitoring patients that are in their homes (Vidal-Alaball et al., 2020). A recent systematic review on the efficacy and safety of telemedicine techniques has concluded that telemedicine was at least non-inferior to traditional counseling (Novara et al., 2020).

As Hofmann and Svenaeus quote “illness is a basic human experience, and as other things in human life, it may be subject to influence by technological interventions” (2018, p. 2), technology has infiltrated many parts of social life including illness experience from the very beginning of COVID-19 Pandemic. Telemedicine can be considered one of the technologies that brought about considerable transformations in both the illness experience and ethos of the medical field. *Telemedicine* was a term first defined in the 1970s for using telecommunication equipment for the examination of a patient by a physician, and its content had been broadened to any health-related use of communication technologies taking place between medical providers or between a provider and a patient (Lucas, 2008). In the use of telemedicine applications, the devices have been documented as real-time or store-and-forward techniques via telephone, live video conferencing, and email (Monaghesh & Hajizadeh, 2020; Vidal-Alaball et al., 2020). It is essential to have a preference among those techniques according to the purpose of telemedicine to provide the most suitable substitution for traditionally effective management. For example, as Jiménez-Rodríguez et al. (2020) have also named and mentioned superior to phone calls, the video consultation might be advantageous to substitute patient-physician interview since it creates real-time, face-to-face live interaction, allows both verbal and non-verbal communication, and makes it possible to assess patient’s physical aspects. Furthermore, it is another advantage that the video conference technology became familiar for many individuals throughout their social interactions during the pandemic.

Maria Coccia describes technology as “a complex system that is composed of more than one entity or sub-system and a relationship that holds between each entity and at least one other entity in the system” (2019). As such complex entities entangled with the social, new technologies cause changes in traditional health services like any other parts of community life. Brown and Webster (2004) have mentioned that new technologies were reconfiguring the organizational model, location, and staffing of healthcare, disturbing long-established practice and even hierarchies across the medical professions. Additionally, they claimed hospitals’ persistence in one form or another, but new technologies would enable more mobile and distributed sites of medical diagnosis and delivery and broaden the clinical and non-clinical sources

of expertise that provide it. Telemedicine is one of the examples of these technologies that have the capacity to bring about radical changes in all these components of the medical field.

Comprehensive research on patient satisfaction (an important factor on success and degree of application) with remote healthcare prior and during COVID-19 Pandemic has shown that the prerequisites for perception of satisfaction was not entirely clear, and the methodologies of the studies on that topic were not clearly defined and couldn’t supply comparable results. The limitations could be caused by using survey research methods and lack of validated questionnaires. In addition, there is a lack in the literature about countries like Turkey, in which these technologies are established relatively later. It should be noted that, the technical sphere of medicine is never isolated from the practical level, that is, the meaning world of the subjects -patients and healthcare professionals-. Therefore, their experience is an essential part of the implementation and use of the technologies. In the literature about patients’ perception of telemedicine, the lack of comfort during the use of such technologies by patients and providers has been pointed as the primary reasons for scarce utilization of them, besides financial issues (Hawrysz et al., 2021). Patients’ satisfaction with telemedicine has been found high and mostly dependent on trust in the provider in relation to the amount of time spent for video consultation. It was a quantitative study designed to use a questionnaire with the Likert scale, and the rates of ‘agreed’ and ‘strongly agreed’ answers for satisfaction were 47.4% and 35.3%, respectively (Orrange et al., 2021). The findings on that aspect, especially the perceived and emotional levels of experiences of the patients that could be reflected by their own phrases, is essential as a guide for implementation of telemedicine widespread and effectively.

Technologies signify not only a technical efficiency in the profession but also, they constantly conjugate and are conjugated by the individual experiences. For example, telemedicine is not only an efficient artifact to use in the crisis period to eliminate healthcare service problems in the pandemic period; but also establishes a *virtual assemblage* quite different from the conventional one. In this new assemblage, both the individual existence of patient and physician transforms and adapts to the new virtual and physically distanced environment. In this new form of subjectivity constituted within the very relationality mediated by technology (Verbeek, 2005) through an interface, physical existence is intertwined with virtual existence, and they co-exist together. This co-existence and in-distance experience are particularly striking when it comes to a notion such as the experience of illness, that is, physically the closest experience individuals ever have with their own body. Therefore, it is important to consider the technical and practical level together, especially in the field of medicine, that is, a field that infiltrates and interferes with the human body, which is one of the most intimate dimensions of reality. Telemedicine brings

about transformations both the professional know-how and personal experience of receiving health service and this study aims to explore various dimensions of this transformation.

Brahmbhatt et al. emphasized the lessons of COVID-19 Pandemic that would prepare us for the unavoidable next one as “how we leverage technology and data management effectively to create flexible ecosystems that facilitate collaboration, equitable care, and innovation will determine the severity and scale of future threats to our provision of health-care” (2021, p. 1). Considering the utility of telemedicine limited to crisis periods would be a shortsighted view and a necessity to approach the right conclusions from the lessons learned during pandemic by a wide spectrum including all parties from telemedicine community to society at large (Bashshur et al., 2020). For a proper creation of such an ecosystem, an approach that draws on theoretical discussions nourished by empirical findings and brings the perspective of patients and healthcare professionals to the forefront remains essential. An evidence-based approach is important so that such technologies do not become mere technical imperatives imposed from above. In other words, how the question is framed and whose perspective is taken into account in this framing will also change the composition of the answer.

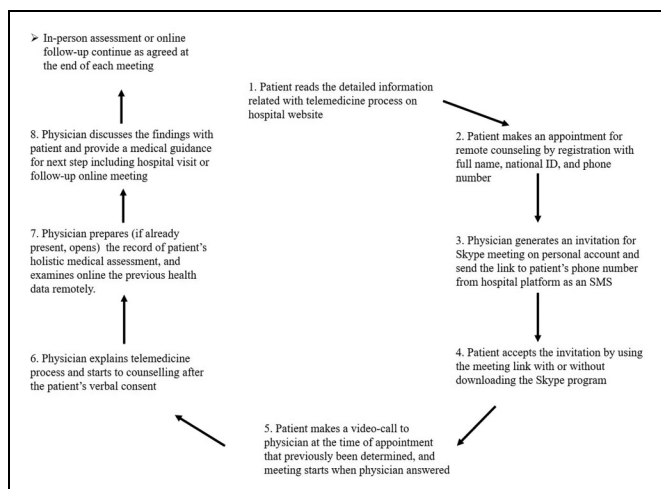
The aim of our qualitative study is to understand the patients’ perception of video consultations in telemedicine related to their recent practice. The method has been chosen to achieve a deep understanding of the phenomenon of interest such as the emerging implementation of the semi-institutional (offered by institution but used as only one doctor’s solo attempt) modality of healthcare that has an impact on the patients using it. By analyzing the qualitative data obtained from these semi-structured interviews; it

might be possible to make more to-the-point decisions regarding the urgent courses of action instead of waiting for another disaster.

