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Telemedicine *apps* and their influence on the tourism industry. A qualitative study.

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Abstract

Purpose (limit 100 words)

Despite increasing interest in telemedicine, its impact on tourism remains underexplored. This study analyses how telemedicine apps improve healthcare access for tourists, emphasizing usability, benefits, challenges, and safety perceptions, while identifying integration barriers and opportunities.

Design/methodology/approach (limit 100 words)

This study employs a qualitative approach using Grounded Theory to develop a structured understanding of telemedicine's role in tourism. Data collection involved semi-structured in-depth interviews, participant observation, and document review with 10 experts from medicine, tourism, app development, consumer advocacy, and academia, recruited through theoretical sampling. The analysis employed ATLAS.ti software with open, axial, and selective coding to generate themes and construct a theoretical framework.

Findings (limit 100 words)

Telemedicine apps, primarily designed for medical management, also enhance tourist safety. However, usability challenges for older users and poor integration with tourism services hinder their adoption. Experts emphasized the importance of accessibility and user-friendly design, while concerns about medical data security were minimal.

Originality/value (limit 100 words)

This research provides novel insights into the connection of telemedicine and tourism, highlighting how telemedicine apps can enhance tourist safety and convenience. By integrating expert

perspectives, the study offers practical recommendations for tourism stakeholders and app developers to foster innovation and adoption in both sectors.

Research limitations/implications (limit 100 words)

The findings are based on a small sample size of experts. Future studies could broaden the participant sample and include actual tourists to gain deeper insights.

Practical implications (limit 100 words)

Tourism providers should partner with telemedicine developers to enhance tourist safety. Training older users will improve adoption rates.

Social implications (limit 100 words)

Integrating telemedicine into tourism can improve access to healthcare, reduce travel-related health risks, and promote proactive health management among tourists, benefiting public health. However, the widespread adoption of telemedicine in tourism requires alignment with existing data protection regulations such as the GDPR in Europe and the HIPAA in the United States.

Keywords: *apps*; telemedicine; mobile health; healthcare safety; tourism; technology adoption.

1. Introduction

Although well-researched in traditional healthcare, its impact on general tourism remains underexplored, highlighting a research gap. Telemedicine *apps* facilitate cost-effective and convenient access to healthcare services, particularly in underserved areas (Huang, 2018). Their role extends beyond traditional healthcare by providing remote consultations, real-time health monitoring, and emergency guidance, making them essential for tourists navigating unfamiliar or resource-limited settings. These *apps* improve safety by offering real-time health monitoring and medical guidance in unfamiliar environments. Bidirectional communication is a key characteristic of smart services (Gao & Huang, 2019). While telemedicine *apps* offered by tech start-ups are gaining popularity, there remains a prevailing sentiment among the public that hospitals should be the primary providers of these services (Yuswohady et al., 2021).

Currently, consumers use multiple channels (offline and online) to become familiar with and purchase products (Verma & Yadav, 2021) or services. Globalization and healthcare privatization have increased cross-border medical travel, emphasizing the need for accessible, cost-effective digital healthcare solutions (Collins et al., 2022). As tourism expands, telemedicine presents a viable alternative for managing healthcare needs abroad. Prior research has primarily focused on medical tourism, overlooking the everyday health challenges faced by tourists. This study bridges that gap by examining how telemedicine can enhance healthcare accessibility, mitigate risks, and improve safety perceptions among tourists.

Moreover, healthcare systems and stakeholders are repositories of a huge amount of collectable and codified knowledge which can potentially reduce the risk of medical errors and properly inform healthcare decision-makers (Leone et al., 2021). Remote health monitoring systems and smart wearable devices together with a cloud-based telemedicine platform can contribute significantly to the prevention of diseases by enabling early diagnosis and management, and consequently managing treatment and rehabilitation of the patients (Papa et al., 2020).

[Figure 1].

This qualitative research aims to determine the key factors influencing the effectiveness of telemedicine *apps* and explore potential healthcare safety issues that may arise during travel. This

study investigates the impact of telemedicine apps on tourists' healthcare safety perceptions, assessing usability, accessibility, and integration challenges. By addressing these critical issues, this study seeks to bridge the gap in understanding how telemedicine can enhance healthcare safety for tourists, offering both theoretical and practical contributions.

Despite growing research on medical tourism, little attention has been given to how telemedicine can support general tourists who experience unexpected health issues abroad. This study examines telemedicine's impact beyond planned medical travel, identifying practical use cases and adoption barriers**.** The specific objectives are as follows:

1. Assess the usefulness of telemedicine *apps* for health monitoring and identify the factors contributing to this perception.

2. Identify the benefits of telemedicine *apps* usage by tourists, including motivators and influencing factors essential for evaluating healthcare safety.

3. Highlight the drawbacks of telemedicine *apps* usage, examining how these disadvantages may affect the relationship between utility and healthcare safety, particularly during travel.

4. Examine the relationship between telemedicine *apps* usage and perceived healthcare safety among tourists.

These four research objectives have been elaborated upon and organized into four conceptual networks, each giving rise to a major grouping of codes (hereinafter referred to as code families or CFs): usefulness for health monitoring, advantages of telemedicine *apps*, disadvantages of telemedicine *apps*, and safety in travel healthcare (see Figure 2). This approach provides a structured framework for examining the multifaceted role of telemedicine in tourism, enabling a comprehensive analysis of its implications for both users and service providers.

[Figure 2].

2. Literature review and theoretical background

2.1 Telemedicine and digital health technologies

Telemedicine applications have become pivotal in ensuring accessible and safe healthcare for tourists. Advancements in digital health technologies have revolutionized the delivery of remote medical care, breaking down geographical barriers and increasing healthcare efficiency (Gajarawala & Pelkowski,

2021). These technologies influence bidirectional communication and cloud-based platforms to facilitate health monitoring, early diagnosis, and effective treatment management (Papa et al., 2020).

The integration of the Internet of Things (IoT), wearable sensors, and real-time monitoring technologies is transforming telemedicine by enhancing predictive healthcare and remote diagnostics (Albahri et al., 2021). These innovations, including wearable electrochemical sensors (Faham et al., 2023), facilitate continuous health tracking, making telemedicine particularly valuable for tourists in remote locations. By bridging digital health and tourism, these technologies provide tourists with proactive healthcare solutions, improving both prevention and emergency response measures. These technologies are especially beneficial for tourists in medically underserved regions, ensuring proactive health management and early detection of medical issues.

Advancements in artificial intelligence (AI) have further refined telemedicine capabilities. Recent research has emphasized the importance of Electronic Health Records (EHRs) in facilitating remote healthcare, improving patient data accessibility, and optimizing digital health ecosystems (Khashan et al., 2024). The successful adoption of EHRs significantly influences the efficiency of telemedicine services, reducing administrative burdens and enabling seamless coordination between healthcare providers and tourists requiring medical attention abroad. However, studies indicate that physicians' adoption of EHRs is influenced by multiple factors, including perceived usefulness, ease of use, organizational support, and technology readiness (Khashan et al., 2024). These insights highlight the importance of well-integrated digital health infrastructures in expanding telemedicine's role in tourism. Pieczynski et al. (2021) and Huang et al. (2022) reveal how AI-enhanced telemedicine supports remote screening and diagnosis, particularly during patient isolation, leading to better healthcare outcomes and efficiency.

