Digital health, telemedicine, and patient-centeredness: new trends for Italian healthcare after Covid-19

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The Covid-19 pandemic is generating disruptive changes in the healthcare sector, drastically transforming the functioning of its organizational arrangements. In the light of recent developments and the adoption of new digital technologies in the healthcare system, we aim at exploring new trends adopted within the Italian healthcare setting in response to the pandemic crisis. Specifically, through the methodology of Web Content Analysis, it is possible to identify the most relevant emerging healthcare responses to the Covid-19 pandemic, that is digital health, telemedicine, and patient-centeredness, that suggest a roadmap to follow within the healthcare system. Implications for theory and practice are discussed.

Keywords: Healthcare, Digital Health, Telemedicine, Patient-centeredness, Digitalization, Covid-19.

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Salute digitale, telemedicina e orientamento centrato sul paziente: nuove tendenze per la sanità italiana dopo il Covid-19

La pandemia da Covid-19 sta generando cambiamenti disruptivi nel settore sanitario, trasformando drasticamente il funzionamento dei suoi sistemi organizzativi. Alla luce degli sviluppi recenti e dell'adozione di nuove tecnologie digitali nel sistema sanitario, miriamo a esplorare nuove tendenze adottate nell'ambito della sanità italiana in risposta alla crisi pandemica. In particolare, attraverso la metodologia dell'Analisi dei Contenuti Web, è possibile identificare le risposte sanitarie emergenti più rilevanti alla pandemia da Covid-19, come la salute digitale, la telemedicina e l'orientamento centrato sul paziente, che suggeriscono una roadmap da seguire all'interno del sistema sanitario. Vengono discusse le implicazioni per la teoria e la pratica.

Parole chiave: sanità, salute digitale, telemedicina, centralità del paziente, digitalizzazione, Covid-19.

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S O M M A R I O

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1. Introduction

The Covid-19 pandemic is generating massive and sudden changes within organizations, impacting organizational systems in all contexts. Companies perceive the need to react quickly to the challenges by trying to diversify their business, invest in new products and/or new markets, and adopt highly innovative ways of doing business (Xie *et al.,* 2022). In addition, the health emergency has contributed to accelerating the digital transformation process, which is essential to cope with the emergency (Hai *et al.,* 2021). In fact, with the advent of recent technological developments – including online platforms, 3D printing technology, artificial intelligence (AI), virtual reality (VR) and augmented reality (AR) – digital innovation has been consolidated as a valuable resource, capable of transforming business and social networks and relationships with opportunities for openness, innovativeness, and growth.

During the health emergency, organizations have been forced to change their characteristics and organizational set-ups, thinking "out of the box" to accelerate innovation and provide answers in a situation of crisis and uncertainty (Al-Emran & Ehrenfeld, 2021). In addition, the deep changes generated by the pandemic have changed people's lifestyles and consumer habits, also affecting their interaction with healthcare providers and companies (Brodie *et al.*, 2021).

In Italy, the Covid-19 pandemic has put great pressure on all aspects of the healthcare system. Since 2020, the costs resulting from systematic and systemic shortcomings relating to health protection, but also and above all to the organizational systems adopted, have been highlighted (Bohnett *et al.,* 2022). To cope with a situation characterized by volatility, uncertainty, complexity, and ambiguity, the Italian healthcare industry has faced a total "restructuring" that has affected several areas and numerous projects, revolving around key words such as innovation, communication, and customer experience (Velotti & Murphy, 2020).

This study contributes to research and practice in at least two ways. First, since there are not many studies analyzing new trends implemented in healthcare in Italy in response to the Covid-19 crisis, despite the perceived need for such work, this study seeks to identify, through extensive analysis and research on the web, a series of new emerging trends capable of representing the current state of the Italian healthcare industry and prospects, while exploring meanings, approaches, and new connections. It may be very important to investigate the phenomenon further. Indeed, analyzing new trends in the Italian healthcare industry can help governments, health agencies, and policy makers design a roadmap to follow in response to a crisis.

Thus, the research questions guiding this study are:

1) How has the Covid-19 pandemic impacted the operation, structure, and organization of the Italian healthcare industry?
2) What are the trends capable of representing the current state of the Italian healthcare industry and prospects?

2. How Covid-19 has impacted the Italian healthcare industry

During 2020, the Covid-19 epidemic spread to such an extent that it became

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the most severe pandemic in the last century (Ciotti *et al.,* 2020; Jose *et al.*, 2021). The health crisis originating from the pandemic has in turn caused a severe economic crisis, which will have major consequences for the present and future well-being of people and society. The health shock caused by Covid-19 highlighted the various latent fragilities in health systems even before the epidemic began. By the end of October 2020, more than 7 million people have been infected and 220,000 have died from Covid-19 in EU countries, Iceland, Norway, Switzerland, and the United Kingdom. During the first wave of the pandemic, the virus particularly affected some Western European countries, especially Belgium, France, Italy, the Netherlands, Spain, the United Kingdom, and Sweden. However, starting in August 2020, the virus began to spread more widely throughout the rest of Europe (Borio, 2020). To reduce the pressure on existing health facilities, hospitals dedicated to Covid-19 patients have been set up; at the same time, countless research efforts have been initiated to identify effective treatments and safe vaccines. From the beginning, the virus seemed to be very contagious; this prompted the governments of the affected countries to apply social distancing as the main measure capable of slowing the spread of the virus (Ashraf & Goodell, 2022). In Europe, the first measures taken in this regard were the suspension of flights to and from China, which was followed by the closure of schools, restrictions on the free movement of people even within national borders, the suspension of public events, and the closure of various non-essential production activities (the so-called "lockdown") (Liu *et al.*, 2022).

The Covid-19 pandemic has been described by the Italian government as "an unprecedented shock", "an event of an extraordinary nature", and "the most difficult crisis the country has [experienced] since the Second World War", in the words of the Prime Minister Giuseppe Conte in 2020. From the impact observed in the first phase of the emergency, the health emergency seems to have arisen suddenly, surprising the civil society, local and national governments, and even international organizations and public health experts that were largely unprepared (Bosa *et al.*, 2022).

