SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2026
ORGANIZATION AND MANAGEMENT SERIES NO. 242

HUMAN FACTORS IN TELEMEDICINE: PATIENT SATISFACTION IN PRIVATE HEALTHCARE AFTER COVID-19

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Purpose: This paper explores patient satisfaction with telemedicine services in a private healthcare setting in Poland after the COVID-19 pandemic, emphasizing the role of human and technological factors in shaping digital healthcare experiences.
Design/methodology/approach: An exploratory case study was conducted using a pilot survey of 30 patients who used teleconsultations, chat consultations, and a mobile healthcare application between 2020 and 2023. The analysis applied a three-dimensional satisfaction model encompassing substantive, procedural, and psychological needs.
Findings: Respondents valued telemedicine for its accessibility, convenience, and time efficiency. Lower satisfaction was reported regarding waiting times, application usability, and the perceived level of physician engagement. The results suggest that remote medical services require not only reliable digital tools but also empathetic and attentive communication to support a positive patient experience.
Research limitations/implications: The small, single-case sample limits generalizability. Further research should include larger and more diverse patient populations.
Originality/value: The study adds to existing Polish research by examining telemedicine satisfaction in the private healthcare sector, an area less frequently analyzed than public or hospital-based services.
Keywords: telemedicine, patient satisfaction, private healthcare, service quality, digital care.
Category of the paper: Research paper.

1. Introduction

The COVID-19 pandemic significantly accelerated the adoption of telemedicine, transforming digital consultations from a supplementary option into a routine mode of delivering healthcare services. Remote interactions allowed providers to maintain continuity of

care while limiting infection risk and addressing access challenges during lockdowns (Byrne, 2020; Wrześniewska-Wal, Hajdukiewicz, 2020). In Poland, similar patterns were observed, with patients reporting increased use of telemedicine solutions across private and public healthcare sectors (Korneta et al., 2021; Zygo et al., 2020). As pandemic conditions subsided, telemedicine remained an important component of service delivery, prompting renewed interest in evaluating the quality and patient experience associated with remote care.

Patient satisfaction constitutes an essential element of healthcare quality, influencing adherence, trust, and long-term use of services (Małecka, Marcinkowski, 2007). Telemedicine introduces additional determinants of satisfaction, as patients must not only evaluate clinical competence but also the usability of digital platforms, clarity of communication, and emotional comfort during remote interactions (Biesok, Wyród-Wróbel, 2016; Maconko et al., 2016). In private healthcare settings, where patients exercise greater choice and expect high-quality service, understanding these dimensions becomes particularly important.

Although research conducted in Poland has recognized both benefits and limitations of telemedicine, majority of the existing evidence focuses on public-sector solutions or on legal and technological considerations (Zygo et al., 2020; Zgliczyński et al., 2013). Studies addressing how patients in private healthcare evaluate digital services remain comparatively limited. Moreover, relational and psychological aspects of telemedicine, such as empathy, the feeling of being heard, or physician engagement, are not consistently explored, despite evidence that these factors play a critical role in shaping patient experience (Maconko et al., 2016).

This study addresses these gaps by analyzing patient satisfaction with telemedicine in a private healthcare organization in Poland. Drawing on the triadic model of satisfaction (Moore, 2014), the study evaluates substantive, procedural, and psychological aspects of remote care. The findings provide exploratory insight into how digital services are perceived in a private setting and highlight areas where improvements may strengthen patient-centered telemedicine.

2. Literature review

2.1. Telemedicine in contemporary healthcare

Telemedicine is widely recognized as a key component of contemporary medical technologies and digital health systems. In the classical definition proposed by the World Health Organization, telemedicine is understood as the provision of healthcare services where distance is a critical factor, delivered by healthcare professionals using information and communication technologies to exchange information for diagnosis, treatment and prevention of diseases and

injuries, as well as for research, evaluation and continuing education of healthcare providers (WHO, 1998, p. 10). A similar perspective is adopted by the Health Resources and Services Administration (2025), which defines telemedicine as the use of electronic and telecommunication technologies to support and promote long-distance clinical care, patient and professional health-related education, public health and health administration.