### Method

The healthcare facility where the recent study has been designed and carried out is a Governmental University Hospital. During the first three months of the pandemic, the pulmonologists were organized and worked only at COVID ward. All the other in-patient and out-patient clinics were closed. Patients applied in-person to the emergency department and a triage center, and if diagnosed with COVID-19 they have been hospitalized with isolation either in COVID ward or Intensive Care Unit according to the severity of the disease. Just before 1<sup>st</sup> of June 2020, the date when the ‘normalization period’ was announced officially, The Ministry of Health suggested officially to initiate the telemedicine service. Due to the lack of reimbursement and legal regulations, that suggestion could not be acknowledge by physicians except one pulmonologist who took the initiative individually. For the telemedicine application subjected to a recent study, Skype (Skype™, version 6.4, Microsoft, Redmond, WA, USA) was addressed by the Information Technologies (IT) department of the university hospital and used for teleconsultations because of being a free of charge and user-friendly video conference program. Although a revision in the online appointment system was made by the IT department according to the administrative order, the rest of the procedure didn’t implement institutionally. Sparing time as much as needed by each patient is a principle for good clinical practice. As an example given by Zhou et al., a longer service time allows more thorough questioning and examination which can reduce the medical consumption required (2021). Thus, an individual attempt was required to launch and design a telemedicine model properly step by step. The procedure from appointment to follow-ups has been schematized in Figure 1. This study was carried out following the Helsinki Declaration; it was approved by the Institutional Review Board (IRB) of Pamukkale University (Decision no: E-60116787-020-15395; Date: 02.02.2021).

After 8 months of that telemedicine practice, 484 patients have received healthcare support from the pulmonologist via telemedicine, and some were required to come to the hospital if either physical examination, laboratory/radiological testing or prescription was required, but some did not (1 in 3). All the procedures were free of charge except in-person visits to hospital. The follow-ups were also made by video consultations if appropriate. The main purpose was avoiding virus transmission risk by person-to-person contact as much as possible. With the aim of discovering the patient perspective about that technological method newly established by the physician, 30 patients were randomly chosen among these 484 patients and interviewed. The sample was limited to 30 patients, when the proper representativeness for this case study is achieved. The



**Figure 1.** The process of telemedicine is implemented individually and voluntarily in a pulmonary medicine out-patient clinic.

inclusion of the interviewees ended when the expressions started to repeat the previous ones. The characteristics of the interviewees (I) have been analyzed. The mean age was 51 years (range: 21 to 73). Females were slightly predominant (17 vs 13). In 13 patients, the reason for video consultation was COVID-19, additionally, two non-COVID patients had followed online for COVID-19 afterward. No in-person visit was required in seven patients while online follow-ups were sufficient in 11 patients. In two patients, hospitalization was suggested and organized at the end of the first online video consultation. Half of the interviewees were from the same city where the hospital located while the rest were from other districts or cities. The mean distance from the origin city was 96 km (range: 23 to 628 km).

A semi-structured questionnaire was used to deeply engage with the experiences and opinions of the interviewees. The pulmonologist –one of the researchers who performed the patient-physician video consultations – did not join the first part of the study that consists of online semi-structured interviews, transcription, and anonymization of the transcriptions of interviews to avoid conflict and to enable all interpretations to be said without hesitation by patients and relatives. During the interviews, voice recordings were made after getting informed consent verbally from each interviewee who already had volunteered to join the study. The voice recordings were transcribed anonymously by the researchers, and all the investigators –including the pulmonologist – worked together afterward. Phrases were classified thematically according to the contents of their discourse. Coding that would enable conceptual abstractions was made. Frequently used codes were analyzed in the main groups they designated.

Among the codes, the comparison of healthcare services in pre-pandemic and post-pandemic periods, the experiences through the online procedure, and the perception of the future of telemedicine were chosen to be discussed in this article. As a method of discussing the data obtained from the study, the results section has been enriched by positioning the data gathered from the field in the existing literature. However, the main discussion was spared in its own session to be done according to the related theoretical and investigational information.

## Results

- **Receiving healthcare support: Differences between pre- and post-pandemic periods (traditional care vs. telemedicine)**

To contextualize patients' perspectives through their own experiences of telemedicine during the pandemic, it is important to look at the impressions about the hospital admissions in these periods. From the first moment of the pandemic, the hospitals were changed by organizing COVID wards and throwing back the other issues because of putting all their

force into COVID-related works. Some clues related to the experiences of going to the hospital for getting healthcare were found among the interviewees' discourses. Main findings on receiving healthcare support between pre- and post-pandemic periods were summarized in Table 1. The comparison of traditional healthcare services was revealing almost no difference between before and after pandemic periods in the necessity to go to the hospital early in the morning to make an appointment on-site. One of the reasons was given as a disproportionate gap between applicants and the number of patients allowed to apply for each out-patient clinic. Although to see an academic doctor for medical evaluation even in public university hospitals is easier because of the simplicity of making appointments and shortness of waiting time, there is an obligation for an established payment.

*“Before the pandemic, for example, I had to leave my house at 4:30 a.m. to arrive at the hospital in the city. It takes 2 h by car to get to that hospital. So, it was obligatory to wake up very early to get a good place in the queue before the turn was up. Then the waiting would begin. According to our turn, we had to wait 10–30 min, even more, of course after the doctor started to see the patients.” I2*

*“I would go to the hospital, get my turn, wait for my turn, to be examined sometime, and the doctor would say the same things to me. It gives me a negative impression, a prejudice... For sure, it depends on the hospital.” I3*

*“It isn't different before or after a pandemic. You must spend all day seeing a doctor and testing, plus you face contagion risk. Unless you pay for a professor... I preferred that when I really had to go to the hospital because it would take a shorter time.” I5*

The pandemic period is the time of necessity for a strong and committed health workforce, characterized by healthcare professionals who attempt work that might be consuming and dangerous. The pre-hospital period should be well-organized from video consultation to triage and reaching the hospital should be in standardized official guidance in times of restrictions, and at last, patients should be aware of stepwise safety measures. Among lessons from the Ebola epidemic, health-system resilience has been defined as “the capacity of health actors, institutions, and populations to prepare for and effectively respond to crises, to maintain core functions when a crisis hits, and – informed by lessons learned during the crisis – to reorganize if conditions require it” (Kruk et al., 2015). Although one can find many articles about the previous disasters in the literature, it seems like every extraordinary event had to start almost from a ‘zero’ point in health or social aspects.

*“I couldn't get healthcare service at the hospital. Although I declared that I had two virus tests recently, I had been*

**Table 1.** The Main Findings on Receiving Healthcare Support Between pre- and Post-Pandemic Periods (Traditional and Telemedicine).