More specifically, the crisis has laid bare the weaknesses of the Italian healthcare industry related to the lack of foresight in social and health policy choices (Vicentini & Galanti, 2021). Over the years, there has been a search for economic efficiency; however, interventions have predominantly focused on savings while neglecting the effects that poor investments aimed at the health of the population can generate indirectly in terms of social and economic costs, through people's quality of life (Mauro & Giancotti, 2021). In particular, this emergency has underscored the need to reorganize and support with greater resources the role of the territory and local institutions that could have contained, in the initial phase of the pandemic, the excess demand for care, avoiding having it poured into hospital facilities, unprepared to cope with such a high number of admissions of Covid-19 patients in the acute phase (Magnavita *et al.,* 2020). Moreover, this issue is inextricably linked to the decentralized organization of public health in Italy among the different regions, which have moved in dealing

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with the emergency in very different ways and not always in harmony with the central government's directions (Capano & Lippi, 2021). In addition, the Covid-19 pandemic has strongly highlighted the role of technologies within the healthcare system, driving organizations to increase the use of a variety of technological solutions to support prevention, treatment, and care processes (Budd *et al.,* 2020; Chandra *et al.,* 2022; Iyengar *et al.,* 2020). Although progress in this direction has been declared essential for years, it has never really been perceived as a necessity. In fact, before Covid-19 pandemic, the use of technology as a support for the Italian healthcare industry was scarcely widespread, and often reserved for exceptional cases (Armocida *et al.,* 2020). Therefore, the Italian healthcare sector, which more than ever has shown its shortcomings during the health emergency, needs to be redesigned in a more responsive way in the face of crisis situations, to provide more accessible services to all citizens (Raimo *et al.,* 2023). Here, the use of technology represents a valuable support which is trying to facilitate and regulate the digitization process of the entire healthcare system.

The staggering impact that Covid-19 has had on society and the economy has thus abruptly brought the issue of public health back to the center of the political agenda. Covid-19 mortality reflects a clear social gradient, a further sad testament to the absolute importance of the social determinants of health. The Covid-19 pandemic has highlighted the pressing need to include health system resilience among the key dimensions of health system performance assessment, on par with accessibility, quality of care and efficiency. In particular, the emergency has shown all the limitations of Italian healthcare and produced a very heavy, disruptive, and unexpected pressure on health facilities, on the protection of the most fragile categories of users, on continuity of care for chronic and disabled patients, on screening programs, and in terms of psychological well-being and prevention of psycho-social distress (Saglietto *et al.,* 2020).

In 2020, there were more than 1.3 million fewer hospitalizations than in 2019, including urgent admissions. Surgical activity saw an 80 percent decrease, emergency activity a 35 percent decrease, and oncology surgery admissions a 13 percent decrease.

Providing an overall assessment of countries' responses to Covid-19 is difficult at this time, as the pandemic is still ongoing around the world. European countries struggled to varying degrees to respond to the first two waves of the pandemic during the spring and fall of 2020, respectively. All the fragilities of the National Health System (NHS) that have emerged with the pandemic, in order to be adequately addressed and managed, require a systems approach, involving all stakeholders in the healthcare sector, from policy makers, managers, and healthcare professionals to citizens. To this end, this study proposes to investigate the effects and impact that the Covid-19 pandemic has generated at the organizational level in the Italian healthcare industry.

3. Method

3.1. The Web Content Analysis methodology

This exploratory study adopts a methodology based on Web Content Anal-

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ysis (WebCA) (Kim & Kuljis, 2010). This methodological process consists of researching and analyzing data published on various digital sites and channels to define and analyze a phenomenon of interest.

The origin of this widely used technique dates back to World War II, when researchers from the Allied forces set out to study the amount and types of popular songs broadcast by European radio stations (Wimmer & Dominick, 2013). By comparing the music broadcast by German radio stations with that of the countries of occupied Europe, the researchers were able to establish with some accuracy changes in the movements of German troops on the continent.

Although scholars have defined content analysis in different ways, Kerlinger's (1986) defined it as a systematic, objective, and quantitative determinant method of studying and analyzing communication messages with the purpose of measuring certain variables. This definition implies three basic concepts.

First, content analysis must be systematic, both in selecting the sample and in conducting the actual analysis. Sample selection must follow established procedures, and each item must have a fair chance of being included in the sample. In addition, during the analysis all the content under examination must be treated exactly the same way. To ensure that the evaluation is also conducted in a systematic manner, only one set of guidelines should be used throughout the study.

Second, the content analysis must be objective. Although perfect objectivity is unattainable, it is still possible to have operational definitions and rules for classifying variables that are as explicit and comprehensive as possible, so that another researcher repeating the same process can reach the same conclusions. Thus, a set of criteria and procedures must be established that clearly explain the sampling and categorization methods employed.

Third, the content analysis must be quantitative. That is, the method must quantify the message in a way that allows for accurate conclusions. Quantification makes it possible for researchers to summarize their findings in order to present them concisely. It also allows for the use of statistical tools that can be useful in interpretation and analysis. However, simply counting may not always be sufficient to arrive at certain conclusions.

3.2. Data collection and analysis

The content analysis carried out in this study followed the nine steps suggested by Wimmer and Dominick (2013) in order to ensure maximum accuracy and objectivity in the analysis. Specifically, the steps were as follows:

1) *Formulating the research question*. As with any other form of research, in content analysis it is necessary to be clear about a hypothesis or research question, which generally matures after a careful review of existing literature on the topic. A well-formulated research hypothesis facilitates the development of accurate and meaningful content categories, which in turn help to produce valuable data. In particular, this WebCA was oriented to identify the new trends adopted by healthcare organizations in Italy to cope with the crisis due to the Covid-19 pandemic.