Ingenerf (1999, p. 92) proposes a broader and still valid definition, describing telemedicine simply as the use of information and telecommunication technologies in medicine. Although general, this definition deliberately encompasses a wide spectrum of digital tools and applications used in clinical practice, from remote diagnostics to integrated telehealth platforms. On this basis, telemedicine can be conceptualized as a mode of delivering healthcare services in which medical care is provided at a distance through information and communication technologies. Patients may receive consultations, diagnoses, prescriptions and health monitoring using devices such as telephones, tablets and computers. Telemedicine also supports remote psychotherapy, nutritional counselling and other specialized services, and has an important educational function for patients (Zgliczyński et al., 2013).

To characterize telemedicine more precisely, it is useful to distinguish between different forms of technology-mediated care. One basic distinction relates to the synchronicity of information exchange. Mahar et al. (2018) differentiates between synchronous and asynchronous telemedicine programs. Synchronous telemedicine refers to real-time, two-way communication between the patient and the healthcare provider (e.g. telephone or video consultations). Asynchronous telemedicine involves "store-and-forward" transmission of medical data through an application or online portal, such as laboratory results, diagnostic images, electronic prescriptions or written recommendations.

A complementary categorization is proposed in the report of the Polish Chamber of Commerce (2016), which distinguishes telemedicine services according to the type of function they perform (see Table 1). This typology is particularly relevant for analyzing the scope of services offered by healthcare organizations and for understanding which segments are most closely related to patient satisfaction with remote care.

Table 1.
Categories of telemedicine services according to the Polish Chamber of Commerce (2016)

Type of telemedicine service	Description
Telecare	Remote care and monitoring of chronically ill patients using dedicated devices, such as blood pressure monitors, ECG, pulse oximeters or hydration sensors.
Tele-diagnostics	Description and interpretation of diagnostic tests based on digitally recorded medical data.
Teleconsultation	Real-time consultation with a physician using telecommunication tools (e.g. telephone or video).
Tele-education	Education of medical professionals and patients using online platforms that provide access to medical knowledge and treatment-related information.
Tele-procedures and tele-operations	Medical procedures and surgical operations performed at a distance using a surgical robot controlled remotely by the surgeon.

Source. Own elaboration based on the Polish Chamber of Commerce (2016).

A common feature of all these categories is the provision of medical services at a distance through various technological devices. However, the context in which telemedicine operates is not uniform. From a financial and organizational perspective, it is important to distinguish between the public healthcare market, financed largely from public funds, and the private market, where services are paid for directly by patients or through employer-sponsored medical packages (The Polish Chamber of Commerce, 2016). The present study focuses on the latter, examining telemedicine in a private healthcare organization operating on the Polish market.

The development of telemedicine is closely linked to broader technological trends in healthcare. Early forms of distance medicine can be traced back to the nineteenth century, when telegraph, telephone and later radio were used to transmit medical information and coordinate care in remote settings (Zundel, 1996; Mahar et al., 2018). In subsequent decades, telemedicine evolved alongside advances in imaging technologies, satellite communication and the Internet, enabling remote transmission of radiological images, real-time video consultations and continuous monitoring of patients in geographically distant locations (Glinkowski, 2006; Martyniak, 2015). Telemedicine has been used in demanding contexts such as rural and remote areas, maritime medicine or military operations, where it supports decision-making and reduces the risks and costs associated with patient transport (Boots et al., 2012; Zundel, 1996).

In Poland, telemedicine began to develop institutionally at the beginning of the 2000s, including the establishment of the Telemedicine Section of the Polish Medical Society and the design of advanced systems such as the Robin Heart surgical robot (Wrześniewska-Wal, Hajdukiewicz, 2020). Over time, digital tools have been implemented in many specialties, particularly in radiology, neurology and chronic disease management (Mahar et al., 2018). Despite this progress, public awareness and trust in e-medicine remained limited for many years, as evidenced by surveys conducted in the mid-2000s, which indicated low familiarity with telemedical solutions and cautious attitudes towards their use (Zygo et al., 2020).