Result	Main findings		
<p><b>Receiving healthcare support: Differences between pre- and post-pandemic periods</b></p>	<p><b>Pre-pandemic:</b></p> <ul style="list-style-type: none"> <li>• Long travels to go to the hospital</li> <li>• Long waiting times for getting appointment and to see doctor at the hospital</li> <li>• Long waiting times for discussing test results with the doctor</li> <li>• No telemedicine was available</li> </ul>	<p><b>Post-pandemic (traditional):</b></p> <ul style="list-style-type: none"> <li>• Same as pre-pandemic, including facing high contagious risk</li> <li>• Chaotic effect of pandemic on hospital visits from application to getting prescription</li> <li>• Being treated for lung problems by specialists other than pulmonologists</li> <li>• Difficulties to reach healthcare support during the quarantine process</li> <li>• Difficulties to get healthcare service in some facilities because of suspicion of COVID-19</li> </ul>	<p><b>Post-pandemic (via telemedicine):</b></p> <ul style="list-style-type: none"> <li>• Chance to overcome the distance and time barriers that occur in accessing the hospital</li> <li>• Fast meetings with doctor, no long waiting time in hospital for test results</li> <li>• No interruption for other daily responsibilities</li> <li>• Same for the first online visit and follow-ups</li> <li>• Advantage for discussing all health data online by the doctor from personal health page</li> <li>• Consulting with the doctor remotely even during the quarantine process</li> <li>• Safety in managing patients with suspicion of COVID-19</li> </ul>

*ordered to take another test. Furthermore, I had to get a tomography even though I already had one. It was a private hospital. After evaluating the images of my tomography scan, the doctor said that I might have COVID, but he could not prescribe me a drug because of my heart disease. I left the hospital with empty hands as soon as I made the payment.” I1*

*“I’d be lying if I said I had good healthcare at the hospital. Although I had pulmonary problems, named as lung involvement of the COVID, I had been treated by doctors like an orthopedist, etc. I have been told that the chest physician checked my tomography and blood test results via the internet, then gave treatment guidance to my doctor.” I29*

There were also some expressions of interviewees which made indirect comparisons between being at the hospital and using telemedicine for healthcare in the pandemic period. Among them, the featured advantage of telemedicine is the opportunity to get the doctor’s advice fast and easily. In addition, no need for long waiting times for discussing the test results with the doctor has been repeated frequently. The connection via video consultation link is permanent after the first conversation unless one of the parties ended their own attendance voluntarily. It creates a two-way connection between doctor and patient to reach each other by writing messages or making a video call as whichever is needed. The opportunity of instant contact with a doctor was referred to as comfort while staying home alone and tussling with the symptoms.

*“In other times, I had to go repeatedly to show my test results to the doctor, even though it was normal. Leaving work, being divided in the process -in life flow-, going to the hospital, waiting for my turn, coming back to work or home... It is disturbing, and unsettling in pandemic conditions, but now I can talk with my doctor about the results from work or home on Skype and it takes only a few minutes. That’s easy and timesaving.” I16*

*“To go to the hospital for testing and waiting for the result had taken all day before, it was time consuming even though I lived close to the hospital. Now, if my doctor orders some tests after video talk, I go to the hospital and register, give the tests, and go wherever I want. After some hours I asked my doctor if the results were available. Then we chat about them, and I get the prescription my doctor signed electronically via my personal health system called e-Nabiz [name for governmental website for personal health data (meaning e-Pulse)].” I23*

*“I was alone at home during my quarantine. It raises fear and anxiety. You wonder about the direction of the process. I took medicine, it helped with my high fever, but after a while, it turned to a circle. It is really worrisome.” I3*

Telemedicine might give the opportunity to encounter the patient with COVID-19 suspicion after a detailed anamnesis in the safe environment of remote video consultation. Being highly contagious makes that disease threatening and to be avoided for healthcare workers, however, to preclude the suspected patient’s application to the hospital or emergency room without showing an alternative solution may cause more problems of contagion for the community. It has been indicated that the health system already invested in

telemedicine ensures that patients with COVID-19 receive the care they need (Hollander & Carr, 2020). It has been observed frequently in the interviewees' expressions.

*"They didn't allow me to enter the private hospital when I went there with a 40 Celsius degree fever. I begged to have some symptomatic treatment for my fever. When they explained the reason as COVID-19 suspicion, I felt desperate. I could apply to the emergency room after calling a friend who works there." I3*

*"My doctor has directed me to the emergency room after our conversation on the internet. She said that there was a suspicion of COVID. Her assistant helped me there and I could be hospitalized after the testing. Whereas just before that time, I could not get any help at another hospital that I transferred there by ambulance. I couldn't get information related to my test results even though I could check them from my personal health page, e-Nabiz." I20*

- ***The process as a technique: From appointment to the end of the video consultation***

Although technological change in the social field causes the evolution of technology by creating competition between new and old technologies (Coccia, 2021-b), this competition is not the only dynamic that affects implementation of a given new technology. Technologies are never isolated in a vacuum but embedded in and entangled with the sociopolitical context. The use of telemedicine in Turkey during the pandemic was not caused by the seemingly linear development of technology or was not a result of a competition between technologies; in contrast, the sociopolitical context that the pandemic has orchestrated, that is, the broader systematical problems in the healthcare service and unpreparedness of the system to a crisis were the main elements that have triggered the use of telemedicine.

In a context where the healthcare system cannot compensate for the risky environment created by the pandemic, digital applications open up a space for providing health services to patients who won't need a physical examination by avoiding distance and time restrictions (Peterson, 2022). Telemedicine enables patients to overcome the distance and time barriers that occur in accessing the hospital (Bashshur, 1995). In other words, the pandemic has increased the use of telemedicine by making it possible to receive health services through virtual health services and digital technologies, thus ensuring regular patient check-ups and follow-ups (Chen & Cheng, 2022). Compared to physical examinations, telemedicine applications provide the opportunity to receive treatment without going to the hospital, except for mandatory situations, which is a critical opportunity for the patients seeking for healthcare in a risky environment. Thus, in this system, it is possible to improve the access of patients who

have difficulty in accessing the hospital to healthcare (Brauer, 1992).

It is observed that the positive effect of eliminating the problems experienced in accessing the hospital for the patients as money and time savings was emphasized by many interviewees. In the telemedicine application, which is used by individuals with limited access to the physician, patients first make an appointment with the health institution providing telemedicine services, then are informed about the necessary procedures and meet with the physician at the pre-determined date and time. It was observed that the interviewees mostly did not experience any difficulties while entering the system because they had sufficient directives obtained from the university hospital's website about the service to be received before the video consultation. The main findings on the patients' perspective of telemedicine as a technical process from appointment to the end of the video consultation were summarized in Table 2.

*"100% different. So, you make an appointment, you go to the hospital and wait in line... But we start the treatment right here before we get too long. A huge advantage in terms of time and economy. Especially if you are uncomfortable, it is a different problem to go with traditional way." I24*

*"The instructions were very simple both when I made an appointment and when I entered the hospital's website. There everything was clearly written. But I learned from the first doctor that this is how it works. I didn't know before that there was such a distance treatment method. I had the first interview with the doctor, sharing it with me on Skype." I27*

Although the functioning of the health services provided by remote patient-physician meetings is not yet subject to a certain order, the widespread use of telemedicine, which has increased especially with the pandemic period, offers patients the opportunity to make face-to-face consultation in many cases, as well as distant diagnosis.

*"We met face-to-face online, and she said that other tests should be done to make a full diagnosis. That is why we went to be seen in-person and had my other tests done. My diagnosis was made face-to-face, not remotely. She called us to the hospital just by looking at that level of importance and she called us right away because she thought it was necessary." I2*

*"I was a little nervous when I first went. My doctor said, 'come the next day, let's do the tests again'. I went the next day, everything was ready already. I had my radiological examinations. I came back after seeing my doctor. After the results were reported, we connected over the internet and discussed them with my doctor. It has become much more comfortable. It is more advantageous to meet on the screen and get the results rather than going to the hospital." I22*

**Table 2.** The Main Findings on the Patients' Perspective of Telemedicine as a Technical Process from Appointment to the end of the Video Consultation.

