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Chapter

Perspective Chapter: The Challenges of the Relationship between Doctors and Patients in the Digital Age

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Abstract

Remote healthcare is rapidly evolving with the integration of various technologies, including 5G and 6G connectivity, which will play a crucial role in the next generation of healthcare. This study aims to identify the challenges in the doctor-patient relationship in the digital age, focusing on whether digitalization improves clinical care and increases patient proximity. The methodology involves a literature review, summarizing key articles, and discussing the results. The findings suggest a shift in the patient's role from passive assistance to active consumption of health information, promoting greater involvement in health maintenance and care. It is suggested that health professionals and patients should be educated to overcome communication barriers and encourage the correct use of the internet for medical assistance. The study's methodology includes a narrative review of literature and a summary table of key articles.

Keywords: challengers, communication, internet, healthcare, doctor-patient relationship, medical informatics

1. Introduction

The world of new technologies is changing markedly and its drastic change could influence healthcare. Medical services such as diagnostics, prevention, or decision-making are the main domains to become more efficient due to digitalization [1].

Likewise, innovations relating to the various activities of doctors on the internet provide great benefits for patients in understanding their health problems and, at the same time, supporting medical assistance in a more automated way. In this context, online consultations, digital medical records, diagnoses, interventions, and treatments, which are an integral part of daily hospital life, make the doctor-patient relationship easier [2]. According to Graefen [3], the term electronic health includes several applications with possibilities made available by modern information and communication technologies, which means that using digital technologies, doctors can support healthcare for their patients.

However, digitalization and health represent two concepts that cannot be separated, both sectors are representative of a social transformation that we are currently going through, and that contributes to new challenges. In recent decades, it has been clarified that digitalization plays an essential and permanent role in the health system [4].

In most studies in the literature [5], it is implicit that physicians believe that digitalization can have a very significant impact on the doctor-patient relationship, through easy access to health services and information through the internet. Faced with this change, it is important to find out if personalized service at the digital level can also be patient-centric, just like face-to-face care, as it represents a different environment.

Considering the theoretical assumptions presented, this study aims to identify the main challenges of the relationship between doctors and patients in the digital age. To which the following questions were raised:

- Does digitalization enable better clinical care and greater proximity to the patient in clinical areas?
- What is the empirical evidence from the research developed to better understand the aspects of digital change, transformation, and transition in healthcare, particularly in the doctor-patient relationship?

The methodology implemented involves a narrative review of the literature with the presentation of a summary table of the most important articles on the subject, which will then be made a discussion of the results of these studies.

This study can be carried out to evaluate the impact of patients' attitudes toward the digital health environment on their behaviors and health outcomes and, mainly, contribute to the development of better education programs and awareness campaigns for the doctor-patient relationship.

2. Theoretical framework

2.1 New remote assistance services in healthcare

In the medical field, the adoption of new technologies must be precise and effective, as this process changes the form of medical intervention that is already implemented [6].

Literature studies have shown that doctors may present some resistance in adopting changes in their daily practice routine and in their relationship with patients, namely, they may have doubts, rejections, and some distrust regarding the way some patients act [7].

The development of technologies in remote healthcare is multifaceted and is developing very rapidly. Over the years, a variety of technologies have been integrated to monitor and provide help to patients. Future 5G and 6G connectivity will play an essential role in the health of the next generation of care. About 5G technology, it can be said that it provides services and connects a diverse set of devices in a secure, reliable, and timely manner [8].

Similarly, the Internet of Things (IoT) has also played a very significant role in healthcare in general and remote care in particular, leading to the specific concept of the Internet of Medical Things (IoMT) [9].

Remote healthcare is based on the use of modern, state-of-the-art information, and communication technologies that allow formal and informal caregivers and doctors to remotely monitor and assist their patients, keeping them safe. Remote health through systems and devices integrates sensors used by the user and which sometimes sends timely alerts to a monitoring center in case of the occurrence of problematic events with the patient [10].

The main benefits of using remote healthcare systems by medical professionals include improving the quality of life for patients and professionals, reducing stress levels, and reducing the costs of the care and triage process [11].