Digital health technologies continue to evolve with the integration of behavioural insights into mobile health adoption. Consumer adoption of digital health *apps* depends on factors such as trust, social influence, and health consciousness, extending beyond mere technological ease of use (Dahiya & Saini, 2024). This is particularly relevant to telemedicine adoption in tourism, where tourists' trust in digital healthcare solutions, influenced by recommendations from peers and healthcare providers, significantly impacts adoption rates.

A holistic framework for the adoption determinants of mobile health (M-health) applications has been proposed to analyse user behaviour, highlighting factors such as hedonic motivations, perceived behavioural control, and social influence (Najib Al-Jabali & Ahmad, 2025). This systematic review

identified that despite the increasing penetration of smartphones, low engagement, digital literacy gaps, and a lack of healthcare provider involvement remain major barriers to mobile health adoption. Understanding these gaps is particularly relevant to telemedicine adoption in tourism, where tourists often lack familiarity with digital healthcare ecosystems and require simplified, intuitive health interfaces for optimal engagement.

Trust plays a crucial role in the adoption of telemedicine and online healthcare platforms, significantly influencing consumers' willingness to engage with digital health services. The Unified Theory of Acceptance and Use of Technology (UTAUT) model, widely applied in digital health research, highlights that perceived trust moderates the relationship between effort expectancy, performance expectancy, and social influence in technology adoption (Saraswat & Singh, 2025). This is particularly relevant in telemedicine adoption among tourists, where users may be hesitant to engage with unfamiliar healthcare systems due to concerns about data security, service legitimacy, and regulatory inconsistencies across countries.

Recent research has further refined theoretical models for telemedicine adoption, expanding beyond Technology Acceptance Model (TAM) and UTAUT. The Modelling Telemedicine Adoption framework (Chanda et al., 2025) emphasizes additional determinants such as digital literacy, stakeholder collaboration, and regulatory harmonization as key factors influencing telemedicine acceptance. This model suggests that while technological factors play a crucial role, successful adoption depends on broader systemic enablers, including government support, healthcare institution engagement, and inter-industry cooperation.

Telemedicine also plays a transformative role in nursing practices. David-Olawade et al. (2024) describe tele-triage, remote monitoring, and virtual consultations as essential tools for reducing emergency department congestion and improving chronic condition management. These integrations not only enhance operational efficiency but also promote timely, patient-centered healthcare, addressing disparities in healthcare access.

2.2 Global challenges in telemedicine adoption

While telemedicine is transformative, its adoption faces significant barriers across global contexts. Cultural perceptions, regulatory challenges, and infrastructural limitations impede its widespread implementation. For example, Luciano et al. (2020) contrast regulatory hurdles in the U.S. with infrastructural challenges in Brazil. Similarly, Yigzaw et al. (2024) highlight the need to balance stringent data privacy regulations, such as General Data Protection Regulation (GDPR) and Health

Insurance Portability and Accountability Act (HIPAA), with efficient healthcare delivery. In Sub-Saharan Africa, financial constraints, cultural resistance, and inadequate technological infrastructure further hinder adoption (Dodoo et al., 2021).

In addition to data protection regulations such as GDPR and HIPAA, studies emphasize the importance of stakeholder-driven governance models for telemedicine adoption (Ojha & Agarwal, 2025). Without clear frameworks for cross-border telemedicine services, tourists may face regulatory uncertainties regarding data privacy, liability, and service continuity. Policymakers must balance regulatory enforcement with innovation-friendly policies to facilitate telemedicine access across different jurisdictions.

The COVID-19 pandemic significantly accelerated the adoption of telehealth, forcing both healthcare providers and patients to rapidly transition to remote healthcare solutions. Maleka and Matli (2024) highlight that, although telehealth improved healthcare accessibility during the crisis, concerns over its long-term sustainability persist. Their study found that, despite telehealth's cost-effectiveness and convenience, factors such as a lack of face-to-face interactions, privacy concerns, and disparities in digital literacy have hindered its continued use beyond the pandemic. These findings underscore the importance of regulatory frameworks that ensure both security and accessibility while maintaining telehealth as a viable solution for tourists and underserved populations.

Data security remains a critical concern. Centralized storage systems increase risks of data breaches, undermining trust in telemedicine platforms (Hiwale et al., 2023). Emerging solutions, such as blockchain and federated learning, provide decentralized and secure frameworks for healthcare data management. However, resistance to adopting telemedicine persists in resource-limited areas, often due to a lack of infrastructure and healthcare professionals' preference for traditional practices (Haleem et al., 2021).

Resistance to telemedicine adoption extends beyond technological barriers, encompassing socio-cultural hesitations and stakeholder misalignment. Studies indicate that while tourists express interest in telemedicine solutions, scepticism toward digital healthcare services, particularly in regions with strong traditional medicine practices, remains a barrier (Chanda et al., 2025). In response, tailored public awareness campaigns and strategic partnerships between tourism and healthcare sectors can facilitate a more seamless adoption process.

Addressing these barriers requires tailored strategies, including investments in digital infrastructure, culturally sensitive education programs, and region-specific telehealth adaptations. Estonia's success

in implementing blockchain-based healthcare systems offers a replicable model for addressing data security and improving access (Liu et al., 2023). Overcoming these barriers will enable telemedicine to deliver equitable, efficient, and accessible healthcare services globally.

Despite the promise of mobile health technologies, existing disparities in healthcare accessibility and digital literacy continue to hinder adoption. Research highlights that M-health applications often lack user engagement due to issues such as low adherence, variations in usage motivation, and limited customization for diverse populations (Najib Al-Jabali & Ahmad, 2025). These findings are particularly relevant in telemedicine adoption for tourism, where tourists from different cultural and economic backgrounds may encounter difficulties in accessing or trusting digital healthcare services. Developing localized telemedicine platforms that address linguistic, financial, and technological barriers could significantly improve user adoption rates among tourists.

2.3 Telemedicine benefits and barriers for tourists

Telemedicine offers unique advantages for tourists, addressing healthcare challenges during travel. Real-time teleconsultations provide medical advice in multiple languages, enhancing healthcare accessibility and reducing travel-related anxiety (Pandit et al., 2024). Telemedicine apps streamline appointment scheduling, record access, and follow-up healthcare, offering a reliable alternative to traditional services, particularly in remote destinations (Alexandra et al., 2021). These features improve service quality and ensure continuity of healthcare for tourists managing chronic conditions (Rouidi et al., 2022).

Beyond its general benefits, telemedicine plays a crucial role in chronic disease management and remote pain treatment, particularly for tourists with pre-existing conditions. The economic impact of telemedicine adoption in tourism is another crucial aspect that requires further exploration. Studies show that incorporating telemedicine solutions into tourism infrastructures not only improves healthcare access but also generates economic benefits for local healthcare providers by increasing patient reach (Chanda et al., 2025). By integrating telemedicine with tourism services, governments and private enterprises can create sustainable business models that enhance both public health outcomes and local economic development.

