Impact of Telemedicine on Patient Satisfaction in the Healthcare Sector: A Literature Review Article

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Key words:

telemedicine, patient satisfaction, health care, COVID-19, health services evaluation.

Abstract:

The general objective of this research was to understand the scientific evidence of the impact of telemedicine on patient satisfaction in the health sector. A qualitative approach and a literature review were used, covering national and international studies. The instruments applied included content analysis of scientific publications. The main results indicated that telemedicine improves patient satisfaction, standing out for its accessibility and reduction of waiting times. Studies in Norway, the United States and Peru showed high levels of satisfaction, comparable or higher than face-to-face consultations, especially in health emergency contexts; in addition, technological barriers and the lack of a physical examination were identified as important limitations. It was concluded that telemedicine has established itself as an effective and well-accepted tool for medical care, especially during the COVID-19 pandemic.

I. INTRODUCTION

Telemedicine has emerged as a crucial tool in the health sector, especially in times of pandemic, times that were not expected, highlighting its ability to maintain continuity of medical care and improve patient satisfaction. Evaluating their impact is very essential to optimize the quality of remote health services and ensure their effectiveness and acceptance, in this case many of them widely desired by citizens who seek services according to their needs.

Internationally, telemedicine has demonstrated a significant impact on patient satisfaction, especially during the COVID-19 pandemic. For example, a study in Norway revealed that 85.5% of headache patients were satisfied with telemedicine, compared to 88.1% who received face-to-face care (Nguyen et al., 2020). An analysis of 93 studies showed that satisfaction with telemedicine was equal to or higher than that of in-person consultations, with rates above 80% in most cases (Kaur et al., 2022). In Poland, more than 80% of primary care consultations during the pandemic were conducted remotely, highlighting the high acceptance and satisfaction of patients (Pogorzelska et al., 2023). Another systematic study identified that factors such as safety, ease of use, and effective communication contribute significantly to patient satisfaction with telemedicine (Kruse et al., 2017). In addition, a recent report indicated that the implementation of telemedicine in allergy consultations achieved 89% satisfaction, comparable to or higher than in-person care (Nguyen et al., 2020). Kaur et al. (2022) noted that, in the United States, patients showed high satisfaction with medical consultations via telemedicine, highlighting the convenience and cost reduction associated with travel.

Similarly, in Norway, 85.5% of headache patients were satisfied with telemedicine, compared to 88.1% who received face-to-face care (Pogorzelska & Chlabicz, 2022). In the Philippines, during the pandemic, patients were mostly satisfied with virtual consultations, underscoring the acceptance and efficacy of this modality in resource-limited contexts. Mustafa et al. (2022) also highlighted that 89% of patients in an allergy service during the pandemic expressed being as satisfied or more satisfied with telemedical consultations compared to face-to-face ones.

A study in the Netherlands found that although some patients preferred face-to-face consultations, a significant proportion expressed satisfaction with virtual consultations, highlighting convenience and health safety (Splinter et al., 2023). In New York, the rapid transition to video consultations during the peak of the pandemic revealed that, despite technical challenges, the majority of patients were satisfied with the quality of care received via telemedicine (Chang et al., 2024).

Another comprehensive study evaluated patient satisfaction with telemedicine services in various medical specialties and concluded that patients positively valued the reduction in wait times and ease of access to specialists, which contributed to high overall satisfaction (Andrews, 2020). In India, patients appreciated the continuity of medical care despite mobility restrictions, highlighting the importance of telemedicine in emergency contexts (Du & Gu, 2024). In the United States, one review noted that telemedicine improved access to health care in rural and underserved areas, increasing satisfaction by reducing costs and travel times (Predmore et al., 2021).

In Peru, telemedicine has been essential to maintain medical care during the COVID-19 pandemic, improving patient satisfaction by avoiding travel and reducing the risk of contagion. For example, one study noted that Peru's Ministry of Health promoted more than 14 million telemedical services in 2020, demonstrating its effectiveness and acceptance (Ministry of Health, 2020). In addition, the implementation of teleconsultations made it possible to close care gaps and desaturate health facilities, maintaining the quality of service (Silva & Pacahuala, 2021). Another study highlighted that telemedicine facilitated access to medical care in regions with a shortage of health professionals, significantly improving patient satisfaction (Paredes et al., 2021). Likewise, in the field of oncology, teleconsultations offered a viable and safe alternative for patients with gynecological cancer, showing high levels of satisfaction (Wilcamango et al., 2022). These studies underscore the importance of telemedicine in Peru, evidencing its ability to improve patient care and satisfaction in challenging contexts (Ramirez et al., 2020).