2.2 Physicians' decision-making on the adoption of new technologies and products

In the literature, there is a set of studies that include theoretical approaches to understand why and how new technologies are adopted in the workplace, and each of these approaches prioritizes a specific factor of technology, depending on which theory originates. In this regard, Liberati et al. [12] identified four main approaches to the use of new technologies: the engineering approach, the cognitive-behavioral approach, the organizational approach, and the social approach.

The ability to provide high-standard quality care is an essential value in the medical field, suggesting a sense of professional pride and identity that is crucial for professionals committing to a career in healthcare [13].

It is important to note that doctors should be encouraged to adopt available technologies. However, many physicians take a long time to make the decision to adopt new technologies in their relationship with patients. In this sense, the reluctance of physicians to adopt new technologies is due to their skills, attitudes, and personal characteristics, such as age and training. In fact, continuing medical education can encourage its adoption.

The education program has a very positive effect and is also positively associated with the number of patients and the fraction of physicians who have adopted this type of technology.

2.3 Digitalization as an enabler of better clinical care and greater proximity to the patient

Today, patients are increasingly accessing digital healthcare, and new technologies and services have created great opportunities for medical knowledge to be disseminated across the new digital frontier and through many avenues of care delivery.

Patients and doctors, throughout the digital transformation process, have demonstrated their support for an integrated model of care, in a holistic and patient-centered system, whose main objective is to facilitate effective and clear communication between them. In this sense, integrated care enables the joint treatment of physical and mental aspects of health, allowing healthcare to move from reactive to preventive [14].

Many studies in the literature recommend that patients be involved from the beginning of the development process of their healthcare process and highlight the need to integrate the patient's voice into the design of digital health technologies.

Personalized care seeks to give patients themselves choice and control over how their care is planned and delivered, based on what matters most and their individual

needs. The shift to personalization in the digital healthcare environment allows patients to be involved in the decision-making process about their health and take an increasingly active role in their treatment.

In the context of digital technology, personalization relates to the process of adapting the user experience of a digital platform, product, or service to specific needs, preferences, behaviors, and characteristics, while involving the use of data and algorithms for the creation of personalized content, recommendations, and interactions [15].

The study by Piras and Miele [15] explored the relationship of digital proximity between doctors and patients, compared to decades past, and often, doctors were emotionally detached from patients so that they could treat them appropriately. The authors concluded that with the emergence of the patient-centered standard and personalization, it was more difficult to treat patients by interpreting clinical data alone.

3. Methodological study

The methodological study to support the literature review represents a systematic review with the implementation of 7 articles published through the databases Science Direct, PubMed, The EPPI-Centre, Cochrane. In this sense, systematic reviews can be used in studies for decision-making and results in many areas such as health, which are based on scientific evidence [16]. This type of systematic review is usually designed to provide an extensive summary of the current literature relevant to the starting question.

Digital technologies have considerably changed the way healthcare is delivered and accessed [17]. In view of these theoretical assumptions, he posed the following starting questions of the study:

- What is the empirical evidence from the research developed to better understand the aspects of digital change, transformation, and transition in healthcare, particularly in the doctor-patient relationship?

4. Presentation of the studies of the systematic review

(see Table 1)

Author/ year	Article title	Goals	Methodology	Findings	Conclusions
Samaneh et al. [18]	Patients' perspectives on digital health tools	The study aimed to analyze studies on patients' perspectives regarding digital health tools and identify the main facilitating factors and barriers to their use.	A narrative review was performed in the Scopus and Google Scholar databases.	Key contributing factors such as self-management and personalization are essential for the acceptance of the use of digital health tools, and digital and health literacy as well as privacy concerns are barriers to their adoption.	Digital health technologies have changed the way healthcare is experienced by patients.