Recent studies have expanded the UTAUT model by incorporating perceived trust as a moderating factor in the adoption of digital health technologies. Findings suggest that while performance expectancy and effort expectancy positively influence adoption intentions, the presence or absence of trust can significantly alter these relationships (Saraswat & Singh, 2025). This is particularly critical

in the tourism sector, where tourists may be reluctant to engage with telemedicine platforms due to concerns over healthcare credibility, medical accuracy, and privacy risks. As a result, tourism and healthcare stakeholders must prioritize trust-building strategies, including endorsements from recognized healthcare institutions, transparent pricing structures, and compliance with international health regulations, to encourage widespread adoption.

Emerging research suggests that social media engagement plays a crucial role in shaping public perceptions of telemedicine (Dass et al., 2024). The integration of social media marketing and digital healthcare services has been found to significantly impact telemedicine adoption intentions, particularly in post-pandemic contexts. The study further highlights that privacy concerns and COVID-19-induced anxiety negatively affect consumer confidence in telemedicine, while positive emotional engagement with online health content enhances telemedicine adoption. These insights suggest that tourism and telemedicine stakeholders should leverage social media campaigns to improve telemedicine credibility and drive user adoption among tourists.

El-Tallawy et al. (2024) highlight how telemedicine has significantly enhanced access to pain management services, particularly for individuals with mobility challenges or those requiring long-term monitoring. Their findings indicate that telemedicine reduces the burden of in-person visits, allowing continuous remote support and specialized pain management interventions. This is particularly relevant for tourists who may struggle to access consistent medical care abroad. Integrating telemedicine solutions into tourism-focused healthcare services could therefore provide targeted support for tourists managing chronic pain, ensuring they receive appropriate medical guidance regardless of location.

The wider adoption of telemedicine in crisis scenarios, such as the COVID-19 pandemic, has demonstrated its effectiveness in maintaining healthcare access while minimizing patient exposure to risks. Toni and Ayatollahi (2024) highlight that telemedicine has proven particularly beneficial for vulnerable populations, including cancer patients, who were at high risk during the pandemic. Their findings indicate that teleconsultation, tele-visits, and telerehabilitation significantly reduced hospital admissions and improved patient-reported outcomes, demonstrating telemedicine's potential beyond emergency situations. These insights are particularly relevant to the tourism sector, where tourists frequently face medical uncertainties in foreign environments. Adapting telemedicine services to tourist needs could enhance both preventive healthcare and emergency response, ensuring a more resilient and accessible healthcare system for tourists worldwide.

However, barriers to adoption persist. Older tourists often struggle with the complexity of telemedicine *apps*, discouraging use (Blok et al., 2020). Privacy concerns regarding medical data further limit adoption, though trust in *app* providers can mitigate these fears (Rouidi et al., 2022). Additionally, the reliance on stable Internet connectivity restricts access in remote or underserved destinations (Ftouni et al., 2022).

Recent research on mobile health technology adoption underscores additional barriers to accessibility. Chan and Zhuo (2024) examined mobile health adoption among low-income working adults and found that digital literacy challenges, privacy concerns, and a lack of awareness of available health *apps* were key obstacles limiting usage. Their findings suggest that even in highly digitized societies, mHealth adoption is constrained by usability complexities and a preference for general web searches over dedicated health *apps*. These insights are highly relevant to telemedicine adoption in tourism, where tourists often face similar challenges in navigating digital health solutions due to unfamiliar healthcare systems and varying levels of digital literacy across global destinations. Understanding these adoption barriers is essential for designing *more intuitive, accessible telemedicine solutions that cater to diverse user demographics, including tourists and low-income groups.

Beyond user-related barriers, effective telemedicine integration within tourism requires strong management competencies at various levels of healthcare leadership. Ylitalo et al. (2023) emphasize that primary healthcare managers play a critical role in the successful deployment of digital health solutions. Their study highlights how managers at different levels (frontline, middle, and senior) must develop specific digital health competencies to facilitate telemedicine adoption. Frontline managers focus on guiding healthcare personnel and users, middle managers coordinate digital health initiatives, and senior managers oversee large-scale integration efforts. These leadership dynamics are essential in tourism-driven telemedicine solutions, where seamless coordination between healthcare providers, tourism stakeholders, and policymakers is required to ensure sustainable implementation.

The adoption of telemedicine in tourism is not solely dependent on technological factors but also on stakeholder engagement, including healthcare providers, regulatory bodies, and tourism businesses. The TAM has traditionally been applied to assess digital health adoption. However, recent research suggests that expanded models incorporating behavioural and social determinants provide a more accurate representation of user engagement with telemedicine (Dahiya & Saini, 2024). The inclusion of personal innovativeness, social influence, and health consciousness as key adoption factors demonstrates that users are more likely to engage with telemedicine *apps* when they align with their perceived lifestyle needs and digital literacy levels. In tourism, where tourists' health behaviours differ

from routine settings, incorporating behavioural adoption models could enhance service personalization and increase user engagement.

Research highlights that successful telemedicine implementation requires cross-sector collaboration, digital literacy enhancement, and trust-building measures among both tourists and service providers (Ojha & Agarwal, 2025). Ensuring a seamless telemedicine experience for tourists demands coordinated efforts from travel agencies, insurance companies, and healthcare institutions to create integrated digital health ecosystems. The Technology Readiness and Acceptance Model (TRAM) has been widely used to analyse physicians' adoption of EHR systems, providing insights into how innovativeness, optimism, discomfort, and insecurity influence the adoption of healthcare technologies (Khashan et al., 2024). The TRAM framework suggests that while positive technology readiness factors (innovativeness, optimism) drive digital health adoption, negative factors (discomfort, insecurity) pose barriers to usability. This model aligns with UTAUT and TAM, highlighting that stakeholders' perceptions play a crucial role in the digital transformation of telemedicine in tourism.

Technology adoption in healthcare is often analyzed using established frameworks, including TAM (Davis, 1989) and UTAUT (Venkatesh et al., 2003). These models provide insights into user behavior and factors influencing the acceptance of digital health solutions. While TAM focuses on perceived ease of use and usefulness, UTAUT expands this by incorporating social influence, facilitating conditions, and effort expectancy (Williams et al., 2015). Studies applying these models in telemedicine emphasize the critical role of digital literacy, trust, and regulatory alignment in adoption rates (Rouidi et al., 2022). Theoretical models such as TAM and UTAUT remain central to understanding digital health adoption; however, recent studies suggest the necessity of hybrid frameworks that incorporate stakeholder perspectives and policy-driven incentives (Chanda et al., 2025). The Modelling Telemedicine Adoption framework extends traditional models by incorporating system-wide enablers such as health tourism policies, interoperability standards, and inter-sectoral cooperation. Applying this framework to telemedicine adoption in tourism offers a more comprehensive understanding of how multiple factors interact to influence user engagement and long-term sustainability.