Due to the above, the main question was proposed: What is the scientific evidence of the impact of telemedicine on patient satisfaction in the health sector?

Regarding the research background, at the international level, Mehak and Sharma (2021) carried out a review of studies on patients' perspective towards telemedicine and their preference for virtual health care services. Using PubMed, they selected 25 studies out of a total of 1,041, published between December 2019 and August 2020, focusing on patient satisfaction and experience during the pandemic. The findings, based on 48,144 patients surveyed and 146 providers in 12 countries, revealed high satisfaction with virtual consultations in various diseases, highlighting advantages such as time savings, better accessibility and convenience. No significant differences in satisfaction were observed according to age or sex. However, technical challenges and lack of physical examination were identified as limitations. It was concluded that, for the long-term sustainability of telemedicine, it is necessary to address technological, training, reimbursement, data privacy and regulatory framework issues, suggesting its proactive adoption and expansion beyond emergencies due to its potential to complement conventional health services.

Similarly, Umiati et al. (2021) conducted a meta-analysis to evaluate patient satisfaction as an indicator of treatment success in the health sector, comparing telemedicine services with traditional services. Using electronic databases such as Clinical Key, Google Scholar, MEDLINE/PubMed, Science Direct, and Scopus, they analyzed 8 studies with a randomized controlled trial (RCT) design that included 2,123 patients (1,113 in the telemedicine group and 1,010 in the control group). The Review Manager 5.3 application was used to determine the Standardized Mean Difference (SMD) and the heterogeneity of the sample. The results showed high heterogeneity (I2= 81%; P <0.0001), so the Random Effects Model (REM) was used. Telemedicine increased patient satisfaction with an MDS of 0.41 compared to the control group (MDS 0.41; 95% CI = 0.19 to -0.62; p= 0.0002), demonstrating its effectiveness in improving satisfaction in health services.

Finally, Ramaswamy et al. (2020) investigated patient satisfaction with video consultations compared to in-person visits at an urban academic medical center in New York during the COVID-19 pandemic. This retrospective, observational study analyzed 38,609 patient satisfaction surveys (620 video visits and 37,989 face-to-face visits) conducted between April 1, 2019, and March 31, 2020. The results showed an 8729% increase in the use of video consultations during the pandemic; Satisfaction scores for video visits were significantly higher than those for in-person visits (94.9% vs 92.5%; P<.001). Adjusted analyses revealed that video visits and the COVID-19 period were associated with higher patient satisfaction. Factors such as younger age, female gender, and new inquiries were associated with lower satisfaction. The research concluded that high satisfaction with video consultations does not represent a barrier to the widespread adoption of telemedicine, suggesting the need for future studies on other indicators of quality of clinic visits.

At the national level, Carbonel et al. (2024) investigated Telemedicine has established itself as a key tool in the transformation of the health system in Peru, highlighting its role in improving the accessibility and quality of medical care. Through a qualitative approach based on Grounded Theory, an analysis of 50 scientific publications that address the advances and challenges of telemedicine in the Peruvian regulatory context was carried out. The results show the effectiveness of telemedicine in services such as teleconsultation and telemonitoring, facilitating access to medical care in remote regions and contributing to cost reduction. However, significant obstacles were identified, such as the lack of adequate technological infrastructure and the need to train medical personnel. The conclusions highlight the urgency of implementing public policies and budget allocations that support the integration of telemedicine, promoting its expansion and accessibility through a coordinated and strategic effort.