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2) *Define the population under consideration*. As a second step, the boundaries of the content under consideration were established, and this step required an appropriate definition of the targeted portion of the population. Before deciding on that population, the context was defined by considering two dimensions: the topical area to be studied and the time period for the study.
3) *Selecting a sample*. The most commonly used sampling technique in content analysis is the multilevel technique (De Wever *et al.,* 2007). The researcher first selects a set of sources (newspapers, magazines, websites, etc.) and then selects certain data (e.g., certain issues of a newspaper or magazine). With this two-level selection, the researcher can arrive at a more easily manageable amount of data for analysis. This study analyzed the websites of the Local Health Authorities and hospital organizations in Italy, as well as newspaper articles and decisions of the Regional Council focusing on the pandemic crisis and the consequent re-engineering of the structures and reorganization of the services offered.
4) *Selecting the unit of analysis*. Following a gradual process of trial and error and refinement, we arrived at the unit of analysis of the study.
5) *Building the content categories of the analysis*. Next, following a comparison among researchers, the data were classified according to certain mutually exclusive, exhaustive, and reliable content categories.
6) *Establishing a quantitative approach*. Although quantification in content analysis may require all four levels of measurement expected in social science research, only three are usually employed: nominal, interval, and proportional. Nominal measurements allow the researcher to simply count the frequency of units in each content category. Since this is a superficial measurement, interval measurement must be added to give more depth and complexity to the analysis. Rating scales, however, introduce an element of subjectivity into the coding process.
7) *Coding content*. The process of classifying a unit of analysis within a certain content category is called coding and is performed by coders. In this content analysis, two coders worked on the coding process, and to make the analysis more reliable, both coders underwent some preparation sessions during which they familiarized themselves with the definitions and units of analysis and practiced coding procedures. Moreover, to make coding easier and more reliable, the present analysis made use of standardized preprints similar to the questionnaires used in surveys.
8) *Analyzing the data*. Like surveys, content analysis requires statistical analysis, the type of which depends on the research objectives. The most interesting data in line with the research objective were uploaded on an online software for qualitative analysis (Dedoose), after which two study authors independently coded the data, highlighting recurring themes according to an inductive/abductive process. Subsequently, the generated codes were compared by engaging in a discussion when disagree-

ments emerged. Cohen's κ coefficient – a statistic for qualitative categorical analysis that assesses inter-rater reliability – was used to estimate the level of agreement between the coders, following an iterative approach (Locke, 2001) and continuously iterating between the data and the emerging conceptualizations. By comparing codes and engaging in discussion when disagreements emerged, the raters reached a final consensus with a value of κ=.85, reflecting excellent agreement between them. Subsequently, patterns were discerned in the data, with the aim of bringing out concepts and relationships and then formulating them in theoretically relevant terms. Once all the relevant first-order codes/terms and second-order concepts/themes were identified, they were assembled into 3 macro-themes, which represent the findings of the study. Here are the codes that were identified:

- Fist-order codes/terms: growing investment in healthcare marketing, need to streamline communication between health facilities and citizens, need to simplify booking systems, introduction of electronic health record and mobile apps in the health field, deployment of digital therapies, use of precision medicine, patient journey, increased patient's empowerment and information, Digital Twin, increased focus on security and protection of health data; respect for preferences, values, cultural traditions of the patient;
- Second-order codes/terms: use of extended reality and artificial intelligence (AI) in healthcare, introduction of e-prescribing systems and healthcare chatbots, use of patient-facing tools, patient involvement, personalized healthcare;
- Aggregate theoretic dimensions: Digital health, telemedicine, and patient-centeredness.

9) *Interpreting the results*. It is in the interpretation of the results that a researcher's creativity and originality are revealed. In addition to presenting the results of the research in a clear and coherent manner, it is necessary to show that they add something new and significant to the existing literature on the subject. Therefore, in this last stage of the process, the authors returned to their study of the literature to demonstrate how their results prove or disprove existing knowledge.
   The next section presents the results of the study.

4. Emerging trends for the Italian healthcare industry

Based on the content analysis, it is possible to identify three key themes related to the Italian healthcare industry in response to the Covid-19 pandemic: digital health, telemedicine, and patient-centeredness (Fig. 1).

4.1. Digital health

The health emergency and the subsequent closure of economic activities put technological innovation and digitalization at the center of the debate. Online platforms have connected different actors, linking internal and external resources, creating a system where users, universities, suppliers, and government agencies can collabo-

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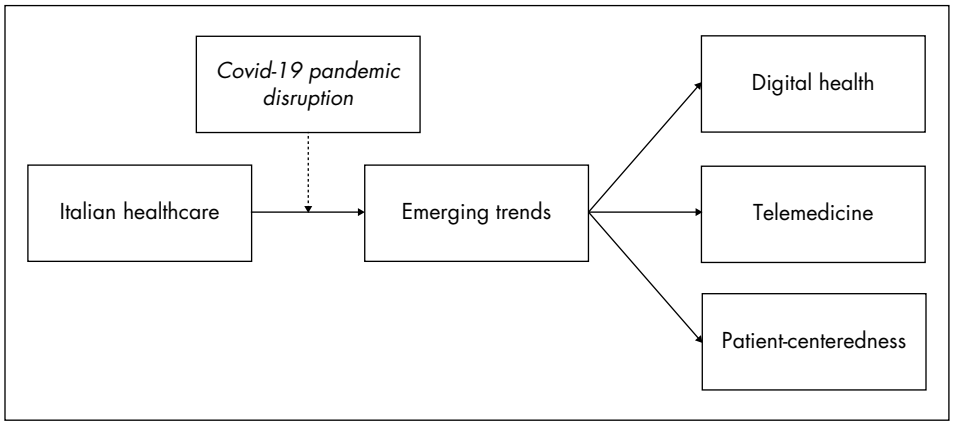

Fig. 1
Emerging trends for the Italian healthcare industry

rate and co-create knowledge and innovation (Hensen *et al.*, 2021; Panda & Mohapatra, 2021).

The concept of digital health concerns the application of digital technologies to support innovation in the health system to make service delivery more effective, speed up communication between health facilities and citizens, simplify booking systems, and facilitate other improvements (Mathews *et al.*, 2019). It also concerns the rethinking of new organizational networks (see BasheeruddinAsdaq *et al.*, 2021; Taylor *et al.*, 2021), necessary to react effectively in response to a crisis, such as the Covid-19 pandemic.

Through the analysis of healthcare strategies at a national level, it emerged that digital health represents a market full of opportunities in which every change is driven by new technologies, generating effective ideas and solutions in response to the Covid-19 crisis.

The WebCA showed that numerous disruptive innovations have been introduced in the Italian healthcare industry during the health emergency, including app-based contact tracing systems, ward robotics, digital booking systems using QR codes, and artificial intelligence (AI)-based temperature scanning (see Almel *et al.,* 2022; El-Sherif *et al.,* 2022; Sriramalakshmi *et al.,* 2022; Tanwar *et al.*, 2022). Thanks to the application of Industry 4.0 technologies, including AI, IoT, big data, 3D printing, virtual reality (VR) and augmented reality (AR), digital services within Italian hospitals have developed (Avanzo *et al.,* 2021; Ercole, 2021).

From this perspective, our results focus on the use of VR and AR in medicine, with various applications in services dedicated to health, from care to diagnostics to therapy. VR (i.e., the ability to generate virtual environments) sees particularly effective applications in the management of acute and chronic pain, post-traumatic disorders, eating disorders, rehabilitation, anxiety disorders, and autism. Developments along these lines are also expected in the field of medical care, with the creation of virtual medical offices (Cannavale *et al.,* 2022).