Recent research has highlighted the relevance of UTAUT2 in understanding e-consultation adoption, particularly among healthcare professionals in emerging economies. Dash and Sahoo (2023) applied UTAUT2 to investigate physicians' perceptions of e-consultation services during the COVID-19 pandemic, demonstrating that facilitating conditions, effort expectancy, and social influence were the

strongest predictors of adoption. However, their findings also indicated that habit and experience had minimal impact, challenging assumptions about long-term behavioral intention in telemedicine. These insights are particularly relevant for tourism-related telemedicine services, where intermittent usage patterns, cross-border healthcare access, and variable regulatory environments may influence adoption differently compared to traditional healthcare settings.

3. Methodological procedure

3.1 Research design

This study adopts a qualitative approach precisely because of the absence of established theoretical frameworks linking telemedicine *apps* and their role in general travel experiences. A significant gap remains in understanding how digital health solutions influence tourist behaviour and healthcare decision-making abroad. The study aims to develop a conceptual model integrating telemedicine and tourism. A literature review preceded the qualitative study to refine its focus and enhance interview quality.

The study adopts a qualitative approach to examine the practical challenges and advantages of telemedicine adoption in tourism, using expert interviews and coding (Strauss & Corbin, 2015). Within the qualitative methodology scope, after considering various options, it has been determined that the most appropriate approach to follow is Grounded Theory (hereinafter, GT) as it employs a series of coding techniques that inductively generate an explanatory theoretical basis of a phenomenon. Both authors developed approaches to GT (Charmaz, 2006; Gibson & Brown, 2009; Strauss & Corbin, 2015).

Consequently, this research adopts the approach outlined by Strauss and Corbin (2015) and Pandit (1996). The decision to select this methodology was primarily influenced by two key factors: (1) Strauss and Corbin's (2015) detailed procedures for developing theory through semi-structured interviews and participatory observations; and (2) Pandit's (1996) technique for applying GT with the assistance of qualitative analysis software (Computer Assisted/Aided Qualitative Data Analysis, CAQDAS).

To develop GT, this research employed two primary strategies as outlined by Strauss and Corbin (2015): the constant comparative method, where the researcher codes and analyses data over time by continuously comparing it to generate concepts, and theoretical sampling, which involves seeking new cases to refine or expand existing concepts and theory. The coding process was conducted in three

phases: open coding, which involved identifying and categorizing raw data; axial coding, which established connections between categories; and selective coding, which integrated these categories to construct a coherent theoretical framework. This iterative approach ensured that emerging themes were validated and supported by the data, contributing to the rigor of the methodology.

The process of creating GT was structured into four stages: research design, data collection, data analysis, and the confrontation of literature with theory construction. Expert input from various domains played a crucial role in this research, providing a global perspective while ensuring a deep, nuanced understanding within each area of expertise.

3.2 Data collection

Experts from medicine, tourism, consumer advocacy, *app* development, and academia were recruited based on their domain expertise to provide a well-rounded perspective. The sample selection was based on theoretical non-probabilistic sampling (Berg, 2014; Pandit, 1996; Shim et al., 2020), focusing on the expertise area of each expert (refer to Table 1). Participants were recruited through purposive sampling via email or telephone, ensuring alignment with the study's objectives. All interviews followed a semi-structured protocol that balanced consistency with the flexibility to explore emergent themes. Interviews lasted an average of 30-40 minutes and were transcribed in word files.

[Table 1].

Given the unknown number of experts composing the final sample due to the methodology used, data collection continued until theoretical saturation was achieved, where no new concepts emerged. Furthermore, it was decided to disclose the names, job positions, and areas of specialisation of the experts who participated in the research, considering the ethical considerations highlighted by Gibson and Brown (2009), as it was essential in this case to specify that the obtained findings are supported by their participation (refer to Table 1).

The final sample consists of 10 experts whose specialisations can be categorised into the following areas: medicine, *apps* and cybersecurity, the tourism industry, surveillance of corporate ethical behaviour and consumer rights advocacy, and academic research. The fieldwork was conducted from May 2023 to October 2023. The job positions listed for the experts correspond to 2023, and the research-related roles were always indicated, excluding any additional positions outside the scope related to the present investigation. This transparency ensures trustworthiness and reliability.

3.3 Data analysis

Three techniques were employed in the data collection process: semi-structured in-depth interviews, participant observation, and document review.

Semi-structured in-depth interviews were chosen as the primary method due to the exploratory nature of the study and the limited information available to develop a general script (Strauss & Corbin, 2015). Unlike structured interviews, this approach allowed for flexibility, as the questions were not predetermined but evolved naturally during the conversation. For each expert, a tailored interview guide was created using a template as a protocol. On average, the interviews lasted about thirty minutes, with all sessions recorded and transcribed using Teams software. The data was then organized, stored, and analysed using ATLAS.ti 23 Windows, which streamlined the different stages of GT and improved the overall quality of the qualitative research (Strauss & Corbin, 2015). The analysis followed a structured GT approach. First, open coding was applied to identify initial themes and concepts. Next, axial coding established connections between themes, highlighting relationships among identified patterns. Finally, selective coding refined these connections into a unified theoretical framework, ensuring coherence in the study's findings.

To ensure coding reliability, two researchers reviewed the transcripts, achieving an inter-coder agreement of 85% (Strauss & Corbin, 2015). The process was iterative, with constant comparison to refine emerging themes and avoid researcher bias

Participant observation complemented the interviews, given the need for a closer relationship between interviewer and interviewee. This method allowed for a deeper engagement with the participants' stories, capturing the emotions, actions, and interactions that unfolded during their responses, which Strauss and Corbin (2015) consider essential for building GT. The researcher's extensive background in the study area, including work experience at HMHospitales and in the tourism sector, as well as a thorough review of relevant literature, facilitated a meaningful immersion into the interviewees' world.

To enhance the rigor and replicability of this study, multiple validation strategies were employed. Theoretical saturation was ensured by continuing data collection until no novel concepts emerged, guaranteeing comprehensive thematic coverage. Methodological triangulation was applied by cross-validating findings through three independent sources: expert interviews, participant observation, and document analysis, thereby enhancing reliability. Document review was an integral part of the research process. From the outset, both technical and non-technical literature were reviewed. The

technical literature provided a foundation for the study's approach and guided the formulation of the research question. This triangulation of methods (interviews, participant observation, and document review) ensured the validity and trustworthiness of the data and strengthened the overall findings.

4. Findings from literature confrontation and theory construction

The findings contribute to addressing the research gap regarding telemedicine adoption in tourism by highlighting both its practical benefits and critical barriers. Unlike previous studies that focus on telemedicine within domestic healthcare settings, this research presents a unique perspective on how tourists interact with mobile health solutions in foreign environments.