Result	Step of the procedure	Main findings		
		Advantages	Experienced disadvantages	Hypothetical disadvantages
<b>The process as a technique: From appointment to the end of the video consultation</b>	Application	<ul style="list-style-type: none"> <li>Facilitating role of website guidance with sufficient directives</li> <li>Saving time and money</li> <li>Offering less travel in pandemic conditions</li> <li>Avoiding contagion risks that would raise by going to hospital</li> </ul>		
	Video consultation	<ul style="list-style-type: none"> <li>Spending more time in online than the traditional visits</li> <li>Reaching to a doctor online although living in distance places</li> <li>Opportunity to get advice from a doctor despite being quarantined</li> </ul>	<ul style="list-style-type: none"> <li>Keeping short and talking only about the most important issues</li> <li>Feeling uncomfortable while communicating through the small screen of a smartphone</li> </ul>	<ul style="list-style-type: none"> <li>Making the boundaries of the public-private sphere transparent</li> <li>Lack of physician's touch that would help to feel better</li> <li>Expressing themselves better in physical presence</li> </ul>
	Follow-ups	<ul style="list-style-type: none"> <li>No need to wait for the test results at the hospital</li> <li>Spending short time in the hospital when an in-person visit required.</li> </ul>		

The use of telemedicine emerges as a factor that opens up a new, and rather virtually mediated space of interaction between the physician and the patient, who may not have the chance of encounter in a physical space. Mainly the availability of physician seems to be a big advantage for the patients living out of the town and under quarantine. At the same time, with the sharp boundaries of the *public-private sphere* becoming transparent and intertwined, individuals have become more dependent on technology with the tendency to suppress the irregularities created by the crisis in the pandemic and re-establish their own order. Thus, with these boundaries becoming blurred, de-constructed and re-constructed, the telemedicine system changes the traditional patient-physician relationship, especially in its complexity and essentials (Bashshur et al., 2000). On the one hand, it has constructed a rather virtual point of contact for the patients who have never had a chance to have any virtual or physical contact with the physician, or even encounter them due to their locational or regional differences. On the other hand, physical contact, which is one of the main components of the patient-physician relationship, has now gained a different meaning. Therefore, telemedicine, as a remote interaction interface, paradoxically both reduced the contact between the patient and the physician in the conventional sense, and also expanded the possible contact universe by changing the very meaning of the concept of contact.

*“In this respect; you’re sitting at home, you’re stuck on something, you want to talk, you can instantly contact your doctor. I live out of town and it’s nice to be able to meet one-on-one in that sense.” I4*

An increase in the workload and transformation in working practices because of prevention measures and contagion risk associated with anxiety (Coronaphobia) (Asmundson & Taylor, 2020) could exaggerate the problems in health systems during the pandemic. It may result in a hesitation for the patients who need healthcare. With its use in the field of medicine, telemedicine has provided remote health services to patients with limited access to the hospital and reduced the risk of virus transmission by diminishing interpersonal interaction during the pandemic period (Bailo et al., 2022). In addition, due to the high risk of hospitals during the pandemic period, patient’s avoidance of the hospital decreases with the telemedicine system. Patients who can receive health services through a distant patient-physician meeting are called to the hospital after the meeting when deemed necessary, and physical examinations are performed. In this case, patients can have their examinations done in a very short time because they learn beforehand in the telemedicine what to do when they go to the hospital. Additionally, since they can learn the results again via video consultation instead of waiting in the hospital, they can return to their homes in a short time without waiting long hours there.

*“When we were going to the hospital to meet in-person, we were meeting with the doctor directly, and frankly, we were having the necessary examinations done. We didn’t waste any time. We stayed at the hospital for 10–15 min at most, got our work done, and then returned home. That is why the online meeting is very positive for us.” I9*

As a result of the rapid growth of technologies in the field of medicine, telemedicine has not only changed the traditional boundaries in health services but also caused the redesign of tasks (Allaert et al., 2019; Nouhi et al., 2012). Comprehending the effects of telemedicine applications, which have been used for many years and whose use is increasing due to the extraordinary situation brought about by the pandemic period on the patient-physician relationship and treatment process today, is an important inquiry to understand its sustainability for the future. In our interviews, three different views were identified regarding patient’s preference for prospective healthcare services: (1) those who prefer distant patient-physician meetings (in terms of facility of access to the doctor, the reflex of avoiding the hospital due to the pandemic, and time/travel/financial savings), (2) those who prefer physical examination (because of the comfort of the doctor’s touch and also they think that they can express themselves better physically) and (3) those who prefer both (after the necessary procedures are performed at the hospital, they want to continue treatment with the telemedicine).

*“Yes, I prefer to be examined remotely, but it’s a matter of gratitude. Even if you have a minor illness, when the doctor treats you, it seems like she saved your life. I would like to see the doctor with whom I have good communication once a month.” I27*

*“It wasn’t comfortable with the small screen of the telephone. Would it be better if it was larger? I don’t know. I didn’t like it. Possibly it is fine with people who do many things via the internet, not me. Even for shopping, I prefer to touch.” I24*

*“No, it did not affect my confidence, but meeting one-on-one (face-to-face) is of course different. For example, how can I say, at that moment she examines me, sees my condition, and we talk together. We’re talking about the results of my tests, what I should do. Everything becomes more detailed when in-person, of course.” I4*

*“It should be better to first meet online, give the necessary examinations to the hospital, and then meet online to talk about the results.” I9*

Telemedicine signifies a transformation on the whole relational matrix in the medical field compared to the conventional medical techniques. Such patient experiences revealed in this exploratory study, and which can be supported by follow-up studies are may have capacity to nourish the future implementations of telemedicine or



**Table 3.** The Main Findings on the Future of Telemedicine.

Result	Field of opinion	Main findings	
		Pro	Con
<b>The future of telemedicine: Should it be permanent, or would it disappear?</b>	Recommending telemedicine	<ul style="list-style-type: none"> <li>• Heard as a recommendation of a friend who had satisfied with video consultation</li> <li>• Already recommended to a family member or a friend</li> <li>• Yet no such a situation occurred, but if does, then he/she would recommend at that time</li> </ul>	NONE
	Routinization of telemedicine	<ul style="list-style-type: none"> <li>• Should be widespread, including all specializations</li> <li>• Would be available in the whole country, for all citizens' favors.</li> <li>• Helps to give priority to more severe patients at hospitals</li> </ul>	<ul style="list-style-type: none"> <li>• Depending on technical capability of patients</li> <li>• The doctor's professional skills should be advanced</li> <li>• Not sufficient except for follow-up visits</li> </ul>

hybrid applications that can be developed in the future, especially in terms of preparedness to a possible crisis.