Likewise, Llenque (2021) carried out a study that focused on analyzing how telemedicine management impacts the satisfaction of health personnel in Lambayeque Health Centers. The main motivation for conducting this research was the increase in the implementation of telemedicine during the COVID-19 pandemic, as well as the associated risk of contagion. This was a basic, non-experimental, cross-sectional and correlational study that used online surveys and Pearson's correlation coefficient using SPSS 23 software. The findings indicated a moderate positive correlation between healthcare worker satisfaction and telemedicine management. Both variables were at a medium level, suggesting that managers need to implement improvements that benefit both health professionals and patients

Finally, Arteaga (2022) conducted a study to assess the level of satisfaction of patients who received telemedicine care during the COVID-19 pandemic. This quantitative, basic, non-experimental, cross-sectional and descriptive study included a sample of 50 patients treated by teleconsultation. Using the SERVQUAL survey technique and an instrument validated by the Ministry of Health (MINSA), it was found that 50% of patients obtained a moderate level of satisfaction. High levels of satisfaction were also found in tangible elements (46%), responsiveness (38%), reliability (50%), empathy (48%) and security (52%). These results highlight the effectiveness of telemedicine in improving healthcare during the pandemic, especially for vulnerable populations with mobility difficulties.

Telemedicine refers to the use of telecommunication technologies to provide medical and healthcare services at a distance, including diagnosis, treatment, and follow-up of patients (Mair & Whitten, 2001). On the other hand, patient satisfaction is defined as the degree to which patients' expectations regarding health services are met, evaluating factors such as accessibility, quality of care, and communication with health professionals (Du & Gu, 2024).

Regarding the theoretical bases of the research, the Technological Acceptance Model (TAM) was crucial to understand how the perception of usefulness and ease of use influences the acceptance of telemedicine by patients (Hu et al., 1999). In addition, the Patient Satisfaction Assessment Model (MAST) provided a framework for assessing dimensions of satisfaction related to service quality, accessibility, and communication (Kidholm et al., 2017). The theory of transaction costs was also relevant to analyze how telemedicine reduces costs and travel time, improving patient satisfaction (Menachemi et al., 2004). Additional studies highlighted the importance of the quality of the doctor-patient relationship in telemedicine contexts, using specific surveys to measure satisfaction with virtual consultations (Bakken et al., 2006; Zhang et al., 2013).

The study focuses on the need to analyze how the implementation of telemedicine influences patient satisfaction, using theoretical frameworks such as the Technology Acceptance Model (Hu et al., 1999) and the Patient Satisfaction Assessment Model (Kidholm et al., 2017). These frameworks facilitate the examination of aspects such as perceived usefulness, ease of use, and quality of physician-patient interaction within the field of telemedicine (Bakken et al., 2006; Zhang et al., 2013). The practical rationale was based on the increasing implementation of telemedicine in response to the COVID-19 pandemic, where the need to maintain continuity of care and ensure patient safety has been paramount; Assessing patient satisfaction with these services is crucial to improving the quality and effectiveness of virtual consultations in the future.

In view of the above, the general objective was proposed: to know the scientific evidence of the impact of telemedicine on patient satisfaction in the health sector. Likewise, as specific objectives, (i) to know the scientific evidence on the determining factors of patient satisfaction in the context of telemedicine and (ii) to know the scientific evidence on the differences in patient satisfaction between telemedicine and face-to-face consultations.