4.1 Factors determining the degree of usefulness

Studies on utilitarian values highlight utility and functionality (Davis, 1989; Moynihan et al., 2010; Park, 2020). Consumers' perceived utility influences their overall perception of devices (Ahn & Park, 2022).Telemedicine satisfaction was defined by experts as the positive attitudes towards the use and value of telemedicine (Guntu et al., 2022). Telemedicine technology is understood as the use of information technologies to facilitate the transfer of medical information for diagnostic, therapeutic, and educational purposes (Rouidi et al., 2022).

The findings indicate that the code "usefulness of medical *apps*" was cited 58 times by experts, highlighting its significance in evaluating the benefits of medical *apps* for health management.

Recent empirical studies have demonstrated that behavioural and emotional engagement with digital platforms significantly influence telemedicine adoption intentions (Dass et al., 2024). Findings suggest that telemedicine adoption is not purely based on technological ease of use but also on emotional factors, such as anxiety, privacy concerns, and perceived data security. The integration of social media and telemedicine services allows users to build trust and familiarity with digital healthcare solutions, which is particularly relevant for tourists who may hesitate to engage with telemedicine due to cross-border healthcare uncertainties.

Expert interviews corroborate findings from recent studies on stakeholder engagement in digital health adoption. Stakeholder involvement plays a critical role in shaping user trust and perception of telemedicine (Ojha & Agarwal, 2025). The alignment of tourism industry leaders with healthcare providers can significantly influence the perceived accessibility and effectiveness of telemedicine solutions for tourists.

Expert interviews corroborate recent research emphasizing the role of trust as a critical moderator in digital health adoption. Studies on online pharmacy adoption suggest that perceived trust significantly influences consumers' willingness to engage with telehealth services, acting as a crucial determinant in adoption intention (Saraswat & Singh, 2025). This finding aligns with the study's results, where participants highlighted trust in medical professionals, reliability of teleconsultation services, and compliance with health regulations as key factors influencing their perception of telemedicine *apps* for travel healthcare.

In the era of digital sensors, there is an ocean of possible multimodal snapshots, episodic, and continuous data available to inform clinical insight (Pandit et al., 2024). Telemedicine offers the possibility of bringing health services to the patient, reducing the time needed to establish a diagnosis and make treatment decisions and improve the continuity of healthcare (Rouidi et al., 2022).

Likewise, the code "care safety", mentioned 31 times, stands out as a key code, being described by the interviewed experts as the cause of the code "usefulness of telemedicine *apps*", where the interviewees indicated the importance attributed to the reliability and healthcare safety provided by telemedicine *apps* for delivering remote medical services and consultations. Telemedicine services mostly rely on the use of the Internet, telecommunication systems, and cellular devices, so reliability from a technical point of view is important (Alexandra et al., 2021).

The code "video consultation/ teleconsultation", mentioned 25 times, and defined as a remote call from a mobile phone or tablet, usually with video (or without video) to the doctor for a consultation, is another highly mentioned usefulness factor for health management through telemedicine *apps*. With increasing telemedicine acceptance there was a move from in-person to telemedicine via phone or video visits (Pandit et al., 2024).

Additionally, the codes "scheduling appointments", "consulting reports", and "patient follow-up" emerge as relevant utilities of telemedicine *apps*, cited by most of the interviewees. Below are three quotes corresponding to each of the last-mentioned codes (refer to Figure 3).

[Figure 3].

Expert 1:

Laura Melendo: *"Well, look, I find it very useful, and I use it a lot to schedule appointments. I always schedule the appointment through the app, and sometimes in the health section of my health folder. I check, well, medical reports, test results..."*

Expert 2:

Estefanía Artetxe: *"Exactly, exactly, I mean, it gives me much more information than a phone call and of course the speed in scheduling an appointment or accessing all the data you need."*

Expert 3:

Carlos Monfort: *"Telephone medical consultation, where the patient calls you and you talk to them. Another thing is that also, whether with video support or not, they are very useful..."*

4.2 Identification of the benefits of telemedicine *apps* usage for tourists

Parasuraman et al. (1988) define reliability as the ability to perform the promised services dependably and accurately. In the health context, reliability is defined as the level of trust that patients have in telemedicine technology, healthcare professionals, and the quality of service (Saigi-Rubio et al., 2016). Telemedicine services depend primarily on the use of the Internet, telecommunication systems, and mobile devices, so reliability from a technical standpoint is important. Reliability affects the level of use because telemedicine users will lose confidence in the system if they cannot use it easily (Schultz, 2018). In addition to technical reliability, a factor influencing patient trust is the success of the health services provided (Lin, 2017), based on the accuracy of the online diagnostic results. The accuracy of such results is important in the choice of health services due to the existence of a life-threatening risk in the case of an incorrect treatment step (Alam et al., 2018). The higher the reliability of the *apps* and the diagnostic results of the hospital's teleconsultation *apps*, the greater the acceptance of the *apps* by users (Alexandra et al., 2021).

The code "use during travel" emerges as a highly relevant utility, being mentioned 45 times, suggesting that the interviewees consider telemedicine a valuable tool while travelling, as it is a cause of the code "usefulness of telemedicine *apps*." Due to globalization and privatization of health services, outsourcing healthcare services has resulted in the movement of health professionals and patients across borders for access to available, affordable, and accredited quality healthcare services (Collins et al., 2022). Existing literature on telemedicine and tourism primarily focuses on medical tourism, where individuals travel specifically for healthcare services. However, there is a notable

research gap in how telemedicine supports general tourism, where tourists may unexpectedly require medical assistance. Recent studies emphasize the role of technological and non-technological innovations in complex services, such as healthcare, where customer participation is crucial for improving service effectiveness (Samuelsson, 2023). Like tourism, the healthcare industry benefits from integrating digital innovations and consumer engagement to enhance service performance and adoption.

Despite these insights, few studies have examined how telemedicine apps function in travel settings, particularly when tourists encounter unfamiliar healthcare systems, language barriers, or limited medical access. This study aims to bridge that gap by identifying the key challenges and opportunities in telemedicine adoption among tourists. Additionally, Hanefeld and Smith (2019) highlight that medical tourism has become a lucrative sector for nations and private hospitals, contributing to foreign exchange revenue, addressing skill shortages, and enhancing healthcare system efficiency.

Next, the code “video consultation/ teleconsultation”, mentioned 25 times, is revealed as one of the key factors forming part of healthcare safety when travelling, by allowing the possibility of communicating and receiving remote assistance from a doctor in your language. Therefore, it can be considered that the healthcare security provided to the interviewees using the telemedicine *apps* when they travel is a common denominator among all of them. Video and phone consultations with a familiar doctor provide a sense of security for tourists (see Figure 4). Teleconsultation allows tourists to access medical advice in their native language, reducing anxiety about navigating foreign healthcare systems. This immediate access to healthcare helps mitigate health risks associated with delayed treatment. Furthermore, telemedicine *apps* facilitate real-time health monitoring and electronic medical record access, improving confidence in managing pre-existing conditions while traveling.

[Figure 4].