Moreover, in the field of AR (i.e., physical environments implemented by digital media), uses are being developed that move in the direction of

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new developments for the management and treatment of diseases related especially to the ophthalmic and rehabilitation fields (Butcher, & Hussain, 2022).

In defining the application areas of digital health in Italian healthcare, we are helped by the "Connected Care" model (Mann & Lawrence, 2022). It represents the ecosystem that allows the patient to access health information through integrated digital platforms and to share this information with all the actors involved in the care process (physicians and nurses, community and home health workers, pharmacies, insurance companies, etc.). Similarly, the different actors who come into contact with the patient are also connected to each other and have the patient's medical history available so as to support them in decision making.

Our analysis shows that the current spending in digital health still has wide margins for growth. However, aided by the pandemic that has highlighted the critical issues in Italian healthcare, a growth trend is noted that looks poised to continue, thanks in part to the funds provided by the PNRR (Muzzi & Panà, 2022).

However, new digital skills are needed among health professionals and citizens so that they can consciously take advantage of the potential of technological tools, as well as an adequate governance system to help overcome discrepancies at the local and regional levels.

4.2. Telemedicine

Among the emerging trends in digital healthcare, telemedicine has brought an innovative change in the physician-patient relationship (Haleem *et al.,* 2021).

Our results from WebCA show how the Covid-19 pandemic has accelerated the development of telemedicine as a permanent medical trend. Remote consultations, online therapy, and video consultations are all examples of the growing popularity of virtual healthcare.

The health emergency has exposed physicians and patients to the use of telemedicine tools to make up for the inability to conduct medical consultations physically in the hospital. Evidence from the healthcare industry shows a huge increase in the use of telemedicine in 2020-2021, because healthcare providers and patients were looking for secure way to access healthcare services during the pandemic (Pandey *et al.*, 2021).

Through the analysis of healthcare strategies at a national level, it emerged that telemedicine within Italian hospitals has developed; this is due in large part to the fact that online medical consultations do not require complex technological tools, but it outlines a real change in mindset.

In fact, a series of protocols and IT platforms are being developed in the Italian healthcare industry to deliver the services provided by telemedicine (e.g., telehealth, telemonitoring/teleconsultation, telehealth) in a safe manner, as required by the regulations; the goal is to offer these services as a possible supplement to the traditional physical visit and eventually integrate them officially into the Essential Levels of Care.

As suggested by the results of our analysis, this is a trend that is unlikely to be reversed with the end of the pandemic crisis, while new applications and new infrastructure will allow for consolidation and systematization of telemedi-

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cine offerings, enabling their more secure and widespread adoption. The remote doctor–patient interaction accessible from anywhere will be one of the biggest technological advances in long-term patient pathway management. This is because remote patient monitoring supports medical enterprises to reduce outlays of time and money (Wijesooriya *et al.*, 2020).

Evidence from the healthcare industry suggests that in the post Covid-19 era, a hybrid healthcare service may take hold and emerge in which, thanks to the acceleration of digital technology, telemedicine will continuously provide healthcare services in an efficient manner (Lee & Lee, 2021; Nittari *et al.,* 2022).

An even more interesting aspect noted by the analysis concerns the evolution of telemedicine. In fact, from being used almost exclusively for urgent care, there has been a shift to a digital care which is also oriented toward hybrid modalities that integrate physical visits with virtual visits (van Der Schaar *et al.*, 2021).

In the long term, it is possible to imagine an intelligent healthcare industry based on digital traceability, data analysis and remote monitoring, artificial intelligence-based patient care, smart hospitals with connectivity features, real-time responses, flexibility, and precision on a large scale (Avanzo *et al.*, 2021).

4.3. Patient-centeredness

The profound changes caused by the Covid-19 pandemic have changed people's lifestyles and consumer habits, affecting their interaction with healthcare providers and organizations. Evidence from the healthcare industry suggests that more than before, the patient is at the center of it, and everything revolves around concepts such as innovation, communication, and patient experience (Rose *et al.*, 2022).

Healthcare organizations will have to deploy a new integrated approach that is increasingly patient-centered and supported by innovative and interactive technologies and platforms. Patient-centered care means "*respect for and attention to the patient's needs, preferences and values, which will guide every clinical decision*" (IOM, www.iom.edu).

The modern patient is a key player in a journey in which it is essential to pay special attention to both his or her physical and spiritual needs. Such a patient is asking for listening, caring, and simplifying access to medical care. Increasingly, today we hear about the "patient journey" (McCarthy *et al.*, 2016), which is a patient's experience during his or her care. Today's focus on the patient experience comes from the current trend of viewing the user as the real target of health care, but precisely not thinking only of the process of recovery from illness but meaning a broader concept.

Our WebCA results suggest that in order to be competitive, healthcare professionals need to and are beginning to consider patients as real customers (Wang *et al.*, 2022).

As a result, they are working to improve the overall healthcare experience and build patient loyalty. Mapping the patient journey enables healthcare professionals to gain a better understanding of the patient experience. This allows them to find new ways to improve their service by creating a targeted and personalized experience (Kim *et al.* 2022).

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A patient-centered ecosystem can be established by offering monitoring, targeted treatments, and personalized advice, as well as targeted communications that allow patients – or potential patients – to be reached (Key *et al.*, 2021).

Through the analysis of healthcare policies at a national level, it emerged that the approach to healthcare changes when patients are looking for information or want to book a medical service. In general, the evolution of the customer experience leads to increasingly fluid experiences in which the user is expected to move between different physical and digital channels, so healthcare organizations are moving toward a multichannel approach. Thus, tools and technologies that improve the patient experience will increasingly be critical to the success of healthcare organizations (Gualandi *et al.*, 2021).

What this means for the patient is the ability to use offline and online channels in an omnichannel approach. Our analysis shows that even in healthcare marketing, a successful strategy cannot ignore a multichannel approach involving as many touchpoints as possible. The goal of such an approach is to be better prepared to meet the needs of potential new users whenever they are looking for useful information and resources (Parker *et al.*, 2020), thanks to an increasingly advanced technology that facilitates and supports this research.

Above all, our analysis shows that successful services will be those that can combine with an approach of transparency and trust toward patients, including through communication (Mintzberg, 2018).