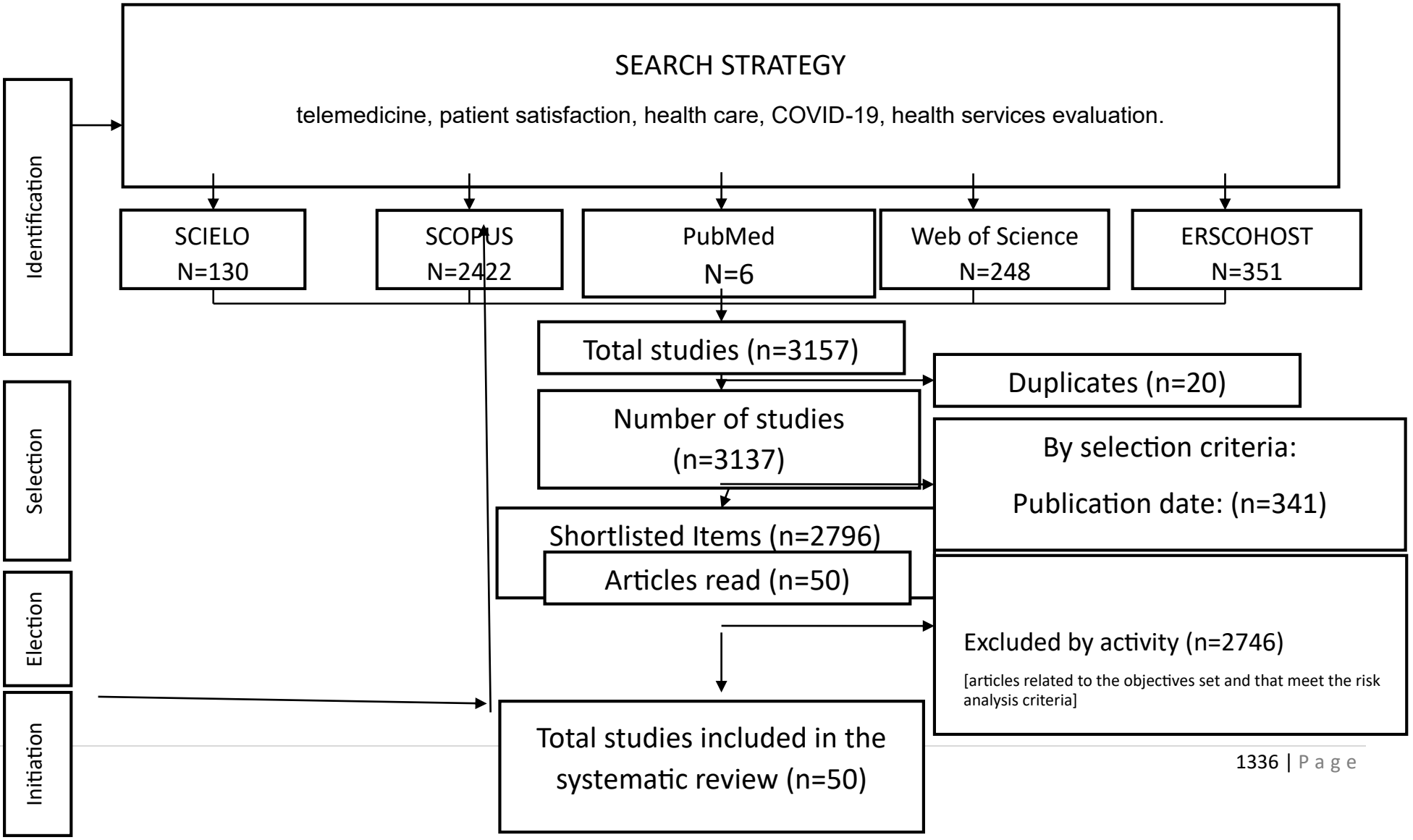
II. METHODOLOGY

The research in this work was developed under a research methodology, under deeply methodological concepts, especially flagship authors that reflect the qualitative study and publications in PudMed, for this we use classifications as qualitative, as indicated by Belcher (2000) who argues that this approach concentrates not only on interpretation, it is valid in the deep analysis of reality in social contexts from the perspective of individuals involved as main actors, with the aim of understanding the meaning that social phenomena and situations have for people in their respective contexts. Regarding the descriptive scope of the research, Cisterna Cabrera (2005) highlights that this type of study is dedicated not only to collecting information in certain periods, this is detailed about a phenomenon without modifying its environment,

with the purpose of describing peculiarities, characteristics, behaviors or relationships within a specific group. These studies, which are also known as "causal correlational" or "descriptive observation", provide data on attitudes and behaviors of a given sample group, and can be cross-sectional or longitudinal, interacting with the groups at a specific point in time or over time. For the design of the research, a non-experimental cross-sectional approach was chosen, where the variables will not be manipulated. According to Day (2005), this design is considered transversal because data are collected at a single time and in a specific place, with the aim of describing the variables and analyzing their incidence and interrelation at that moment, using a documentary approach. Finally, Leavy (2017) mentions that, currently, there are various techniques for data and information collection that can be applied to any type of research. To carry out this process of collecting data from reliable sources, both physical and digital databases are considered, especially reports issued by state entities that handle this type of documentary information.