The findings reveal two critical barriers affecting telemedicine adoption among tourists. First, usability challenge: older users frequently encounter complex interfaces and unfamiliar navigation, underscoring the need for adaptive designs and user-friendly onboarding features. Second, privacy concerns: while some users trust telemedicine, others remain hesitant due to data security risks and international regulatory inconsistencies. Meanwhile, concerns over data security and compliance with international regulations (e.g., GDPR, HIPAA) impact trust in telemedicine services, particularly in cross-border healthcare interactions

In addition to technological and usability barriers, communication challenges in telehealth consultations further impact user experiences. Seuren et al. (2024) highlight delays in audio-visual synchronization, difficulties in mutual engagement, and conversational disruptions, which can reduce patient trust and clinician effectiveness. This issue is particularly problematic for tourists, who may already face language barriers and unfamiliar healthcare settings. Addressing these limitations requires improvements in telehealth interface design, including real-time speech translation, optimized connectivity, and enhanced visual-audio synchronization to ensure seamless interactions between patients and healthcare providers.

Abdelwahed et al. (2024) emphasize that healthcare professionals' perceptions and attitudes significantly influence the adoption of digital health technologies. Their study found that professionals' digital literacy, trust in e-health systems, and perceived ease of use are major determinants of telemedicine adoption. However, barriers such as reluctance to transition from traditional healthcare models, cybersecurity concerns, and the digital divide persist, particularly in regions with limited e-health training and infrastructure. These findings reinforce the necessity of user-centred design strategies, targeted education programs, and robust security frameworks to enhance telemedicine adoption, particularly in travel settings.

Regarding data privacy, the study reveals a dichotomy: while some users trust telemedicine systems, others remain hesitant due to potential security risks. Implementing blockchain-based data encryption, AI-driven anomaly detection, and standardized compliance frameworks could mitigate these concerns, ensuring that medical data remains protected across jurisdictions. Addressing these issues is essential to fostering greater acceptance of telemedicine as a reliable healthcare alternative for tourists.

4.3 Factors determining the drawbacks of telemedicine *apps* usage

Determining the disadvantages of telemedicine *apps* from the user's perspective is crucial, especially regarding their impact on healthcare safety and utility. A rewarding experience is critical to keep the user pleased and motivated over time, especially in health-related *apps* (Biduski et al., 2020).

One of the most prominent barriers identified in this study is the technological complexity faced by older adults, creating a substantial barrier to the adoption of telemedicine *apps* among older adults. While younger users generally navigate these platforms with ease, older individuals often struggle with user interfaces that are not intuitive, multi-step authentication processes, and unfamiliar digital interactions. These usability challenges discourage engagement and, in some cases, lead to complete

avoidance of telemedicine solutions, ultimately limiting their effectiveness in providing accessible healthcare during travel. Addressing these barriers requires user-centered design strategies, such as simplified interfaces, voice-activated navigation, and step-by-step onboarding tutorials (Blok et al., 2020).

In addition, privacy concerns regarding medical data security were cited by multiple experts, although opinions on their severity varied. While some participants expressed confidence in telemedicine security measures, others raised concerns about data violations, unauthorized access, and compliance with international privacy regulations such as GDPR and HIPAA. These concerns are particularly relevant in cross-border healthcare interactions, where legal protections and data governance structures differ significantly between countries. A more transparent approach, including clear user consent protocols, encryption of medical records, and integration with secure digital identity verification systems, could enhance trust and encourage wider adoption of telemedicine among tourists.

The codes "data privacy" and "elderly person" emerge as central codes in the "inconveniences". Therefore, codes such as usefulness, use while travelling, or healthcare safety are not associated with "inconveniences", so the relationship between usefulness and healthcare safety of telemedicine *apps* and their use while travelling remains uncompromised, which is the objective to be determined in this section.

Notably, the code "elderly person" is cited by all interviewees, understood as the greatest inconvenience when using telemedicine *apps*. The code "data privacy", cited 13 times, is revealed as an inconvenience but not a determinant for the use of telemedicine *apps* (refer to Figure 5).

[Figure 5].

Expert 1:

Reinald Gimeno: *"I understand that, well, I am constantly using banks, so I must trust that it will really be protected, just like the banks or other data we are constantly putting into cyberspace, so I don't know, yes, it gives me confidence."*

Expert 2:

Alicia de la Cuerda: *"In fact, I think we have entered a paranoia at such a level... I understand that I am not famous, but I have no problem with it."*

Expert 3:

Estefanía Artetxe: *"If I have the banking apps where I have everything downloaded, how am I going to be afraid of that? Moreover, you can't just log in, you need a user code, and usually for data privacy, they tell you they will send a code to your phone for you to enter and confirm that it's you are logging in and not someone else, just like online banking."*

Perednia et al. (1995) suggest that the ultimate success of telemedicine requires an adopting organisation to address not only technological challenges but also management issues, including user acceptance of this technology. Therefore, it is important to study the essential factors for its acceptance and use by healthcare professionals (Rouidi et al., 2022). However, to better understand the technology acceptance of older people, researchers concluded in several studies, that additional variables should be included, related to biophysical and psychosocial characteristics, abilities and problems experienced (Blok et al., 2020).

4.4 Linkage between the usage of telemedicine *apps* and the perceived healthcare safety

It is worth noting the connection between the codes "travel insurance" and "Tourism Industry and telemedicine", which highlights the relationship between healthcare safety, telemedicine *apps*, and travel, with the purchase of travel insurance, promoted or facilitated through the tourism industry (refer to Figure 6). Below are three experts that refer to the above:

[Figure 6].

Expert 1:

Alicia de la Cuerda: *"Well, in that travel insurance, you have, for example, many people who travel who don't have medical insurance, but maybe for an international travel situation. Imagine, you go to the United States, and you have any problem, so you take out travel insurance that involves a series of things."*

Expert 2:

Carlos Monfort: *"Let's see, I think if you are going to travel and have some fear, you take out medical travel insurance. What can happen with the app? It might give you a false sense of security. That is, okay, it shows that my blood pressure is high, and I have a headache, I go to a hospital, okay? So, it's*

great, but if you haven't taken out medical insurance and can't access it, then, it's like everything, it's how you use it..."

Expert 3:

Reinald Gimeno: *"Well, in destinations where healthcare management is more complicated... for example, in the United States, where we know what healthcare coverage is like... you don't really know how far your insurance goes... or in more distant countries... or in countries where you might contract some disease...*

The qualitative research was conducted with the support of the ATLAS.ti software package for the construction of the TF, from which 271 quotes, four CF (disadvantages of telemedicine *apps*, usefulness for health management, healthcare safety while travelling, and advantages of telemedicine *apps*) and 111 codes were obtained. Among all the codes resulting from the research, 60 lack theoretical saturation, and 13 have a frequency of values equal to or above 14 (refer to Table 2).

[Table 2.]

5. Conclusions

This study directly addresses an unresearched area in both tourism and healthcare research by examining telemedicine's role in supporting tourists. While telemedicine is well-documented in traditional healthcare settings, its potential to enhance tourist safety, improve access to emergency healthcare, and reduce travel-related health risks has received little scholarly attention. By highlighting usability concerns, security issues, and adoption barriers, this study paves the way for future research and policy improvements in telemedicine tourism. For example, the role of tourists' behavioural intentions, mediated by tourist satisfaction, remains largely unexamined in hospitality and tourism research (Majeed et al., 2020). Additionally, telemedicine is rapidly becoming a key service within information and communication technologies (ICT), significantly impacting traditional healthcare delivery mechanisms (Kamal et al., 2020).