5. Theoretical and practical implications

Some theoretical and practical implications emerge from the results of this study. The spread of the Covid-19 pandemic has radically changed many aspects of people's daily lives around the world. For almost two months, Italy found itself in an unprecedented condition of quarantine, unable to move freely from home to carry out all routine activities.

The devastating impact that the pandemic has had in Italy is partly related to certain epidemiological characteristics of the population, such as a very high average age and a high number of frail patients, but mainly to certain fragilities in the healthcare system.

Good organization of a healthcare system is a crucial element in ensuring safe and effective care for the population (Adinolfi & Borgonovi, 2018). The pandemic has shown that healthcare with scarce resources and without good organization is particularly fragile.

This study highlights the importance of certain issues in stimulating change in the Italian healthcare industry.

First, it is important to accelerate the use of digital health services, which are now the key to competitiveness for healthcare organizations. If, therefore, the emergency has prepared and accustomed citizens to some extent to turn to the Internet for activities that were previously only done in person, it is also true that the road to digitization of healthcare and the transition to e-health still has a long way to go and remains fraught with obstacles. In particular, one of the main problems associated with the digitization of healthcare is that more than a quarter of Italian physicians currently don't

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receive structured and formal training regarding the use of digital technologies. This highlights the need to establish pathways that reduce the digital device of healthcare professionals through courses aimed at educating and promoting the best operational and strategic approaches. During the health emergency, the Internet was a key support and tool. Thanks to the Internet, in fact, it was possible to access services and information that previously did not exist or were little known. It is an essential lever for enhancing the ability of healthcare companies to play a growing role in international markets. With digitization, the way of communication for a healthcare organization change. Digital transformation brings several benefits, such as simplifying access to information, improving business processes, and strengthening competitive advantage. Thus, given the increasing role that technology will play in the future of healthcare, it is critical that physicians and patients have full confidence in the use of digital health service and that no one is excluded. As a next step, leaders across the health system will need to agree on how to fund innovation, decide which technologies are most effective and create a robust IT infrastructure, but also which partners to choose to provide safe, secure, and equitable access to both the technologies and the data they generate.

A digital health ecosystem is a combination of resources working together, taking advantage of emerging applications and technologies to unify different types of data (e.g., administrative, test results, etc.) collected from clinics, laboratories, or any type of medical testing through laboratory or hospital information systems (LIS/HIS). Actionable insights (obtained by combining the data) can be displayed on computer dashboards or on an application where the physician can view contextualized medical information about the individual. Over time, the digital health ecosystem will build a repository of knowledge and insights that can help increase the effectiveness of personalized healthcare for patients and disease management and prevention measures across the population.

Consequently, our study emphasizes the importance of telemedicine as one of the most innovative and interesting applications in digital health. We are referring to healthcare services delivered through information technology, in situations where the health professional and the patient (or two professionals) are not in the same place (e.g., tele-consultation, tele-monitoring, tele-visit, etc.).

Through this modality, it is possible to securely transmit medical information and data for the purpose of prevention, diagnosis, treatment, and subsequent follow-up of patients. However, while it is true that telemedicine services are assimilated to any diagnostic/therapeutic health service, they do not replace traditional healthcare delivery but rather complement it to improve its effectiveness and efficiency. With the pandemic, telemedicine has emerged as a key tool to ensure continuity of care, a factor that has led to an evolution of the legislation about it and an increase in its use by physicians and patients. However, factors such as age, educational status, income levels, and geographical origin of users may influence digital health literacy, preventing effective use of digital

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health services. Therefore, from a practical view, the task of governments is to improve citizens' digital health literacy and allocate funds to provide patients with appropriate digital tools. Finally, another important challenge is a cultural one in which health professionals must adopt a new approach based on the centrality of the patient and marked by the sharing of clinical information and its transparent management. As show by our results, the main directions of organizational change in healthcare concern the adoption of patient-centeredness, designing care pathways that are more targeted to patients' health problems and adopting a holistic approach to care with strong integration of specialized knowledge. Many healthcare organizations are following these trajectories of change.

Relationships between healthcare providers and patients are thus being transformed. Special emphasis is placed precisely on the patient, who becomes an individual endowed with knowledge, skills, and awareness that enable him or her (in whole or in part) to empower in relation to his or her own health, as part of a new process in which the healthcare professional can become, at the patient's discretion, a facilitator operating no longer within a relationship of authority but rather within one of partnership.

Today there is a debate about how to reorganize the NHS: certainly, more resources need to be allocated to increase staffing levels, modernize infrastructure, and employ state-of-the-art technologies. At the same time, it is necessary to invest in organizational models that are able to respond more effectively to new (and old) health problems. Therefore, identifying the dominant trends in the Italian healthcare industry following the Covid-19 pandemic can help governments, health agencies, and policy makers design a roadmap to follow in response to a crisis.

However, one cannot help but observe some resistance to change, especially on the part of health professionals. Often, new organizational models are adopted without proper communication and without providing for appropriate reskilling interventions. In these cases, change generates distrust in organizational members, who thus tend to perceive the new models as ineffective structures. Consequently, change will be formally adopted but not actually implemented through a renewal of individual and collective behaviors.

As shown by our study, it is critically important to review networks and relationships in healthcare. The overall reform of health services is a complex and ambitious project, but it can succeed if perspectives are changed, and goals and direction indicators are adjusted. Readjustment of functions and responsibilities among health professions, as well as adopted organizational models and networks, appears urgent.

6. Conclusions

The Covid-19 pandemic has highlighted the lack of technological tools and healthcare personnel with specialized skills in the face of exponential patient growth.

This contribution highlights how digital health and patient-centeredness implemented in the Italian healthcare sector in response to the Covid-19 emergency may suggest some trends and a roadmap to follow.

First, thanks to digital technologies, healthcare organizations can effective-

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ly solve concrete problems. Italy has suffered from low investment in digital health, well below the European average, so it needs a real technological, infrastructural, and cultural revolution.

The world we experience in our everyday lives is rapidly evolving from paper-based to digital, and the use of cloud-based platforms and applications with encrypted technologies can make health data more understandable, comprehensive, and easily accessible only to the people who need it, where they need it, such as patients and the health professionals who treat them. This becomes possible with the creation of secure digital systems across a range of care delivery points within a community, connecting patients with health professionals working in clinics, labs, and hospitals.