- **The future of telemedicine: Should it be permanent, or would it disappear?**

The future of telemedicine can be reflected in relation to two topics: patients' behaviors on recommending that healthcare-seeking method to other people, and opinions about the widespread and continuing implementation of that alternative method in medicine. The indicators for the acceptance of telemedicine by the people who had searched for solutions to their health issues via that process during the pandemic period might be both their satisfaction expressed at interviews and the recommendation of this method to other people. The main findings on those topics were summarized in Table 3. Satisfaction can be built through effective patient-physician communication and by handling the health problem appropriately. Gross et al. (1998) have shown that the patient's satisfaction was increased remarkably by spending at least 15 min together in a medical visit including 'discussing non-medical topics not related to the current visit' besides talking about the findings from physical examination and results of laboratory tests at the end of the visit. They have also indicated that satisfaction of a patient was associated with adherence to treatment plans, better treatment outcomes, and continued enrollment with a physician and healthcare facility. That contentment is mutual since on the doctor's side it consists of doing the job properly with the scope of professional knowledge and principles. For providing such a positive result, meeting as patient and doctor in a 'safe' place should be free from the imposition of time constraints.

A quantitative study evaluating the perception of patients and doctors on telemedicine revealed that about 82% of the participants were satisfied with the treatment given through

telemedicine and they answered that they would recommend this method to their relatives and friends. In addition, 18% of patients were not satisfied with the treatment provided because they felt uncomfortable facing the camera and lack in-person face-to-face contact with the doctor (Acharya & Rai, 2016). In our study, almost all interviewees indicated that they had already recommended using telemedicine for the medical interview with their pulmonologist to their family members or friends, and some recipients of the recommendation had used it soon after. At the time of the study, there was no other doctor in the city, not only in the same specialization but also in any other branches of medicine. Nine months into the doctor's experience, some of the interviewees were already the ones who had been referred by their relatives. Very few others mentioned that the necessity to recommend to anyone had not arisen yet, but if it had, they would have recommended it strongly.

*"I recommended it to my wife, and she used it for her mother. She did not ask me for any further guidance about the way of appointment and meeting, except the name of my doctor. She found all the information by googling and could manage to make the connection with the doctor via the internet. It was so comfortable for them, too. For sure I want it for my mother especially in that period, but I would need to help her in every step because it requires some technical skills which my mother and possibly other elderly people might not have."* 13

*"Of course, we would recommend it. We are quite convinced. In fact, a friend of my brother told us first that he used that method to consult his radiological results that had been led by another doctor, and even without seeing the doctor physically, he was satisfied with the doctor's remarks."* 17

*"One of our neighbors who also had a problem with her chest heard that method from us, insomuch that all the neighbors heard about it. Most of them were trying to reach our doctor*

*and they did. They went to the hospital after meeting online once, as the doctor had asked for it, and then the controls continued via telemedicine.” I13*

The health system is a complex organization with its varied issues around health and disease, its wide spectrum of stakeholders, i.e., from individuals to public and from providers to policymakers, different types of set-ups, responsibilities differing from prevention to treatment. Furthermore, each part of that complex structure requires elaborate arrangements. Hage and Aiken (1970) discuss the social change in complex organizations according to a ‘four stages of choices that occur over time’ approach. Those stages are named *evaluation, initiation, implementation, and routinization*. COVID-19 Pandemic has accelerated the evaluation phase not only by urgent need to organize the health system according to the crisis conditions but also in the light of ‘huge but passive’ knowledge of previous experiences. The need for a change was clear and imposed itself even when the groundwork, mainly on the lack of legal regulations, awaited. Recently a call for policymakers was repeated as ‘helping legislation catch up with the technology’ by additional means of reimbursement for telemedicine (Kruse et al., 2017). Hollander and Carr (2020) pointed out the barriers to the implementation of telemedicine facilities mainly being related to payment, credentialing, and staffing of specialists.

After noticing the necessity for change, the next stages as initiation and implementation could likely contain a considerable amount of conflict (Hage & Aiken, 1970) which also makes it difficult for telemedicine despite the urgent need in a pandemic. Although it might not be convincing enough, some clusters performing telemedicine as personally tailored applications could help patients, other doctors, and decision-makers for visualizing both the technique and opportunities for better outcomes in healthcare. The ‘routinization’ may be encouraged by the feedback from the first implementation by pioneers.

According to the data from our study, the expressions about the routinization of telemedicine have accumulated in two groups: Opinions on extensive use and post-pandemic use of that method for a medical interview via video consultation as they were experienced previously. Interviewees were convinced that telemedicine via video consultation should be extended, though the propositions differed as an extension to other specialties, especially by the patient who has accompanying diseases, to the hospital, or to all countries. The reasons they stated were saving time, travel cost, and effort, avoiding unnecessary applications to the hospital, preventing the risk of infections by going to the hospital, and helping to set the priorities for example urgent or severe health problems. One of the expressions has touched on the non-COVID patients’ victimization, even to the point of resulting in death, because of fear or contagion of COVID-19.

*“That technique must be widespread one million percent. We live in the technology era. I believe it ought to be more than this. Time is so precious. Especially for doctors, they deal with lives.” I8*

*“It would be best if it were widespread in Turkey. It is so good for our citizens. No travel cost, no other expenses. You sit home and talk face-to-face to the doctor, even with professors, via your webcam. What more do we want? Even the remote physiological support of the doctor helps with the cure.” I13*

*“At least, we didn’t take other patient’s places, so they could continue with treatment. For example, many patients with heart disease who need urgent treatment can’t go to hospitals. People are frightened because of the pandemic. Some healthy people may get exposed to COVID-19 in the hospitals and some of them could die. In my opinion, telemedicine can prevent all those possibilities.” I18*

There were a few concerns among the interviewees’ expressions, one related to technologically incapable people, and three were emphasizing the dependence on the doctor’s professional skills. The effect of effective communication on patient satisfaction was already mentioned. In another study, the major issues that caused patients’ dissatisfaction were technical issues in 24% of patients and feeling uncomfortable in front of the camera and lack of physical presence, face-to-face contact with the doctor in 18% of patients (Acharya & Rai, 2016). In a study on orthopedic department, Kumar et al. (2020) found that the overall satisfaction-rate to telemedicine was 92%, and only 7.2% of patients had difficulty in understanding or following telemedicine-based advice. In our study, the interviewees put forth the importance of organizing a structured and standardized system that would serve for good clinical practice.

*“In fact, it is a good technique, but I am not sure if anybody could perform. It is hard for people who are not familiar with the technology. Although my parents use smartphones and social media, I have concerns about their competence for using that video conferencing program without my help.” I16*

*“It has to be common but in a healthy way. I think it will be better to create a well-structured combined system. It is prone to be fudged easily because there are so many patients in Turkey. You know, doctors can spare only 5, maximum 10 min for each patient in out-patient clinics. Actually, it is a good system when applied where suitable and in the proper way.” I7*

*“In fact, we use telemedicine via telephone calling with some doctors from private hospitals. Even though we made the payment, we were not satisfied. We would want telemedicine to become widespread, in the same way as my doctor did.” I25*

All except two interviewees declared that they were supportive of telemedicine becoming a common practice after the pandemic. Their reasons were mostly related to

time-saving, avoiding unnecessary travels, preventing crowding in hospitals, and guiding patients to appropriate healthcare units through effective forward-triage.

*“It ought to be continued after the pandemic. Because I need to travel 3 h for the farthest hospital, but I know people who travel 5–6 h for the same purpose. Remote access is very good for them, too.” I2*

*“It is not only the pandemic that causes waste of money and time by going to the hospital and waiting there unnecessarily, especially when the doctor might see no need for it. I6*

*“Remote video consultation is an advantage for patients who live far away or in disabling conditions. For example, my bed-ridden mother couldn’t go and wait in the hospital corridors, thanks to the doctor who helped us online and invited her directly to the in-patient clinic. After the pandemic, that system must continue completely in the same way.” I6*

Although the maintenance of it has been favored to use in most of the patients, there were equal numbers of thoughts on both suitability for first detailed medical interviews and follow-up visits.