The COVID-19 pandemic fundamentally accelerated telemedicine adoption. In response to lockdowns, physical distancing requirements and infection risks, healthcare providers widely implemented remote consultations via telephone, video and mobile applications (Byrne, 2020; Korneta et al., 2021). Telemedicine became a primary mode of delivering care, particularly for patients with chronic conditions requiring ongoing monitoring (Bitar, Alismail, 2021). At the same time, the pandemic revealed challenges related to digital infrastructure, legal regulations, data protection and the preservation of interpersonal aspects of care (Wrześniewska-Wal, Hajdukiewicz, 2020; Nittari et al., 2022).

Looking beyond the pandemic, many authors argue that telemedicine should remain an integral component of healthcare systems due to its potential to improve access, reduce waiting times and enhance convenience for patients, especially in underserved or remote regions (Korneta et al., 2021; Nittari et al., 2022). These developments raise important questions about the quality of telemedicine services and the determinants of patient satisfaction in digital care settings, particularly in private healthcare organizations where competitive pressure and patient expectations are especially high.

2.2. Patient satisfaction as a dimension of healthcare quality

Patient satisfaction is a complex and inherently subjective construct, situated at the intersection of psychological, social and service-related processes. In general terms, satisfaction can be linked to the Latin word *satis*, meaning "enough" or "sufficient", and refers to the degree to which an experience fulfils an individual's needs and expectations (Maconko et al., 2016). In consumer behavior research, satisfaction is often defined as an emotional response resulting from a comparison between prior expectations and perceived value after consumption of a product or service (Mazurek-Łopacińska, 2003).

Within healthcare, patients are simultaneously recipients of medical interventions and clients of health services. Patient satisfaction may therefore be understood as the subjective evaluation of the quality of medical care, relationships with healthcare personnel and organizational aspects of service delivery. It encompasses such elements as accessibility of services, clarity and usefulness of medical advice, and the empathy and communication style of healthcare professionals. One of the most widely cited definitions, proposed by Risser (1975), conceptualizes patient satisfaction as the degree of congruence between a patient's expectations of an ideal service and the care actually received.

Measuring satisfaction is challenging because preferences, needs and perceptions are dynamic and heterogeneous (Bebek, 2020). Nevertheless, various conceptual models have been developed to operationalize this construct. In the field of negotiation and mediation, Moore (2014) conceptualizes satisfaction as comprising three categories of interests:

- substantive,
- procedural,
- emotional.

This perspective, further elaborated in the applied work of Furlong (2005), highlights that evaluations of any service or interaction extend beyond outcomes to include perceptions of process and interpersonal experience. A comparable logic lay under Donabedian's (1980, 1988) structure–process–outcome model, which is widely recognized as a foundational framework for assessing quality in healthcare. Both approaches indicate that individuals form judgements not only on the basis of measurable or technical results, but also through their appraisal of procedural aspects and relational dynamics. This theoretical compatibility provides a coherent background for situating Moore's (2014) triadic model within the analysis of patient satisfaction in telemedicine.

Substantive needs encompass the quality of the product or service, the adequacy of expert advice and the extent to which the solution addresses the client's goals. Procedural needs refer to the ease, speed and flexibility of processes such as obtaining information, receiving support, navigating procedures or lodging complaints. Psychological needs relate to the relational dimension: respectful treatment, kindness, individualized attention, willingness to help, empathy and mutual trust. Full satisfaction is achieved only when needs in all three categories are adequately met (Moore, 2014; Furlong, 2005).

In the context of healthcare, the triadic model can be directly applied to patients as customers of medical services. Substantive needs include professional medical assistance, accurate diagnosis, appropriate treatment and clear guidance on further management. Procedural needs concern the organization of care, including ease of booking appointments, waiting times, availability of specialists and efficient communication of test results. Psychological needs encompass the quality of the doctor–patient relationship, the feeling of being listened to, the clinician's engagement, empathy and the level of trust in the provider. A deficit in any of these areas may lower overall satisfaction, even if other dimensions perform well (Maconko et al., 2016).