In the health sector, more than in other sectors, digital innovation is facilitating and strengthening disintermediation processes that strongly affect the physician–patient relationship. Indeed, digital tools enable patients to seek information or monitor their health status independently, while helping physicians to grow and improve professionally or have a more direct relationship with patients themselves. These examples show that in the age of digital health, patients and physicians are at the center of communication activities at different stages of prevention, diagnosis, and treatment.

The first and most important driver of this transition is the growing interest in telemedicine solutions. The pandemic has exposed physicians and patients to the use of telemedicine tools to cope with the inability to conduct consultations – even routine ones – physically. In light of the profound changes that Covid-19 has brought to the entire healthcare industry in Italy, the use of telemedicine tools has enabled – and will continue to enable – responses to specific problems and needs, as well as improved communications within the healthcare community and in relationships with patients.

Finally, this study highlights the importance of patient-centeredness. Health is becoming more accessible by pushing traditional healthcare companies to innovate, especially considering the patient's point of view above all. The involvement of citizens and the participation of patients in the treatment and rehabilitation processes increase their trust and compliance with the proposed therapies, increase their sense of responsibility in the use of services, and determine the commitment of the health care organization to improving the quality of healthcare provision.

This study has some limitations, including the fact that it focuses exclusively on the Italian reality, without taking into consideration the international context, and the fact that the choice of methodology adopted excludes the possibility of actually talking to key actors through questionnaires or qualitative surveys in order to discern any hidden transformation processes not identified in this paper. For example, better than anyone else, physicians are able to perceive discrepancies between resource use, need, and availability and show great interest in digitization and resource management. It would also be interesting to know the level of citizens' and patients' knowledge and use of digital technologies. Future research

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could explore these issues in greater depth to provide a more comprehensive view of the post-pandemic healthcare organization.

The pandemic is quickly modifying business models and organizational systems, generating considerable upheaval within organizations. Redesigning business models and value chains, rethinking how markets are accessed, and rewriting customer interaction flows are just some of the challenges that companies in every sector face in converting to digital quickly and effectively.

In conclusion, it seems essential for healthcare organizations to understand and make use of technologies and to know how to modify their own supply chains in the context of a crisis. Only in this way will organizations be able to react effectively to unforeseen shocks and achieve long-term resilience.

REFERENCES

Adinolfi P., & Borgonovi E. (2018). *The myths of health care*. Switzerland: Springer International Publishing AG.

Al-Emran M., & Ehrenfeld J. M. (2021). Breaking out of the box: Wearable technology applications for detecting the spread of COVID-19. *Journal of Medical Systems*, *45*(2): 1-2. DOI: 10.1007/s10916-020-01697-1.

Almel S., Kesavan S., & Muralidhar B. S. (2022). NextGen Smart Healthcare Systems: Solution for Mitigating Crisis. In: *Future Role of Sustainable Innovative Technologies in Crisis Management* (pp. 214-239). IGI Global.

Armocida B., Formenti B., Ussai S., Palestra F., & Missoni E. (2020). The Italian health system and the COVID-19 challenge. *The Lancet Public Health*, 5(5), e253. DOI: 10.1016/S2468-2667(20)30074-8.

Ashraf B. N., & Goodell J. W. (2022). COVID-19 social distancing measures and economic growth: Distinguishing short-and long-term effects. *Finance Research Letters*, 47, 102639. DOI: 10.1016/j.frl.2021.102639.

Avanzo M., Porzio M., Lorenzon L., Milan L., Sghedoni R., Russo G., ... & Mettivier G. (2021). Artificial intelligence applications in medical imaging: A review of the medical physics research in Italy *Physica Medica*, *83*: 221-241. DOI: 10.1016/j.ejmp.2021.04.010.

BasheeruddinAsdaq S. M., Naveen N. R., Gunturu L. N., Pamayyagari K., Abdullah I., Sreeharsha N., & Alanazi A. A. (2021). Wireless Networking-Driven Healthcare Approaches in Combating COVID-19. *BioMed Research International*, *2021*. DOI: 10.1155/2021/9195965.

Bohnett E., Vacca R., Hu Y., Hulse D., & Varda D. (2022). Resilience and fragmentation in healthcare coalitions: The link between resource contributions and centrality in health-related interorganizational networks. *Social Networks*, *71*: 87-95. DOI: 10.1016/j.socnet.2022.07.004.

Borio C. (2020). The Covid-19 economic crisis: Dangerously unique. *Business Economics*, 55(4): 181-190. DOI: 10.1057/s11369-020-00184-2.

Bosa I., Castelli A., Castelli M., Ciani O., Compagni A., Galizzi M. M., & Vainieri M. (2022). Response to COVID-19: was Italy (un) prepared?. *Health Economics, Policy and Law*, 17(1): 1-13. DOI: 10.1017/S1744133121000141.

Brodie R. J., Ranjan K. R., Verreynne M. L., Jiang Y., & Previte J. (2021). Coronavirus crisis and health care. *Journal of Service Theory and Practice*, *31*(2): 225-246. DOI: 10.1108/JSTP-07-2020-0178.

Budd J., Miller B. S., Manning E. M., Lampos V., Zhuang M., Edelstein M., & McKendry R. A. (2020). Digital technologies in the public-health response to COVID-19. *Nature medicine*, 26(8):

MECOSAN – ISSN 1121-6921, ISSNe 2384-8804, 2023, 125 DOI: 10.3280/mesa2023-125oa16840

1183-1192. DOI: 10.1038/s41591-020-1011-4.

Butcher C. J., & Hussain W. (2022). Digital healthcare: the future. *Future Healthcare Journal, 9*(2): 113-117. DOI: 10.7861/fhj.2022-0046.

Cannavale C., Tammaro A. E., Leone D., & Schiavone F. (2022). Innovation adoption in inter-organizational healthcare networks – the role of artificial intelligence. *European Journal of Innovation Management, 25*(6): 758-774. DOI: 10.1108/EJIM-08-2021-0378.

Capano G., & Lippi A. (2021). Decentralization, policy capacities, and varieties of first health response to the COVID-19 outbreak: Evidence from three regions in Italy. *Journal of European Public Policy*, 28(8): 1197-1218. DOI: 10.1080/13501763.2021.1942156.

Chandra M., Kumar K., Thakur P., Chattopadhyaya S., Alam F., & Kumar S. (2022). Digital technologies, healthcare and COVID-19: Insights from developing and emerging nations. *Health and Technology*, 12(2): 547-568. DOI: 10.1007/s12553-022-00650-1.