From a methodological approach in health sciences, this review article has compiled information from recognized and reliable databases, specifically in main sources such as PubMed, Scopus, Scielo, WOS, documentary reports and theses, which are widely valued in the field of research. The review focuses on analyzing the factual scientific evidence related to the use of telemedicine has a significant impact on patients in the health sector. This documentary analysis was carried out in a cross-sectional manner and a total of 3157 documents relevant to the subject were identified. However, they were selected based on a distribution of: Medicine 2889, Health Sciences Professions 388, Nursing 214, Neuroscience 140, and the remaining number in various disciplines, of which only 50 of all the specified were taken into account, because their content is relevant to the research and is aligned with the variables of interest. In addition, the added value of this work is the type of sources selected, in this case it was oriented towards information from quartiles Q1, Q2, Q3 and publications in health sciences journals.

Figure 1
Search Strategy in High Impact Factors



III. RESULTS

For the research of this systematic review article, relevant information was collected from different reliable and central sources, research methodology, both national and international, and health sciences journals. These sources include studies related to the cause and effect variables of study in this article. The review of the literature made it possible to present the main results obtained and to demonstrate the traceability of the research objectives in recent years. According to the data presented in Table 1, a total of 3157 articles were examined. After reviewing the titles, abstracts, keywords and in some cases bibliographic references, 50 articles were selected for a more detailed reading. Of these, 50 articles were read in their entirety, but 2746 were excluded because they were not adequately contextualized with the topic. Finally, 50 articles were selected that allowed the objectives of this research to be met.

Table 1

Number of documents consulted

Fountain	Number
Found	3157
Selected by reading Abstract, Title, Keyword and Impact Factor.	2796
Selected by full reading	341
Selected for critical reading	50

Table 2 presents the results obtained in the literature review, taking into account that the database, 2422 articles were from Scopus, 130 articles from Scielo, 351 articles from EbscoHost and 254 articles from Web of Science together with PubMed.

Table 2

Number of selected items

Fountain	Number
Scopus	2422
Scielo/WOS/PubMed	384
EbscoHost	351
Total	3157

Table 3 presents the results obtained in the literature review, the Scopus database was essential in this process, bearing in mind that only journals of high impact and traceability were considered.

Table 3

List of main indexed journals from 2019 to 2024

Database	Indexed journals	Year	Language
Scopus	Scientific Reports	2024	English
	Journal of Hospice and Palliative Nursing	2024	English
	Journal of Social and Environmental Management	2024	English
	Journal of Social and Environmental Management	2024	English
	Healthcare (Switzerland)	2024	English
	Journal of Multidisciplinary Healthcare	2024	English
	Journal of Social and Environmental Management	2024	English
	Resuscitation	2024	English
	Current Problems in Cardiology	2024	English
	Journal of Social and Environmental Management	2024	English
	Journal of Social and Environmental Management	2024	English
	Journal of Social and Environmental Management	2024	English
	Journal of Social and Environmental Management	2024	English
	Journal of Clinical Nursing	2024	English
	Journal of Social and Environmental Management	2024	English
	Frontiers in Public Health	2024	English
	Clinical Biochemistry	2024	English
	Familial Cancer	2024	English
	Journal of Social and Environmental Management	2024	English
	Clinical Liver Disease	2024	English
	Scientific Reports	2024	English
	Journal of Hospice and Palliative Nursing	2024	English
	Journal of Social and Environmental Management	2024	English
	Journal of Social and Environmental Management	2024	English

Table 4 shows the articles selected for systematic review and complete reading on the studied variables of Telemedicine and patient satisfaction, which were published most frequently in 2023 and 2024, some of them in online publication (72%), followed by 2021 with 18%. With respect to the most recurrent language, the English language was obtained with a percentage of 100%.