*“It may prevent crowds in the hospital if a system consists of a preliminary online face-to-face interview, at the end prescription for the diagnosis featured, and again face-to-face video consultation one week later to control could be settled, especially for mild cases.” I15*

*“In my opinion, it will be very good for follow-up visits. It prevents waste of time and travel costs, and the patient can continue to work just after the interview. Since the disease is not diagnosed yet and some tests are required, the first visit may not be suitable for telemedicine.” I17*

The importance of the quality of an interview depending on the physician’s professional skills has been emphasized frequently by giving examples of the doctor whom they experienced. All interviewees were happy with their experience in that system of an individually implemented doctor for telemedicine.

*“It depends on the doctor, for sure I recommend my doctor to everybody, but it might not be the same with some other doctors” I17*

The opposing phrases were very rare. Two patients have related their opinions with personal preferences as below:

*“In a pandemic, we shouldn’t put the doctors at risk, but I prefer face-to-face, the physical presence when life is normal as before the Corona situation.” I29*

Thus, while the loss of physical contact is substituted for this virtual contact with good communication to a great

extent, for some interviewees, this new virtually mediated and indirect interaction points to an uncomfortable situation while sharing illness experiences. Physician’s touch and the necessity for the physical presence of the patient remain the motives for resistance.

## Discussion

Our qualitative study demonstrates that almost all the patients accept telemedicine as a manageable method for getting healthcare support. The flexibility of teleconsultation with the physician, at least by writing a message on the conversation and getting the reply soon, has established a sense of confidence. The physician’s approach is the main ingredient of building up trust in both the system and the process. Using the time efficiently, being in the patient’s own environment during a video consultation, time and money-saving, and avoiding the contagion risk and long waiting times of hospital are the advantages of telemedicine listed by most of the patients. A very few of the patients are feeling discomfort to be in front of the screen. Almost all patients and their relatives are applicants to suggest to other individuals the system they used and support the idea of being used in other specialties, in condition to be appropriate, and continuity after the pandemic period.

Telemedicine, which is seen as a precaution taken during the pandemic period due to the risky environment in hospitals, has played an important role in promoting remote patient-physician communication and reducing the transmission of the virus (Damico et al., 2021). Telemedicine applications can accelerate the transformative effect of technology in the field of medicine during the pandemic period. The fact that access to health institutions constitutes a risk factor creates anxiety in patients who want to receive health services. By making it possible to reduce unnecessary hospital admissions and hospital waiting times (Portnoy et al., 2020), telemedicine enables the increasing density in hospitals to be brought under control, so it appears as an alternative while receiving healthcare in this process. The model subjected to our study is only the one systematic telemedicine practice implemented voluntarily by the physician. Its alternative was waiting till the reimbursement was settled by the National Security System and widespread acceptance of telemedicine among the physicians and health authorities. It has been mentioned twelve years ago related to the use of Information and Communication Technologies in health systems, “the great majority of applications would appear to fall into the ‘pilot project’ category, with relatively short track records and high dependency on external technical and financial support” (Lucas, 2008). Extraordinary times may force some individuals to take initiative for pioneering attempts, but as a result of the same conditions, those attempts doom to remain as ‘pilot’ unless political decisiveness. At that point, it becomes more important to analyze the results of precursor applications and to define them as a

possible model in order to establish a dialog with policy-makers and providers, as well as the users.

In a review of previous studies, the reasons suggested for the high patient and provider satisfaction with telemedicine use have been indicated as easier access to specialists, reduced travel period, shorter waiting times for appointments, improved effectiveness, economic savings, and increased interaction with a specialist, accurate diagnoses, and personalized care, and the ability to address cultural issues (Whitten & Love, 2005). One of the highest scores for the patients' satisfaction for telemedicine experience was 98.3% with the given reasons of appointment scheduling, travel time, and patient involvement in the medical process. The authors also have given that in the previous studies on traditional non-telemedicine care have found up to 90% patients' satisfaction rate, mostly related with physician's communication style (Gustke et al., 2000). Since the physician's touch for customary examination of the patient is not valid in telemedicine, the components of effective communication as interest, empathy, non-judgmental attitude, etc. and involving the patients in the diagnosis and treatment processes by explaining and discussing the results have become especially important in terms of patient perception of the medical interview. Our study has shown that when a patient and physician agree to an in-person visit if required for physical examination, testing or treatment is an important factor that increases the patient's satisfaction. It has been expressed frequently that even the trust to be invited by the physician if necessary is sufficient to admit the suggestions.

Kruse et al. (2017) discuss that ease of use, tendency to improve outcomes and communication, and low cost are important components that motivate patients and providers about the use of telemedicine. Also, the advantages were pointed out as decreasing the travel time, wait time, and missed appointments; increasing communication with providers, quality of services, access to care, self-awareness, and improving outcomes, medical adherence, patients' management of their chronic conditions, and in the final analysis the public health. Our study consists of recent evidence to cover those expectations among the individual experiences which were specified in the interviewee's expressions.

The present study has produced the same results in anticipation of the future implementation of telemedicine via video consultation as the healthcare providers' perception study found (Jiménez-Rodríguez et al., 2020). Similar concerns about the technical difficulties for some patients, particularly the elderly ones, were emphasized in both. However, that perception has a minor effect on the opinion of patients about suitability for continuity after the pandemic among our interviewees. The future of telemedicine seems already at the door, widely opened during the COVID Pandemic. At these early stages, an approach that emphasize patient's perspective will contribute to establish a good clinical practice with telemedicine at the stages of *implementation* and *routinization*.

A medical interview with the most versatile diagnostic and therapeutic tool of the practicing physicians generates the clinical hypotheses that provide the basis for cost-effective utilization of the clinical laboratory and other diagnostic modalities (Lichstein, 1990). Giving enough time to the patients in a safe environment to talk about what they were experiencing is the key to build bridges between both the patient and the doctor, and complaint and diagnosis. Seeking for all usable clues from the medical history, participation of the patients in the diagnostic process, discussing the results in detail, and explaining the treatment plan to build patient's compliance are components of good clinical practice in medicine, and all of them require time as much as needed. Hybrid systems of online and in-person parts as appropriate or developing proper technological substitutes for steps that fail to satisfy might be the options. As Hollander and Carr mentioned "no telemedicine program can be created overnight" (2020), it seems an urgency to walk through the implementation strategies to catch up with the routinization phase (Hage & Aiken, 1970). Since the technological improvements make remote applications for some physical examination methods and laboratory testing, the proper diagnosis and following guidance for treatment would be possible widely in the near future. Telemedicine might be the phase that the medicine prepared insidiously not only for disasters, epidemics, etc. but also ordinary times. Besides, Coccia explains the higher mortality rates from COVID-19 in countries that keep the national lockdown period longer, by having a lower average level of healthcare expenditure or an older structure of population (2021-c). Therefore, it can be said that telemedicine can increase the probability of receiving health services even in societies with all kinds of disadvantages when it is combined with proper political interventions. The interviewees were selected randomly among the patients who had already found an opportunity, including the support from the relatives, to use telemedicine. This may be one of the limitations of the study. On the other hand, the aim of the study is to produce data on patients' perspectives who already had the experience since the reverse would not be meaningful. The familiarity and literacy of the internet and technology is an essential factor to be able to get healthcare support via telemedicine, as in relation to this, to be included in that study. In fact, the relatives who help the patient during the video consultation have supported them for online face-to-face interviews of the study. To reach the patients who failed to apply for telemedicine may be an issue of another study. Additionally, technology literacy and the digital divide are topics that should be handled at macro levels. However, the results of our study might be valuable to show the feasibility and effectiveness of a pioneering attempt as an alternative at times that the ideal conditions were not settled at the institutional level and to encourage future research about the subject as an exploratory study.