Ciotti M., Ciccozzi M., Terrinoni A., Jiang W. C., Wang C. B., & Bernardini S. (2020). The COVID-19 pandemic. *Critical reviews in clinical laboratory sciences*, 57(6): 365-388. DOI: 10.1080/10408363.2020.1783198.

De Wever B., Van Keer H., Schellens T., & Valcke M. (2007). Applying multilevel modelling to content analysis data: Methodological issues in the study of role assignment in asynchronous discussion groups. *Learning and Instruction, 17*(4): 436-447. DOI: 10.1016/j.learninstruc.2007.04.001.

El-Sherif D. M., Abouzid M., Elzarif M. T., Ahmed A. A., Albakri A., & Alshehri M. M. (2022). Telehealth and Artificial Intelligence insights into healthcare during the COVID-19 pandemic. *Healthcare*, 10(2): 385. MDPI. DOI: 10.3390/healthcare10020385.

Ferrigno G., & Cucino V. (2021). Innovating and transforming during COVID-19: insights from Italian firms. *R&D Management*, 51(4): 325-338. DOI: 10.1111/radm.12469.

Granstrand O., & Holgersson M. (2020). Innovation ecosystems: A conceptual review and a new definition. *Technovation, 90*, 102098. DOI: 10.1016/j.technovation.2019.102098.

Grizzle D., Goodin A., & Robinson S. E. (2020). Connecting with New Partners in COVID-19 Response. *Public Administration Review, 80*(4): 629-633. DOI: 10.1111/puar.13247.

Gualandi R., Masella C., Piredda M., Ercoli M., & Tartaglini D. (2021). What does the patient have to say? Valuing the patient experience to improve the patient journey. *BMC health services research*, 21(1): 1-12. DOI: 10.1186/s12913-021-06341-3.

Hai T. N., Van Q. N., & Thi Tuyet M. N. (2021). Digital transformation: Opportunities and challenges for leaders in the emerging countries in response to COVID-19 pandemic. *Emerging Science Journal, 5*: 21-36. DOI: 10.28991/esj-2021-SPER-03.

Haleem A., Javaid M., Singh R. P., & Suman R. (2021). Telemedicine for healthcare: Capabilities, features, barriers, and applications. *Sensors International*, 2. DOI: 10.1016/j.sintl.2021.100117.

Hensen B., Mackworth-Young C. R. S., Simwinga M., Abdelmagid N., Banda J., Mavodza C. & Weiss H. A. (2021). Remote data collection for public health research in a COVID-19 era: ethical implications, challenges and opportunities. *Health Policy and Planning, 36*(3): 360-368. DOI: 10.1093/heapol/czaa158.

Ho W. R., Maghazei O., & Netland T. H. (2022). Understanding manufacturing repurposing: a multiple-case study of ad hoc healthcare product production during COVID-19. *Operations Management Research*, 1-13. DOI: 10.1007/s12063-022-00297-1.

Iyengar K., Mabrouk A., Jain V. K., Venkatesan A., & Vaishya R. (2020). Learning opportunities from COVID-19 and future effects on health care system. Diabetes & Metabolic Syndrome. *Clinical Research & Reviews*, 14(5): 943-946. DOI: 10.1016/j.dsx.2020.06.036.

Jahan M., Hu Y., Yeboah K., & Stahley J. (2021). Modifying "Manufacturing Processes" Laboratory for Online/Hybrid Learning Due to COVID-19. In *ASME International Mechanical Engineering Congress and Exposition*, Vol. 85659, V009T09A052. DOI: 10.1115/IMECE2021-70797.

Jose R., Narendran M., Bindu A., Beevi N., Manju L., & Benny P. V. (2021). Public perception and preparedness for the pandemic COVID 19: a health belief model approach. *Clinical epidemiology and global health*, 9: 41-46. DOI: 10.1016/j.cegh.2020.06.009.

Kapucu N., & Ustun Y. (2018). Collaborative crisis management and leadership in the public sector. *International Journal of Public Administration, 41*(7): 548-561. DOI: 10.1080/01900692.2017.1280819.

Kerlinger F. N. (1986). *Foundations of behavioural research*. New York: Holt, Rinehart and Winston.

Key T., Kulkarni A., Kandhari V., Jawad Z., Hughes A., & Mohanty K. (2021). The patient experience of inpatient care during the COVID-19 pandemic: exploring patient perceptions, communication, and quality of care at a university teaching hospital in the United Kingdom. *Journal of patient experience*, 8, 2374373521997742. DOI: 10.1177/2374373521997742.

Kim E. J., Nam I. C., & Koo Y. R. (2022). Reframing Patient Experience Approaches and Methods

to Achieve Patient-Centeredness in Healthcare: Scoping Review. *International Journal of Environmental Research and Public Health*, 19(15), 9163. DOI: 10.3390/ijerph19159163.

Kim I., & Kuljis J. (2010). Applying content analysis to web-based content. *Journal of Computing and Information Technology*, *18*(4): 369-375. DOI: 10.2498/cit.1001924.

Kumari M. C., & Sagar B. (2020). Global pandemic and rapid new product development of medical products. *Digital Government: Research and Practice*, *2*(2): 1-38. DOI: 10.1145/3428492.

Lee S. M., & Lee D. (2021). Opportunities and challenges for contactless healthcare services in the post-COVID-19 Era. *Technological Forecasting and Social Change*, *167*, 120712. DOI: 10.1016/j.techfore.2021.120712.

Liu J., Shahab Y., & Hoque H. (2022). Government response measures and public trust during the COVID-19 pandemic: Evidence from around the world. *British Journal of Management*, 33(2): 571-602. DOI: 10.1111/1467-8551.12577.

Liu W., Beltagui A., & Ye S. (2021). Accelerated innovation through repurposing: exaptation of design and manufacturing in response to COVID-19. *R&D Management*, *51*(4): 410-426. DOI: 10.1177/2F00081256211056651.

Liu Z., Shi Y., & Yang B. (2022). Open innovation in times of crisis: An overview of the healthcare sector in response to the COVID-19 Pandemic. *Journal of Open Innovation: Technology, Market, and Complexity*, *8*(1): 21-36. DOI: 10.3390/joitmc8010021.

Locke K.D. (2001). *Grounded theory in management research*. London, UK: Sage.

López-Gómez C., Corsini L., Leal-Ayala D., & Fokeer S. (2020). *COVID-19 critical supplies: The manufacturing repurposing challenge*. United Nations Industrial Development Organization.