Author/ year	Article title	Goals	Methodology	Findings	Conclusions
Lindsey et al. [19]	Digital Care Horizon: A Framework for Extending Health Care Through Digital Trans- formation	The authors described a structure of Digital Care Horizon to accelerate digital transformation from the perspective of a healthcare delivery system.	The challenges and partnerships to facilitate the digital extension of healthcare.	Digitally enabled models of care face numerous challenges, namely, the internet and digital access have been considered a social “super” determinant of health, and care must be taken to ensure the development of equitable care models.	Digital inclusion and enablement require that health organizations work with diverse partners to facilitate access to the Internet, by different populations with different literacies.
Graefen [3]	The doctor- patient relationship in the era of e-health	The study aims to describe the influence of digitalization in the form of e-health on the doctor-patient relationship.	Narrative review of the literature	The doctor-patient relationship is a complex relationship, made up of patients with different levels of literacy and with different emotional states, requiring more or less proximity and mutual cooperation.	The digital revolution will have a profound impact on the way doctors and Healthcare organizations interact with patients and the wider community.
Ahmad et al. [20]	Emerging Technologies for Next Generation Remote Health Care and Assisted Living	This article aimed to delve into the state-of-the-art research into newer technologies and technological paradigms that play a vital role in enabling next-generation healthcare remote control.	Narrative review of the literature on the most important technologies and technological paradigms that are crucial to enable healthcare and assisted living.	Remote healthcare is currently one of the most promising solutions to ensure a high level of treatment outcomes, cost-effectiveness and sustainability of healthcare systems worldwide.	COVID-19 has necessitated further improvements to health systems with reinvigorated research on remote health and care technologies.
Iversen and Ma [21]	Technology adoption by primary care physicians	The aim of the study is to analyze the adoption of prevention and monitoring technologies by primary care physicians.	The empirical study uses Norwegian national registry and medical claims and data between 2009 and 2014. The authors used a difference-in- difference model to estimate the impact of the educational program.	Fixed-effect estimates and separate analyses of physicians who moved between counties support a pair-effects approach.	The educational program has a strongly positive effect, which is positively associated with the number of diabetic patients from a physician and the fraction of physician- adopters in the same market.

Author/ year	Article title	Goals	Methodology	Findings	Conclusions
Pennestri and Banfi [22]	Primary Care of the (Near) Future: Exploring the Contribution of Digitalization and Remote Care Technologies through a Case Study	This article focuses on the contribution that digitalization and telemedicine can offer to specific innovations in primary care, based on implemented policies driven by technology.	Professional resources in the doctor-patient relationship and in primary care must be defined with great precision and clarity, both for patients and doctors.	Some limitations are probably intrinsic to the degree of technology as it is today, and can improve with Technical Improvements.	The equitable distribution of limited resources. Resources require careful reflection on the breadth of health coverage these countries can afford and justify in the coming decades.
Abril- Jiménez et al. [23]	Design of a Training Model for Remote Management of Patients Hospitalized at Home	This article describes a new training model for health professionals in the remote management of ICT-based services for Home Hospitalization.	The model was defined based on the mixed method that combined the PICO model and a User- Centered Design methodology, oriented to identify and discover the needs of health professionals and the training instruments in the literature.	The model identifies measurable elements to evaluate the acceptability, the increase in workability, and the integration in the results of daily clinical practice, as well as to evaluate the proposed training content and its results.	The proposed training model highlights the key aspects of training health professionals to support the effectiveness and successful imple- mentation of complex health technology interventions in the context of ICT-based HaH.

Table 1.
Presentation of the studies of the systematic review.

5. Discussion of results

This study aimed to identify the main challenges in the relationship between doctors and patients in the digital era. To which the following questions were raised: Does digitalization allow for better clinical care and greater proximity to the patient in clinical areas? And what is the empirical research evidence developed to better understand aspects of change, transformation, and digital transition in healthcare, particularly in the doctor-patient relationship?