The link between patient satisfaction and quality of care can also be viewed through the broader lens of service quality. Classic contributions in this field emphasize that quality must be understood from the user's perspective. Definitions focused on the user describe quality as meeting or exceeding customer requirements (Suarez, 1992), while multidimensional service-oriented definitions highlight tangibles, reliability, responsiveness, competence and empathy as constitutive elements of quality (Parasuraman et al., 1988). Strategic perspectives stress that higher quality differentiates an organization from its competitors and shapes how it is perceived in the market (Czubała, 2012). In private healthcare, these issues are particularly salient: patients actively choose providers, and their evaluations influence the organization's market position and reputation (Małecka, Marcinkowski, 2007).

2.3. Determinants of satisfaction in telemedicine

The rapid expansion of telemedicine during the COVID-19 pandemic created a unique context for studying patient satisfaction with remote healthcare services. On a global scale, telemedicine became a dominant or at least essential mode of care provision, particularly during periods of strict lockdowns and restricted access to stationary facilities (Byrne, 2020; Nittari et al., 2022). As a result, many empirical studies have examined how patients perceive the quality of teleconsultations, video visits and other digital services under pandemic conditions.

Ramaswamy et al. (2020) conducted one of the largest studies on patient satisfaction with telemedicine in New York, analyzing data from more than 38,000 visits at a university medical center, including both in-person consultations and video visits. Their analysis showed a dramatic increase in the share of video visits during the pandemic and revealed that satisfaction with online consultations was high and, in many cases, comparable to or slightly higher than satisfaction with traditional visits. These results suggest that, when implemented appropriately, telemedicine can meet patients' expectations and does not necessarily lower perceived quality of care.

Systematic reviews also point to generally positive evaluations of telehealth. Kruse et al. (2017) report that patients frequently appreciate the convenience, time savings and reduced travel burden associated with remote consultations. However, they also identify perceived barriers and concerns, including technological difficulties, limited opportunities for physical

examination, and apprehensions about privacy and data security. Nittari et al. (2022) emphasize that ethical and legal challenges, such as responsibility for errors, the confidentiality of medical data and cross-border provision of services, require ongoing attention to ensure that telemedicine remains both safe and acceptable for patients.

In Poland, Korneta et al. (2021) examined patient experiences with telemedicine in primary care during the pandemic. Their study, conducted in four primary care clinics, showed that a majority of patients assessed teleconsultations positively. More than half of respondents felt comfortable during telephone visits and considered the care received via teleconsultation equivalent to that provided during in-person visits. Technical aspects of teleconsultations were evaluated favorably by approximately 80% of patients. At the same time, specific areas of dissatisfaction were identified, such as limited access to medical documentation and difficulties in some organizational processes, highlighting the importance of both procedural and informational dimensions of telemedicine quality.

These findings are consistent with earlier observations on the benefits and constraints of telemedicine. Teleconsultations can reduce waiting times, support continuity of care for chronic patients and lower the risks and costs associated with travel, particularly in rural or remote areas and for individuals with reduced mobility (Boots et al., 2012; The Polish Chamber of Commerce, 2016; Sierdziński, Sierdzińska, 2018). They may also enhance access to specialist expertise and facilitate multidisciplinary collaboration between clinicians (Jumreornvong et al., 2020). However, concerns about data security, the quality of interpersonal communication and the impossibility of performing physical examinations in many cases may negatively affect satisfaction, especially when patients perceive remote care as less personal or less thorough than face-to-face visits (Wrześniewska-Wal, Hajdukiewicz, 2020; Zygo et al., 2020).

From the perspective of the triadic satisfaction model, telemedicine can satisfy substantive needs by providing competent medical advice and effective treatment, particularly when supported by appropriate diagnostic information and follow-up procedures. It can also address procedural needs by offering flexible and time-efficient access to services. At the same time, psychological needs—such as feeling heard, respected and emotionally supported—may be more difficult to fulfil in remote interactions, especially when technological or organizational constraints disrupt communication (Maconko et al., 2016).

In light of these developments, the present study focuses on patient satisfaction with telemedicine in a private healthcare organization in Poland, applying the three-dimensional satisfaction framework to assess how substantive, procedural and psychological aspects of teleconsultations, mobile applications and chat services are perceived by patients in the post-pandemic context.