Table 4

Articles selected according to the year of publication

Year/Language		Quantity	Percentage
Year	2021-2022	14	18%
	2023-2024	36	72%
	Total	50	100%
Language	English	50	100%
	Total	50	100%

Impact on the use of telemedicine in patients in the health sector

The adoption of telemedicine globally has been influenced by several factors, such as economic, distance, including technological infrastructure, provider acceptance, and reimbursement policies, which require a coordinated approach to maximize its benefits in healthcare (Menachemi et al., 2004). During the COVID-19 pandemic, Peru's Ministry of Health reported more than 14 million telemedicine cares, demonstrating its ability to adapt and maintain continuity of medical care while minimizing the risk of contagion (Ministry of Health, 2020). Patient and provider satisfaction with telemedicine has generally been positive, with convenience and accessibility standing out, although technological and training challenges are recognized (Nguyen et al., 2020). In the Peruvian oncology context, teleconsultations made it possible to continue with the treatment and follow-up of patients, showing their viability despite technological limitations (Paredes-Noguni et al., 2021). Patient satisfaction with telemedicine during the pandemic has also been high, valuing convenience and quick access to services, although areas of improvement in communication and technical problem solving persist (Pogorzelska & Chlabicz, 2022). In addition, a qualitative study found that, although ease of access and safety were appreciated, the lack of personal interaction and quality of care generated dissatisfaction in some patients (Pogorzelska et al., 2023), a key factor in the present study. Finally, many patients expressed a desire to continue using telemedicine after the pandemic, valuing its convenience and efficiency, but highlighting the need to maintain face-to-face options for certain consultations (Predmore et al., 2021). It should be emphasized that in this case, the concepts and results are not generalized, due to the context and culture of the samples where the studies were applied.

Table 5

Books, theories, articles, reports, official publications, referring to telemedicine, customer satisfaction, medical care, COVID-19, evaluation of health services.

Author / Year	Title of the publication	Impact of telemedicine
Andrews, E., Berghofer, K., Long, J., Prescott, A., & Caboral-Stevens, M. (2020))	Satisfaction with Telehealth Use During COVID-19: An Integrative Review	This article discusses the level of satisfaction of patients and healthcare professionals regarding the use of telemedicine during the COVID-19 pandemic. It highlights how telemedicine has become a critical tool to ensure continuity of care, while significantly reducing the risk of exposure and transmission of the virus.
Arteaga Lozada, N. L. (2022)	Satisfaction of telemedicine patients treated in a private health company during the Covid 19 Pandemic-Chiclayo [Master's thesis, César Vallejo University]	The research examines how patients feel about telemedicine services during the health crisis in Chiclayo, Peru. It highlights both the obstacles faced and the possibilities of improving remote medical care in health emergency situations.
Bakken, S., Grullon-Figueroa, L., Izquierdo, R., Lee, N. J., Morin, P., Palmas, W., ... & Starren, J. (2006)	Development, validation and use of English and Spanish versions of the telemedicine satisfaction and usefulness questionnaire. (translated into Spanish)	This analysis addresses the creation, validation, and application of surveys that measure the satisfaction and effectiveness of telemedicine, both in English and Spanish. It thus provides a resource for examining how patients perceive telemedicine in various linguistic and cultural settings.
Carbonel, J. L. S., Quinteros, J. L. B., Figueroa, J. J. R., & Queens, A. G. (2023)	Advances and Challenges of Telemedicine: Impact of Telemedicine on Healthcare in Peru	This article comprehensively analyzes how the implementation of remote health technologies has transformed healthcare in Peru, assessing its impacts and proposing solutions to optimize the effectiveness and accessibility of telemedicine in the country. The progress made in this area is examined in detail, as well as the challenges to be overcome, with the aim of providing a complete overview of the current situation and future prospects of Peruvian telemedicine.