## Conclusion

As Zhou et al. (2021) addressed in detail, hospitals would consider the difference in medical consumption between the in-person and telemedicine modalities when making service decisions. An interesting finding of their study was the preference of hospital administrative to set greater in-person capacity but less telemedicine capacity in response to the outbreak of the pandemic under certain conditions even though it contradicts public beliefs. COVID-19 Pandemic might be a catalyst for transformations in the patient-physician relationship and healthcare experience via the use of telemedicine in healthcare support. McCoy et al. (2022) stated that the increasing use of telemedicine during the pandemic period leads health care to become more virtual care and it may be permanent after the epidemic is over. However, it seems more efforts need to be established to create confidence, and an atmosphere convenient for implementation and routinization before a new disaster occurs. Today, after a long time since its first definition, significant technological breakthrough appearance even as a possibility in the public sphere, opinions tend to polarize between optimists, who emphasize the potentialities of the new technology, and pessimists, who tend on the contrary to stress the difficulties and the potential barriers to the adoption of the new instrumentality (Nicolini, 2006). The limitation of our study is derived from the lack of attempt and decisiveness of both colleagues and authorities. The data was obtained only from one center and a single doctor's practice. There couldn't be a chance to make comparison between different experiences. It would be valuable to compare pre- and post-pandemic data obtained in relation to the patient perspective of telemedicine, but there was no implementation before the pandemic. We believe that the outcome of any new technology, including telemedicine is closely related to the political initiatives and decisions of the policy-makers. Studies that are nourished from the empirical findings, bringing the patient perspective to the fore and opening up a space to discuss the best alternative may become a guide for these political interventions.

Moreover, implementing and experiencing telemedicine in healthcare services, the physicians will take a chance to evaluate the outcomes (both clinical and patient's perspective) to define the principles of "good virtual care" (Brahmbhatt et al., 2021) which was adopted from the established traditional "good clinical care". Frankly evaluating the patients' experience will be the vital part of that challenge which will shape the future of telemedicine. Thus, potential disparities, the need for social policy regulations, perception of innovations, causalities and gains in a wide spectrum can be revealed. Since the pandemic has propagated from only one patient, the worldwide implementation (epidemic) of the telemedicine, 'technodemic/teledemic', might be catalyzed by following in the footsteps of the sporadic examples of decisiveness.

## Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

## ORCID iD

G Altinisik Ergur  <https://orcid.org/0000-0001-6869-1301>

## References

- Acharya R. V., & Rai J. J. (2016). Evaluation of patient and doctor perception toward the use of telemedicine in Apollo tele health services, India. *Journal of Family Medicine and Primary Care*, 5(4), 798-803. <http://doi.org/10.4103/2249-4863.201174>
- Allaert F., Quantin C., Piccardi P., & Legrand L. (2019). La Télémedecine deviendra coût efficace grace aux applications sur smartphone. *Cahiers du CEREN*, 52, 19-24. <https://hal.archives-ouvertes.fr/hal-02123144>.
- Ardito L., Coccia M., & Messeni Petruzzelli A. (2021). Technological exaptation and crisis management: evidence from COVID-19 outbreaks. *R&D Management*, 51(4), 381-392. <https://doi.org/10.1111/radm.12455>
- Askitas N., Tatsiramos K., & Verheyden B. (2021). Estimating worldwide effects of non-pharmaceutical interventions on COVID-19 incidence and population mobility patterns using a multiple-event study. *Scientific Reports*, 11(1), art. no. 1972. <https://doi.org/10.1038/s41598-021-81442-x>
- Asmundson G. J. G., & Taylor S. (2020). Coronaphobia: Fear and the 2019-nCoV outbreak. *Journal of Anxiety and Disorders*, 70, 102196. <https://doi.org/10.1016/j.janxdis.2020.102196>
- Bailo P., Gibelli F., Blandino A., Piccinini A., Ricci G., Sirignano A., & Zoja R. (2022). Telemedicine applications in the era of COVID-19: telesurgery issues. *International Journal of Environmental Research and Public Health*, 19(1), 323. <https://doi.org/10.3390/ijerph19010323>
- Bashshur R., Doarn C. R., Frenk J. M., Kvedar J. C., & Woolliscroft J. O. (2020). Telemedicine and the COVID-19 pandemic. *Lessons for the Future. Telemedicine and e- Health*, 26(5), 571-573. <https://doi.org/10.1089/tmj.2020.29040.rb>
- Bashshur R. L. (1995). Telemedicine effects: Cost, quality, and access. *Journal of Medical Systems*, 19(2), 81-91. <https://doi.org/10.1007/BF02257059>
- Bashshur R. L., Reardon T. G., & Shannon G. W. (2000). Telemedicine: A new health care delivery system. *Annual Review of Public Health*, 21(1), 613-637. <https://doi.org/10.1146/annurev.publhealth.21.1.613>
- Brahmbhatt D. H., Ross H. J., & Moayed Y. (2021). Digital technology application for improved responses to health care challenges: lessons learned from COVID-19. *The Canadian Journal of Cardiology*, 38(2), 279-291. <https://doi.org/10.1016/j.cjca.2021.11.014>
- Brauer G. (1992). Telehealth: The delayed revolution in health care. *Medical Progress Through Technology*, 18(3), 151-163.
- Brown N., & Webster A. (2004). *New medical technologies and society – reordering life*. Polity Press.