The research addressed four specific objectives: assessing the usefulness of telemedicine *apps* for health monitoring, identifying their benefits for tourists, analysing the drawbacks influencing utility and safety perceptions, and exploring the relationship between telemedicine *app* usage and perceived healthcare safety during travel. These objectives provided a focused framework for analysing expert insights and generating actionable recommendations.

Several important theoretical contributions have emerged from this research, particularly in understanding the factors that influence the adoption and use of telemedicine *apps* by tourists. These factors include perceived usefulness, ease of use, *apps* during travel, advantages and disadvantages, and the level of healthcare security provided by these *apps*. Despite a strong desire to meet travel needs, tourists may face obstacles such as perceived risks that could deter them from using telemedicine services (Kim et al., 2021). Over the past decade, the involvement of consumers in healthcare processes has gained increasing attention, with positive expectations for its impact on healthcare outcomes (Mirzaei & Esmaeilzadeh, 2021). Moreover, bidirectional communication is recognized as a fundamental feature of intelligent services (Gao & Huang, 2019).

6. Implications

6.1 Research implications

This study provides a theoretical framework to understand the intersection of healthcare, telemedicine *apps*, and tourism. It suggests that integrating telemedicine services into travel-specific *apps* can significantly enhance the travel experience and improve medical safety for tourists. Additionally, telemedicine *apps* have the potential to mitigate travel-related health anxieties and encourage proactive health management among tourists, contributing to public health improvements.

6.2 Practical implications

The integration of telemedicine *apps* within the tourism industry carries wide-reaching implications for various professionals and sectors. Healthcare professionals, including physicians and other medical practitioners, could find new employment opportunities in telemedicine, especially those with expertise in emergency medicine, primary healthcare, and teleconsultation. As demand for telemedicine services increases, there will likely be a need for specialized training programs to ensure that healthcare providers can meet the specific needs of tourists and maintain high-quality service. Multilingual teleconsultation services and emergency medical coordination tailored to tourists' needs could further enhance adoption and satisfaction.

Information technology specialists will be instrumental in this integration, tasked with developing and maintaining secure, user-friendly telemedicine platforms tailored to the tourism industry. Ensuring data security and the seamless interoperability of these platforms with existing tourism information systems will be crucial to their success.

Tourism professionals, such as travel agents, hotel managers, and tour operators, will need to adapt by integrating telemedicine services into their offerings and effectively communicating these benefits to clients. This adaptation can enhance the overall appeal and safety of tourism packages.

Consultants and regulatory experts will also play a vital role, advising tourism businesses on the legal and regulatory aspects of providing telemedicine services to tourists. This includes ensuring compliance with data privacy laws and both local and international medical regulations to deliver legally sound and ethically responsible services. Integrated solutions, such as travel insurance with telemedicine services, could also increase consumer confidence and adoption.

Finally, researchers and academics may find new opportunities to study the impact of telemedicine on the tourism industry, exploring best practices for its implementation and assessing its effectiveness in various contexts. This could lead to the development of specialized academic programs and training courses that bridge telemedicine and tourism, preparing future professionals for this evolving field.

6.3 Social implications

From a policy perspective, integrating telemedicine within tourism requires careful consideration of health data privacy regulations such as the GDPR in Europe and HIPAA in the United States. In addition to regulatory alignment, the ethical and social implications of telemedicine adoption require careful examination. Research suggests that telemedicine adoption policies should prioritize digital equity, ensuring that lower-income and marginalized tourist populations have access to affordable and culturally sensitive healthcare solutions (Chanda et al., 2025). Without targeted efforts to bridge digital health disparities, telemedicine risks becoming an exclusive service accessible only to tech-savvy or high-income tourists, rather than a universally beneficial healthcare solution.

These frameworks administrate the collection, storage, and transfer of sensitive medical information, making compliance essential for international telemedicine services. Ensuring secure cross-border data exchange through encrypted transmission protocols, implementing standardized consent mechanisms, and promoting interoperability between national healthcare systems are critical steps to address regulatory inconsistencies and enhance patient trust. According to Holly et al. (2023), effective health data governance (HDG) should not only prioritize security but also integrate equity and rights-based principles to ensure inclusivity in digital health solutions. Their study highlights the need for globally unified policies that balance data protection with the efficient use of medical data for public health benefits. Policymakers should collaborate with telemedicine providers, tourism stakeholders, and cybersecurity experts to develop comprehensive data-sharing agreements,

regulatory strategies, and robust compliance measures that align with global standards for medical data protection, ensuring equitable and ethical handling of health data across jurisdictions

The role of social media engagement in promoting telemedicine services is increasingly relevant, particularly in the context of public health crises (Dass et al., 2024). Studies indicate that social media-driven digital health campaigns can reduce anxiety-related resistance to telemedicine by offering reliable, verified information on its benefits and regulatory safeguards. However, ethical concerns arise regarding the use of fear-based digital marketing to promote telemedicine services, highlighting the need for ethical advertising standards and transparent data governance frameworks. Ensuring that social media-driven telemedicine adoption strategies are evidence-based and ethical is critical for fostering trust, accessibility, and equitable healthcare delivery for tourists and vulnerable populations.

Beyond improving healthcare access for tourists, telemedicine raises ethical concerns regarding digital inclusion, accessibility for marginalized groups, and data sovereignty. Research suggests that ethical telemedicine adoption requires a stakeholder-centred approach to ensure equitable service delivery and mitigate digital disparities (Ojha & Agarwal, 2025). Tourism stakeholders must advocate for policies that promote ethical AI-driven healthcare solutions, ensuring fairness in healthcare provision across diverse tourist demographics.

In summary, the integration of telemedicine *apps* and services into the tourism industry could have profound implications, driving innovation and creating new professional pathways across a range of disciplines. By fostering collaboration among tourism stakeholders, healthcare providers, and technology developers, telemedicine *apps* can redefine global travel safety standards. The findings highlight the urgent need for integrated telehealth solutions in tourism, addressing usability, privacy, and accessibility challenges. Future research should explore cross-border regulatory frameworks, AI-driven language solutions, and digital health training for tourists to maximize telemedicine's potential as a standard component of global travel infrastructure.

6. Limitations and future research lines

The integration of telemedicine *apps* into the tourism industry offers valuable insights but also presents some limitations that need to be addressed. The availability of empirical data, particularly from actual tourists, is essential for validating research findings, as studies solely based on expert perspectives may not fully capture user behaviour or preferences. While this study has contributed significantly to understanding the adoption and use of telemedicine *apps* during travel, it is important to recognize its limitations.