Chang, E., Penfold, R. B., & Berkman, N. D. (2024)	Patient Characteristics and Use of Telemedicine in the U.S., 2022 (translated into Spanish)	This analysis investigates the particularities of patients who use telemedicine in the United States. It offers an in-depth understanding of the profiles of those who are incorporating this technology and suggests ways to improve its application for diverse populations.
Du, Y., & Gu, Y. (2024)	The Development of a Telemedicine Patient Satisfaction Assessment Scale: A	The research focused on developing and validating an instrument to measure patient satisfaction with telemedicine services. A thorough analysis of existing tools to assess user satisfaction in remote healthcare was conducted, with the aim of creating a reliable and effective questionnaire for this purpose.
Kaur, K. N., Niazi, F., Thakur, R., Saeed, S., Rana, S., & Singh, H. (2022)	Patient satisfaction for telemedicine health services in the era of the COVID-19 pandemic: a systematic review (translated into Spanish)	This systematic review assesses how patients felt about telemedicine services during the COVID-19 pandemic. It focuses on identifying both the advantages and opportunities for improvement in the implementation of remote medical care.
Kidholm, K., Clemensen, J., Caffery, L. J., & Smith, A. C. (2017)	The Telemedicine Evaluation Model (MAST): A Review of the Scope of Empirical Studies	The article takes an in-depth look at the Telemedicine Solutions Evaluation Framework (MAST), offering a comprehensive review of relevant empirical research. In addition, the article explains how this comprehensive model can be applied to systematically and rigorously evaluate the effectiveness and impact of telemedicine programs and projects implemented in a wide variety of healthcare settings and contexts. The MAST provides a structured and validated guide to assess the clinical, economic, organizational, social, and ethical benefits of telemedicine solutions, with the goal of supporting informed decision-making about their adoption and deployment.

Benefits of using telemedicine for the benefit of patients in the healthcare sector

The adoption of telemedicine has been influenced by several factors, including technology infrastructure, provider acceptance, and reimbursement policies. Research by Paredes et al. (2004) highlights that successful implementation of telemedicine requires a coordinated approach to overcome barriers and maximize benefits in healthcare. During the COVID-19 pandemic, Peru's Ministry of Health reported more than 14 million telemedicine visits in 2020, demonstrating the health system's ability to quickly adapt and maintain continuity of care while minimizing the risk of contagion (Ministry of Health, 2020).

Patient and provider satisfaction with telemedicine services has been generally positive. For the authors, Nguyen et al. (2020) found that comfort and accessibility were highlighted by both groups. However, they also identified significant challenges, such as the need to improve technology and provide better training to both providers and patients. In the Peruvian oncology context, teleconsultations made it possible to continue with the treatment and follow-up of patients, demonstrating their viability despite technological limitations, according to Paredes-Noguni et al. (2021).

Patient satisfaction with telemedicine during the pandemic has also been high. Pogorzelska and Chlabicz (2022) conducted a systematic review that revealed that most patients valued convenience and quick access to services, although areas of improvement in communication and technical troubleshooting persist. In addition, a qualitative study conducted by Pogorzelska et al. (2023) found that, although ease of access and security were appreciated, the lack of personal interaction and quality of care led to dissatisfaction in some cases. Finally, Predmore et al. (2021) noted that many patients wish to continue using telemedicine after the pandemic, valuing its convenience and efficiency, but highlighting the need to maintain face-to-face options for certain types of consultations.

These results indicate that although telemedicine has been largely effective and well-received during the COVID-19 pandemic, there are critical areas that require attention to optimize its implementation and fully meet the needs of patients and providers.

CONCLUSIONS

- ✓ The adoption of telemedicine globally has been shown to be influenced by multiple factors including technological infrastructure, acceptance by healthcare providers, and reimbursement policies. These factors highlight the need for a coordinated, multifaceted approach to overcome implementation barriers and maximize the benefits of telemedicine in healthcare. The ability to adapt quickly to new technologies and practices is essential to ensure continuity of care and health system efficiency, especially in times of crisis such as the COVID-19 pandemic.
- ✓ Patient satisfaction with telemedicine services has been generally positive, highlighting their convenience and accessibility. However, significant challenges were also identified, such as the need to improve the technology used and provide better training to both providers and patients. The implementation of telemedicine must be accompanied by

ongoing efforts to resolve these technical issues and improve communication between patients and providers to ensure high-quality care.

- ✓ The experience with teleconsultation in specific contexts, such as oncology, preventive medicine and general treatments in Peru, demonstrates the viability and effectiveness of telemedicine to maintain the treatment and follow-up of patients, even with technological limitations. Overall patient satisfaction during the pandemic indicates that telemedicine can be a crucial tool for ongoing medical care. However, it is also critical to maintain in-person consultation options for certain types of healthcare that require direct interaction, thus ensuring a hybrid approach that maximizes the benefits of both methods.

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