The studies analyzed in the systematic literature review presented different results that meet the main objective. Thus, the study by Samaneh et al. [18] was important as it analyzed the knowledge available in the literature about patients' perspectives on digital health tools and, at the same time, tried to identify the main facilitating factors and barriers to their use. Their results determined that self-management and personalization represent factors that contribute to the acceptance of the use of digital health tools. And the barriers identified in this process are digital literacy, health literacy, and

the privacy of your data. In comparison, the study by Shen et al. [24] analyzed patient privacy perspectives regarding the exchange of information with doctors and their results. The results of the study determined that the perception of quality of care was associated with fewer concerns about privacy, and the benefits perceived by patients in relation to the exchange of information can reduce the effects of privacy concerns. Likewise, the study by Demirci et al. [25] aimed to develop a scale that can measure patients' perceptions of factors such as privacy, security, use, sharing, benefit, and satisfaction in the digital health environment by a sample of individuals aged equal to or over 18 years. In the scale carried out with this sample, the authors concluded that patients are reticent about sharing information, security, and privacy of their data.

Regarding the doctor-patient relationship, studies by Graefen [3] and Ahamad et al. [20] were fundamental in describing the influence of healthcare digitalization on this complex relationship that includes patients who have different levels of literacy, interpersonal relationships, and cooperation. Thus, most studies in the literature reflect the fact that technological tools play an essential role in enabling and controlling healthcare remotely. Accordingly, the study by Zsuzsa et al. [26] aimed to analyze the knowledge and attitudes of digitally involved doctors regarding digital health technologies and the transformation of the doctor-patient relationship. The authors concluded that digital health solutions can create a deeper doctor-patient relationship, as in this specific case, patients' knowledge can help in the joint work effort, with technologies being the essential tools to create greater engagement with patients.

In relation to the question "what is the empirical research evidence developed to better understand aspects of change, transformation and digital transition in healthcare, particularly in the doctor-patient relationship?". The study by Iversen and Ma [21] was relevant for analyzing the adoption of health technologies that contribute to the doctor-patient relationship. The study included the Norwegian register of medical data between the years 2009 and 2014. The results of the study identified that educational programs are essential and positive for a more effective and clearer doctor-patient relationship.

Likewise, the study by Pennestrì and Banfi [22] focused on the contribution of digitalization and telemedicine to specific innovations in primary care, based on technology-driven policies. The study results determined that how digitalization and remote care technologies should be implemented in the medical context is often missing.

Abril-Jiménez et al. [23] described a training model for healthcare professionals in the remote management of ICT-based services for home hospitalization. This proposed training model highlights key aspects of training health professionals to support the effectiveness and successful implementation of complex health technology interventions in the context of ICT-based home hospitalization.

6. Conclusion

For this study, it is important to understand the online doctor-patient relationship and, given this interaction, two discourses are determined, that of the doctor and the patient. Effort is placed based on mutual understanding. However, despite the various benefits of this digital relationship, there are several concerns regarding the content obtained and its effects on the doctor-patient relationship, including language barriers, longer clinical consultations that can result in misunderstandings about the information provided.

Likewise, the doctor-patient relationship is generally anxiety-producing, especially for the population with lower levels of technology literacy, highlighting some difficulties with the communication pattern.

The immediate effect of technologies on the doctor-patient relationship occurs with the replacement of informed trust, which is gradually being replaced by the internet. Overall, the internet event directed this sector toward exploring ICT to improve patient care and communication. Through these aspects, the present study aimed to identify the main challenges in the relationship between doctors and patients in the digital era. To which the starting questions were posed: Does digitalization enhance better clinical care and greater proximity to the patient, in clinical areas? What is the empirical evidence from the research developed to better understand aspects of digital change, transformation, and transition in the healthcare area, particularly in the doctor-patient relationship?

According to the studies analyzed, it was possible to identify that there are some obstacles in the doctor-patient relationship at a digital level, however, it is the doctor himself who can improve this relationship, through clear and objective communication, identifying the patient's barriers and maintaining a proximity equivalent to a face-to-face relationship.

The findings indicated the presence of a change in the patient's role, from a passive form of assistance to a more active consumer of information about their health, thus promoting greater involvement in health maintenance and care. It is also suggested that there is a need to educate health professionals and patients to overcome the barriers that limit communication and, at the same time, encourage the correct use of the internet for medical assistance.


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