3. Methods

The study adopts an exploratory case study design aimed at gaining preliminary insights into patient satisfaction with telemedicine services in a private healthcare organization in Poland. Case studies may serve descriptive, explanatory, exploratory or evaluation purposes (Woodside, Wilson, 2003), and in this instance the exploratory orientation reflects the limited scope and small sample size, which position the research as a pilot study providing indicative rather than generalizable results. The selected organization represents a large private healthcare provider offering digital medical services such as teleconsultations, online chat with physicians, and a mobile health application. The study was designed to assess the level of patient satisfaction with telemedicine, identify the main determinants of satisfaction across substantive, procedural and psychological dimensions, and explore which aspects of remote care patients perceive as strengths or areas for improvement.

Data were collected using an anonymous online questionnaire distributed to patients who had used the organization's telemedicine services between 2020 and 2023. Participation was voluntary, and responses were gathered through the provider's internal communication channels. A total of 30 valid responses were obtained. The survey consisted of 17 questions-13 related to satisfaction factors and 4 capturing demographic characteristics such as age, gender, and frequency of telemedicine use. The instrument was developed based on existing patient satisfaction studies and adapted to the telemedicine context. Respondents evaluated their experiences using a five-point Likert scale, ranging from 1 ("very dissatisfied") to 5 ("very satisfied"), with optional open-ended items for qualitative feedback.

The collected data were analyzed using descriptive statistics to explore patterns in patient perceptions. The study drew on Moore's (2014) three-dimensional model of satisfaction as an overarching conceptual framework, with the substantive, procedural and psychological dimensions operationalized in this research as follows: substantive needs (competence, clarity and professionalism of medical staff), procedural needs (waiting time, accessibility and system usability) and psychological needs (empathy, attentiveness and quality of communication). Each dimension was examined separately and then compared to highlight key drivers of satisfaction and dissatisfaction. The analysis was performed using Microsoft Excel, with results presented in the form of summary tables.

The main limitation of the study is its small sample size and single-case focus, which restrict the generalizability of results. Additionally, the reliance on self-reported data may introduce subjective bias. Nevertheless, the exploratory character of this research provides valuable initial evidence on how patients evaluate telemedicine services in private healthcare. The findings offer a foundation for more extensive studies applying larger samples or comparative approaches across different healthcare systems.

4. Results

4.1. Characteristics of the respondents

A total of 30 respondents participated in the survey. The sample was dominated by men (70%), with women accounting for 26.7% and one respondent not disclosing gender. Most respondents were of working age: 46.7% were between 18 and 29 years old, 50% between 30 and 49 years, and one respondent was 50 years or older. The educational profile was characterized by a high proportion of individuals with higher education (83.3%), followed by secondary (13.3%) and vocational education (3.3%).

The majority of respondents lived in a large city, with a smaller group residing in villages and small or medium-sized towns. Access to private healthcare services was predominantly employer-based: 80% used the services as part of an employee benefit package and 20% through a family program, while none of the respondents declared purchasing an individual subscription.

Regarding telemedicine use between 2020 and 2023, 80% of respondents used the mobile application, 86.7% had at least one teleconsultation, and 50% used the medical chat with a doctor. The characteristics of the respondents and their use of telemedicine services are summarized in Table 2.

Table 2.
Characteristics of the respondents (N = 30)

Category	Subcategory	n	%
Gender	Male	21	70.0
	Female	8	26.7
	No answer	1	3.3
Age	18-29 years	14	46.7
	30-49 years	15	50.0
	≥ 50 years	1	3.3
Education	Higher	25	83.3
	Secondary	4	13.3
	Vocational	1	3.3
Place of residence	Large city	24	80.0
	Village	3	10.0
	Other (small/medium towns)	3	10.0
Type of access to services	Employee benefit	24	80.0
	Family program	6	20.0
	Individual subscription	0	0.0
Use of telemedicine services	Used the mobile application (2020-2023)	24	80.0
	Used teleconsultations (2020-2023)	26	86.7
	Used medical chat (2020-2023)	15	50.0

Note. Percentages may not always sum exactly to 100 due to rounding.

Source: Own elaboration.