- Chen C.-H., & Cheng C.-M. (2022). Potential next-generation medications for self-administered platforms. *Journal of Controlled Release*, 342, 26-30. <https://doi.org/10.1016/j.jconrel.2021.12.028>
- Coccia M. (2019). A theory of classification and evolution of technologies within a generalized Darwinism. *Technology Analysis & Strategic Management*, 31(5), 517-531. <https://doi.org/10.1080/09537325.2018.1523385>
- Coccia M. (2021-b). Technological innovation. In Ritzer G., & Rojek C. (Eds.), *The blackwell encyclopedia of sociology*. John Wiley & Sons, Ltd. <https://doi.org/10.1002/9781405165518.wbeost011.pub2>
- Coccia M. (2021-a). Pandemic prevention: lessons from COVID-19. *Encyclopedia of COVID-19*, (1), 433-444. <https://doi.org/10.3390/encyclopedia1020036>
- Coccia M. (2021-c). The relation between length of lockdown, numbers of infected people and deaths of COVID-19, and economic growth of countries: lessons learned to cope with future pandemics similar to COVID-19. *Science of The Total Environment*, 145801. <https://doi.org/10.1016/j.scitotenv.2021.145801>
- Damico N. J., Dешane A., Kharouta M., Wu, A., Wang, G.-M., Machtay, M. X., Kumar, A., Choi, S., & Bhatt, A. D. (2021). Telemedicine use and satisfaction among radiation oncologists during the COVID-19 pandemic: evaluation of current trends and future opportunities. *Advances in Radiation Oncology*, 7(2), 100835. <https://doi.org/10.1016/j.adro.2021.100835>
- Gross D. A., Zyzanski S. J., Borawski E. A., Cebul R. D., & Stange K. C. (1998). Patient satisfaction with time spent with their physician. *Journal of Family Practice*, 47(2), 133-137. Erratum in: *Journal of Family Practice*, 47(4), 261.
- Gustke S. S., Balch D. C., West V. L., & Rogers L. O. (2000). Patient satisfaction with telemedicine. *Telemedicine and e-Health*, 6(1), 5-13. <http://doi.org/10.1089/107830200311806>
- Hage J., & Aiken M. (1970). *Social change in complex organizations*. Random House.
- Hawrysz L., Gierszewska G., & Bitkowska A. (2021). The research on patient satisfaction with remote healthcare prior to and during the COVID-19 pandemic. *International Journal of Environmental Research and Public Health*, 18(10), 5338. <https://doi.org/10.3390/ijerph18105338>
- Hofmann B., & Svenaeus F. (2018). How medical technologies shape the experience of illness. *Life Sciences, Society and Policy*, 14(1), 3. <https://doi.org/10.1186/s40504-018-0069-y>
- Hollander J. E., & Carr B. G. (2020). Virtually perfect? Telemedicine for COVID-19. *New England Journal of Medicine*, 382(18), 1679-1681. <https://doi.org/10.1056/NEJMp2003539>
- Jiménez-Rodríguez D., Santillán García A., Montoro Robles J., Rodríguez Salvador M. D. M., Muñoz Ronda F. J., & Arrogante O. (2020). Increase in video consultations during the COVID-19 pandemic: Healthcare professionals' perceptions about their implementation and adequate management. *International Journal of Environmental Research and Public Health*, 17(14), 5112. <https://doi.org/10.3390/ijerph17145112>
- Kruk M. E., Myers M., Varpilah S. T., & Dahn B. T. (2015). What is a resilient health system? Lessons from Ebola. *Lancet (London, England)*, 385(9980), 1910-1912. [https://doi.org/10.1016/S0140-6736\(15\)60755-3](https://doi.org/10.1016/S0140-6736(15)60755-3)
- Kruse C. S., Krowski N., Rodriguez B., Tran L., Vela J., & Brooks M. (2017). Telehealth and patient satisfaction: A systematic review and narrative analysis. *BMJ Open*, 7(8), e016242. <https://doi.org/10.1136/bmjopen-2017-016242>
- Kumar S., Kumar A., Kumar M., Kumar A., Arora R., & Sehrawat R. (2020). Feasibility of telemedicine in maintaining follow-up of orthopaedic patients and their satisfaction: A preliminary study. *Journal of Clinical Orthopaedics and Trauma*, 11(Suppl 5), S704-S710. <https://doi.org/10.1016/j.jcot.2020.07.026>
- Lichstein P. R. (1990). The medical interview. In Walker H. K., Hall W. D., & Hurst J. W. (Eds.), *Clinical methods: the history, physical, and laboratory examinations* (3rd edition, pp. 29-36). Butterworths. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK349/>.
- Lucas H. (2008). Information and communications technology for future health systems in developing countries. *Social Science and Medicine*, 66(10), 2122-2132. <https://doi.org/10.1016/j.socscimed.2008.01.033>
- McCoy J. L., Shaffer A. D., & Dohar J. E. (2022). Pediatric otolaryngology telemedicine amid a pandemic – and beyond. *International Journal of Pediatric Otorhinolaryngology*, 153, 111014. <https://doi.org/10.1016/j.ijporl.2021.111014>
- Monaghesh E., & Hajizadeh A. (2020). The role of telehealth during COVID-19 outbreak: A systematic review based on current evidence. *BMC Public Health*, 20(1), 1193. <https://doi.org/10.1186/s12889-020-09301-4>
- Nicolini D. (2006). The work to make telemedicine work: A social and articulative view. *Social Science and Medicine*, 62(11), 2754-2767. <https://doi.org/10.1016/j.socscimed.2005.11.001>
- Nouhi M., Fayaz-Bakhsh A., Mohammadi E., & Shafii M. (2012). Telemedicine and its potential impacts on reducing inequalities in access to health manpower. *Telemedicine and e-Health*, 18(8), 648-653. <https://doi.org/10.1089/tmj.2011.0242>
- Novara G., Checcucci E., Crestani A., Abrate A., Esperto F., Pavan N., & Ficarra V., & Research Urology Network (RUN). (2020). Telehealth in urology: A systematic review of the literature. How much can telemedicine be useful during and after the COVID-19 pandemic? *European Journal of Urology*, 78(6), 786-811. <https://doi.org/10.1016/j.eururo.2020.06.025>
- Orrange S., Patel A., Mack W. J., & Cassetta J. (2021). Patient satisfaction and trust in telemedicine during the COVID-19 pandemic: Retrospective observational study. *JMIR Human Factors*, 8(2), e28589. <https://doi.org/10.2196/28589>
- Peterson S. (2022). Digital physical therapy practice and payment during the COVID-19 pandemic: A case series. *Physiotherapy Theory and Practice*, 1-10. <https://doi.org/10.1080/09593985.2021.2021572>
- Portnoy J., Waller M., & Elliott T. (2020). Telemedicine in the era of COVID-19. *Journal of Allergy and Clinical Immunology in Practice*, 8(5), 1489-1491. <https://doi.org/10.1016/j.jaip.2020.03.008>
- Verbeek P.-P. (2005). *What things do: philosophical reflections on technology, agency, and design*. (R.P. Crease, trans.). Pennsylvania State Univ. Press.
- Vidal-Alaball J., Acosta-Roja R., Pastor Hernández N., Sanchez Luque U., Morrison D., Narejos Pérez S., & López Seguí F. (2020). Telemedicine in the face of the COVID-19 pandemic. *Atención Primaria*, 52(6), 418-422. <https://doi.org/10.1016/j.aprim.2020.04.003>

- Whitten P., & Love B. (2005). Patient and provider satisfaction with the use of telemedicine: Overview and rationale for cautious enthusiasm. *Journal of Postgraduate Medicine*, 51(4), 294-300. Available from: <https://www.jpgmonline.com/text.asp?2005/51/4/294/19243>.
- World Health Organization (WHO) (2020). WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020. <https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19—11-march-2020>. (Accessed: 28 January 2022).
- Yuan J., Li M., Lv G., & Lu Z. K. (2020). Monitoring transmissibility and mortality of COVID-19 in Europe. *International Journal of Infectious Diseases*, 95, 311-315. <https://doi.org/10.1016/j.ijid.2020.03.050>
- Zhou C., Hao Y., Lan Y., & Li W. (2021). To introduce or not? Strategic analysis of hospital operations with telemedicine. *European Journal of Operational Research*. <https://doi.org/10.1016/j.ejor.2021.12.020>