Lynch S. E., & Mors M. L. (2019). Strategy implementation and organizational change: How formal reorganization affects professional networks. *Long Range Planning*, *52*(2): 255-270. DOI: 10.1016/j.lrp.2018.02.003.

Magnavita N., Sacco A., & Chirico F. (2020). Early COVID-19 pandemic response in Italy: pros and cons. *Zdrowie Publiczne i Zarządzanie*, (1): 32-35. DOI: 10.4467/20842627OZ.20.002.12656.

Mann D. M., & Lawrence K. (2022). Reimagining connected care in the era of digital medicine. *JMIR mHealth and uHealth*, 10(4), e34483. DOI: 10.2196/34483.

Martinez M. A. (2021). Lack of effectiveness of repurposed drugs for COVID-19 treatment. *Frontiers in Immunology*, *12*, 635371. DOI: 10.3389/fimmu.2021.635371.

Mathews S. C., McShea M. J., Hanley C. L., Ravitz A., Labrique A. B., & Cohen A. B. (2019). Digital health: a path to validation. *NPJ digital medicine*, 2(1): 1-9. DOI: 10.1038/s41746-019-0111-3.

Mauro M., & Giancotti M. (2021). Italian responses to the COVID-19 emergency: Overthrowing 30 years of health reforms?. *Health policy*, 125(4): 548-552. DOI: 10.1016/j.healthpol.2020.12.015.

Mintzberg H. (2018). Managing the myths of health care. In *The Myths of Health Care*. Springer.

Muzzi A., & Panà A. (2022). The "redisorganisation" of the Italian Healthcare Service. *Igiene e Sanità Pubblica*, 78(1): 4-6.

Nittari G., Savva D., Tomassoni D., Tayebati S. K., & Amenta F. (2022). Telemedicine in the COVID-19 Era: A Narrative Review Based on Current Evidence. *International Journal of Environmental Research and Public Health*, *19*(9), 5101. DOI: 10.3390/ijerph19095101.

Panda A., & Mohapatra S. (2021). Online healthcare practices and associated stakeholders: review of literature for future research agenda. *Vikalpa*, *46*(2): 71-85. DOI: 10.1177/2F02560909211025361.

Pandey J., Gupta M., Behl A., Pereira V., Budhwar P., Varma A., ... & Kukreja P. (2021). Technology-enabled knowledge management for community healthcare workers: The effects of knowledge sharing and knowledge hiding. *Journal of Business Research*, 135: 787-799. DOI: 10.1016/j.jbusres.2021.07.001.

Parker F., Sawczuk H., Ganjkhanloo F., Ahmadi F., & Ghobadi K. (2020). Optimal resource and demand redistribution for healthcare systems under stress from COVID-19. *arXiv preprint arXiv, 2011.03528*. DOI: 10.48550/arXiv.2011.03528.

Raimo N., De Turi I., Albergo F., & Vitolla F. (2023). The drivers of the digital transformation in the healthcare industry: An empirical analysis in Italian hospitals. *Technovation*, 121, 102558. DOI: 10.1016/j.technovation.2022.102558.

Rose G. L., Bonnell L. N., O'Rourke-Lavoie J. B., van Eeghen C., Reynolds P., Pomeroy D., & Littenberg B. (2022). Development and validation of the patient centeredness index for primary care. *Journal of Clinical Nursing*. DOI: 10.1111/jocn.16177.

Saglietto A., D'Ascenzo F., Zoccai G. B., & De Ferrari G. M. (2020). COVID-19 in Europe: the Italian lesson. *The Lancet*, 395(10230): 1110-1111. DOI: 10.1016/S0140-6736(20)30690-5.

Scholl I., Zill J. M., Härter M., & Dirmaier J. (2014). An integrative model of patient-centeredness – a systematic review and concept analysis.

PloS one, *9*(9), e107828. DOI: 10.1371/journal.pone.0107828.

Sriramalakshmi P., Vondivillu S. T., & Govind A. S. K. (2022). Role of IoT, AI, and Big Data Analytics in Healthcare Industry. In *Transformation in Healthcare with Emerging Technologies,* 19-43. Chapman and Hall/CRC. DOI: 10.1201/9781003201960-2.

Tanwar R., Balamurugan S., Saini R. K., Bharti V., & Chithaluru P. (2022). *Advanced Healthcare Systems: Empowering Physicians with IoT-Enabled Technologies*. John Wiley & Sons.

Taylor A., Caffery L. J., Gesesew H. A., King A., Bassal A. R., Ford K., ... & Ward P. R. (2021). How Australian health care services adapted to telehealth during the COVID-19 pandemic: a survey of telehealth professionals. *Frontiers in public health*, *9*, 648009. DOI: 10.3389/fpubh.2021.648009.

van Der Schaar M., Alaa A. M., Floto A., Gimson A., Scholtes S., Wood A., ... & Ercole A. (2021). How artificial intelligence and machine learning can help healthcare systems respond to COVID-19. *Machine Learning*, *110*(1): 1-14. DOI: 10.1007/s10994-020-05928-x.

Velotti L., & Murphy P. (2020). Service and value co-production and co-creation in emergency services and emergency management. *International Journal of Emergency Services*, *9*(1): 1-7. DOI: 10.1108/IJES-05-2020-069.

Vicentini G., & Galanti M. T. (2021). Italy, the sick man of Europe: Policy response, experts and public opinion in the first phase of Covid-19. *South European Society and Politics*, 1-27. DOI: 10.1080/13608746.2021.1940582.

Wang C. X., Vogel C. M., & Wahab S. A. (2022). Healthcare Design Practice for Humanizing the Patient Journey. *Service Design Practices for Healthcare Innovation* (pp. 253-267). Cham.: Springer.

Wijesooriya N. R., Mishra V., Brand P. L., & Rubin B. K. (2020). COVID-19 and telehealth, education, and research adaptations. *Paediatric Respiratory Reviews*, *35*: 38-42. DOI: 10.1016/j.prrv.2020.06.009.

Wimmer R. D., & Dominick J. R. (2013). *Mass media research*. Cengage learning.

Xie X., Wu Y., Palacios-Marqués D., & Ribeiro-Navarrete S. (2022). Business networks and organizational resilience capacity in the digital age during COVID-19: A perspective utilizing organizational information processing theory. *Technological Forecasting and Social Change*, 177, 121548. DOI: 10.1016/j.techfore.2022.121548.