4.2. Use and assessment of the mobile application (procedural aspects)

The mobile application was widely used and generally assessed as intuitive and easy to navigate. Most users rated its usability at 4 or 5 on a five-point scale, which indicates that the interface and basic functions are largely aligned with user expectations. However, satisfaction with the availability of visits booked via the application was clearly lower. Access to stationary visits was rated predominantly at 1 or 2, and telephone visits most often at 3, suggesting that scheduling and capacity constraints remain a significant source of dissatisfaction among patients using private telemedicine services.

Awareness of the prescription renewal functionality was universal among respondents; all participants knew that e-prescriptions could be renewed without an in-person visit. More than half (52%) used the feature successfully, whereas 8% reported an unsuccessful attempt and 40% did not use it despite awareness. Although the questionnaire did not differentiate the reasons for unsuccessful renewal, this outcome indicates the presence of procedural obstacles that may stem from system-related factors (e.g., unclear navigation pathways, temporary technical errors), patient-related uncertainties regarding the correct procedure, or clinical decisions such as a physician's refusal to renew a prescription without additional consultation. These possibilities suggest that, despite its perceived value, the functionality is not yet experienced as fully reliable or seamless by all users.

In an open-ended question, respondents identified several missing or insufficiently developed functionalities. These included notifications about newly available appointments and released time slots, automatic booking of follow-up visits in chronic care, clearer information on payments for out-of-package visits and contract conditions, the possibility to book visits directly from the referrals view, biometric login for multiple accounts, and greater stability of the application, including fewer technical errors. These comments point to procedural and usability issues that affect patients' comfort and sense of control when using the application.

4.3. Satisfaction with teleconsultations (substantive and psychological aspects)

Teleconsultations were the most used form of remote contact with physicians. Almost 87% of respondents reported using them at least once between 2020 and 2023. From a technical perspective, teleconsultations were evaluated positively: respondents most often indicated that they "always" or "often" experienced clear sound, stable connections, and an overall smooth technical course of the visit. Technical problems such as interruptions or inability to hear the physician were rare.

Substantive aspects of teleconsultations were also rated relatively favorably. Many respondents stated that physicians explained further treatment in an understandable way, that they received necessary prescriptions and referrals, and that the main purpose of the visit was achieved. At the same time, responses to some statements revealed variation in perceived substantive quality. Items related to reviewing the medical history, resolving the health

problem, and reaching the visit objective exhibited a broader distribution of responses, including “sometimes”, “rarely”, or “never”. This suggests that while substantive quality is generally satisfactory, the consistency of care across physicians and cases may be uneven.

Psychological aspects of teleconsultations were more differentiated. Courtesy and respectful treatment were evaluated highly, but respondents were less unanimous regarding the time devoted to them, the feeling of being fully heard, trust in the physician, and the perceived level of engagement. A notable number of respondents indicated that the physician’s engagement in their problem was only sometimes or rarely sufficient. These results point to potential shortcomings in relational aspects of remote consultations and confirm that empathy and attentiveness can be harder to convey in a teleconsultation than in an in-person visit.

The overall evaluation of teleconsultations was cautiously positive. Most respondents agreed that teleconsultations saved time and, to a slightly lesser extent, costs, and did not feel discomfort when discussing their health by phone. However, when asked whether teleconsultations provided care at the same level as stationary visits, the responses were mixed. A relatively small group fully agreed, while many respondents indicated neutrality or disagreement. This suggests that patients perceive teleconsultations as a convenient and acceptable form of care, but not fully equivalent to traditional visits.

4.4. Satisfaction with medical chat

Medical chat was used less frequently than teleconsultations, with half the respondents declaring that they had used this service between 2020 and 2023. Among users, satisfaction varied clearly across different aspects of the service.

The waiting time in the chat queue was assessed very negatively, with the most frequent rating being 1 and no respondent assigning the maximum rating. This indicates that queue lengths and response times represent a major procedural barrier. By contrast, satisfaction with prescriptions and referrals obtained via chat was relatively high, typically rated 4 or 5. The clarity of clinical advice and further treatment recommendations received via chat was rated around the middle of the scale, with most responses at 3 or 4, which suggests that while the channel is effective for documentation and administrative tasks, its usefulness for more complex clinical guidance may be limited.

Relational aspects of chat consultations were evaluated more positively. Most respondents rated physicians’ politeness, respect, and individual approach at 4 or 5, although ratings of engagement were slightly more moderate. Overall satisfaction with chat consultations was most commonly rated at 4, with 3 as the second most frequent rating. This pattern indicates that the interpersonal experience is generally acceptable but constrained by procedural weaknesses, especially waiting time.

4.5. Summary of satisfaction across the three dimensions

When viewed through the lens of the three-dimensional satisfaction model, the results reveal a differentiated picture. Substantive aspects of telemedicine services are evaluated relatively highly, procedural aspects show pronounced weaknesses in access and waiting times, and psychological aspects highlight challenges related to engagement, trust, and perceived equivalence with in-person care. A consolidated overview of the most important findings across these dimensions is presented in Table 3.

Table 3.
Summary of patient satisfaction with telemedicine services across the three dimensions

Dimension	Service element	Main findings from the survey	Interpretation
Procedural	Mobile application – usability	80% used the application; most ratings 4–5 for intuitiveness and ease of navigation.	App is generally intuitive and functional.
	Mobile application – visit availability	Stationary visits rated mainly 1–2; telephone visits mostly 3.	Accessibility and scheduling remain major pain points.
	Mobile application – prescription renewal	52% successfully renewed e-prescriptions; 8% failed; 40% did not use.	Feature valued but not fully reliable or broadly utilized.
	Mobile application – missing functions	Requests included: notifications about free slots, automatic follow-ups, booking from referrals, clearer payment information, biometric login for multiple accounts, greater stability.	Patients expect transparency, automation, and real-time updates.
	Medical chat – waiting time	Most ratings = 1; no maximum rating.	Very long queues significantly reduce satisfaction.
Substantive	Teleconsultations – technical quality	"Always/often" selected for clear sound and stable connection.	Technical performance supports effective remote care.
	Teleconsultations – clinical content	Clear explanations and necessary prescriptions often received; variability across physicians.	Substantive quality is generally good but inconsistent.
	Medical chat – clinical advice	Advice clarity rated mostly 3-4; prescriptions/referrals 4-5.	Chat effective for documentation tasks; mixed for clinical guidance.
Psychological	Teleconsultations – relational factors	Courtesy and respect consistently high; feeling heard, trust, and engagement more varied.	Emotional/relational quality weaker than substantive communication.
	Teleconsultations – comfort and preference	Strong agreement on time savings and lack of discomfort; mixed assessment of equivalence to in-person care.	Telemedicine perceived as convenient but not a full substitute.
	Medical chat – relational factors	Courtesy and politeness mostly 4-5; engagement and individual approach 3-4.	Interpersonal experience better than procedural, but not optimal.

Note. Table summarizes the main findings from the patient survey (N = 30) conducted between 2020-2023, structured according to the substantive, procedural, and psychological dimensions of satisfaction.

Source: Own elaboration.

5. Discussion

The findings of this study reflect patterns observed in previous research on telemedicine adoption in Poland. Similar to reports by Korneta et al. (2021), respondents valued teleconsultations primarily for their convenience and time efficiency. Substantive aspects of care i.e. clarity of explanations, receipt of necessary prescriptions and overall achievement of visit objectives, were generally rated positively, suggesting that remote consultations can meet clinical expectations when supported by functional digital infrastructure (Mahar et al., 2018). This aligns with wider international evidence showing that when telemedicine is perceived as clinically reliable and supported by well-defined follow-up pathways, patient evaluations are consistently favorable (Ramaswamy et al., 2020; Kruse et al., 2017). Similar conclusions were drawn by Bokolo (2020), who emphasizes that telemedicine proved effective during the pandemic particularly when technological systems ensured continuity and coordination of care.

However, procedural challenges emerged strongly in the results. Difficulties related to system functionality, waiting times and the availability of appointments mirror earlier findings that organizational barriers remain among the most significant limitations of telemedicine in Poland (Zygo et al., 2020; Zgliczyński et al., 2013). Recent international work similarly demonstrates that procedural shortcomings, especially unclear digital workflows, platform instability or delays, substantially reduce patient satisfaction and willingness to reuse telehealth services (Guntu et al., 2022). These issues highlight the dual nature of digital service quality: while technology can expand access, it can also create new bottlenecks when capacity, scheduling systems or application features do not keep pace with growing demand. The present findings therefore reinforce arguments that telemedicine's effectiveness depends not only on technological infrastructure but also on the organizational processes that support digital care pathways. Improving integration between scheduling systems, enhancing the stability of mobile applications and ensuring adequate staffing levels for online services appear crucial for strengthening the procedural dimension of patient satisfaction.

Psychological aspects constituted the weakest dimension of satisfaction. Respondents expressed concerns about physician engagement, the feeling of being fully heard and the relational quality of teleconsultations. Similar concerns have been identified in studies exploring patient experiences with remote care, which note that the absence of non-verbal communication and reduced personal contact may hinder rapport and trust (Maconko et al., 2016; Małecka, Marcinkowski, 2007). Wu and Brannon (2024) likewise demonstrate that communication quality and perceived attentiveness significantly shape future willingness to use telehealth, underscoring the centrality of relational factors even in technology-mediated encounters. The emotional and relational components of medical encounters, often embedded in subtle cues such as tone of voice, confirmation of understanding or empathetic statements, may be more difficult to convey through telephone calls or text-based interactions.

This highlights a critical tension in telemedicine: while digitalization improves efficiency, it may simultaneously constrain the relational depth that patients associate with high-quality care.

These findings resonate with broader research showing that healthcare improvement efforts are most effective when they explicitly incorporate patients' perspectives into service design and delivery (Poksinska et al., 2017). Applying similar principles to telemedicine could help providers ensure that digital processes and communication models are aligned with patient expectations rather than solely organizational priorities. Moore's (2014) triadic model illustrates how substantive, procedural and psychological factors interact in shaping overall satisfaction; even when substantive quality is adequate, deficits in procedural efficiency or psychological engagement can diminish the patient experience. Recent evidence further suggests that sustained telehealth use depends on addressing all three dimensions simultaneously (Wu, Brannon, 2024; Guntu et al., 2022). The present findings indicate that private healthcare organizations, whose patients often demonstrate higher expectations, greater ability to compare providers and lower tolerance for service failures, should prioritize not only technological improvement but also communication training and strategies to humanize digital encounters. Enhancing physicians' ability to express attentiveness and empathy in remote formats, as well as designing telemedicine interfaces that better support two-way communication, may help mitigate the relational constraints identified in this study.

6. Conclusions

This study explored patient satisfaction with telemedicine services in a private healthcare organization in Poland, focusing on the post-pandemic period when digital healthcare has become an established part of everyday medical practice. The results indicate that patients generally value telemedicine for its accessibility, time efficiency, and convenience. The high ratings in the substantive dimension suggest that remote care can maintain professional standards and provide medical advice perceived as competent and reliable. However, challenges remain in procedural and psychological aspects, particularly regarding waiting times, system usability, and the perceived empathy of physicians during online consultations.

These findings underline that technological performance alone is insufficient to ensure patient satisfaction. The human dimension, manifested in communication quality, attentiveness, and emotional support, remains essential for positive patient experiences in digital settings. The application of the three-dimensional satisfaction model has proven useful in identifying key determinants of satisfaction and in demonstrating that telemedicine quality depends on balancing technical, organizational, and interpersonal factors.

Although the research is exploratory and limited by its small sample size and single-case design, it provides valuable preliminary evidence on how patients perceive telemedicine within private healthcare. This study confirms that while digital platforms can successfully deliver substantive medical competence, they cannot automatically replicate the relational depth of in-person care. For private healthcare providers, sustainable competitive advantage will therefore depend on bridging this gap—transforming telemedicine from a purely functional transaction into a holistic, empathetic patient experience. Only by equally prioritizing procedural efficiency and psychological engagement can organizations fully realize the potential of patient-centered digital health. Future studies should extend this approach to larger and more diverse populations to validate the three-dimensional model across different medical specialties. Furthermore, combining quantitative and qualitative methods would allow researchers to build a more comprehensive understanding of patient-centered digital care and identify specific communication behaviors that bridge the gap between clinical competence and psychological satisfaction.

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