One notable limitation is related to the sample size. This research, being a qualitative study, relied on in-depth insights from a relatively small sample of ten experts. Qualitative studies often use smaller samples to gain detailed understandings of the subject matter. However, this limited sample size may not fully represent the broader population, potentially affecting the generalizability of the findings. The small sample size also means that the study's conclusions are based on the perspectives of a select group of experts, which may not capture the full range of experiences and opinions. Moreover, the lack of input from actual tourists limits the study's ability to explore user experiences and acceptance directly. Including tourists in future research would provide a more comprehensive view of how telemedicine *apps* influence travel behaviour and healthcare safety. To build on these findings, future research could benefit from a quantitative approach, which would involve a larger and more diverse sample to test the generalizability of the findings. Additionally, a longitudinal study could provide deeper insights into how the adoption and impact of telemedicine *apps* evolve over time, offering a more comprehensive understanding of their long-term effects and effectiveness.

Another limitation is the relatively low usage of telemedicine *apps* among the interviewees. This can be attributed to the novelty of telemedicine. Although many participants had downloaded telemedicine *apps* and used them, their insights into the utility of these *apps* during travel were often based on assumptions rather than actual experience. Including tourists with firsthand experience using telemedicine *apps* while traveling could help bridge this gap and provide actionable insights into user behaviour. The effectiveness of telemedicine will ultimately depend on widespread adoption and understanding the factors that influence user acceptance is crucial for promoting its use (Kamal et al., 2020).

Despite these limitations, the study provides substantial academic contributions to the tourism and hospitality industry. It offers insights into the factors shaping the adoption and use of telemedicine *apps* during travel. For instance, the role of tourists' behavioural intentions and tourist satisfaction as a mediator has not been thoroughly explored in hospitality and tourism research (Majeed et al., 2020).

Future research could explore several areas. One potential direction is examining how the availability of telemedicine services through mobile *apps* affects tourists' travel behaviour and decisions, such as destination choice, travel duration, and frequency. Research has shown that ICT can influence travel in various ways, including affecting the location of residences and travel mode choices (Mouratidis et al., 2021). Smartphone *apps*, with their advanced functions and real-time location-specific data, can provide valuable information on destinations and travel solutions (Jamal & Habib, 2020).

Another area for future research is the development of telemedicine services specifically designed for tourists. This could involve providing multilingual medical assistance, connecting tourists with local doctors, and coordinating with emergency services. Telemedicine is emerging as a significant ICT service with notable effects on traditional healthcare systems (Kamal et al., 2020) and addressing the unique needs of tourists could enhance its effectiveness.

Exploring collaboration models between tourism businesses, such as hotels, airlines, and travel agencies, and telemedicine providers, including hospitals, insurers, and public health services, is also a promising research avenue. Integrated packages that include remote medical care could enhance the tourist experience. The telemedicine–medical tourism system encompasses various components, including tourists, destinations, transit regions, tourism industries, telemedicine support systems, and healthcare organizations (Gu et al., 2021).

From a managerial perspective, integrating healthcare services with telemedicine *apps* could significantly enhance tourists' experiences and improve healthcare safety during their journeys. This integration supports the simultaneous engagement in activities such as travel and telework, online socialization, or educational and recreational pursuits (Mouratidis et al., 2021). Additionally, a tech-savvy attitude is positively associated with effective trip planning and improved travel outcomes (Jamal & Habib, 2020).

Declarations

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Data availability statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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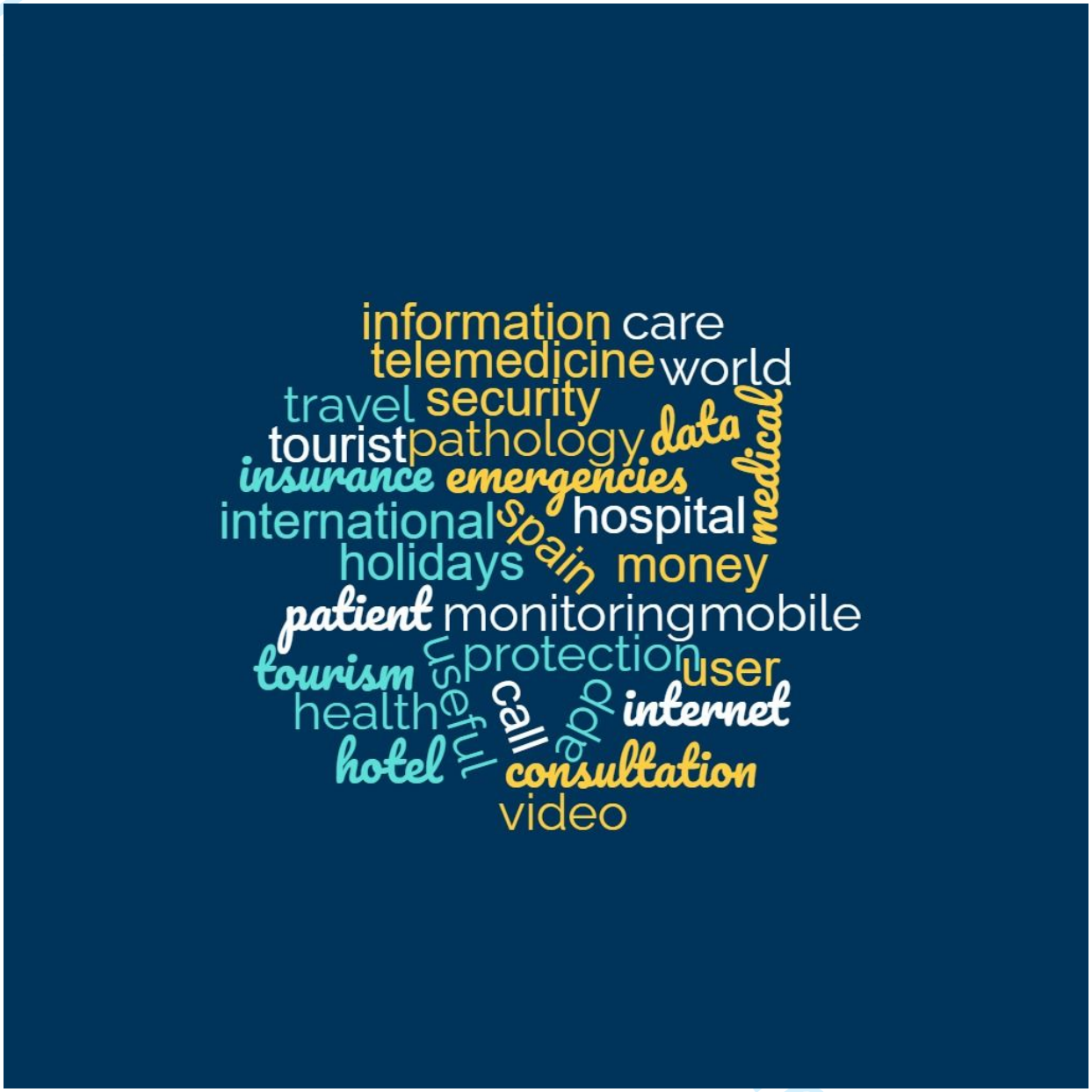

Figure 1. Word cloud represents the semantic field of this study.

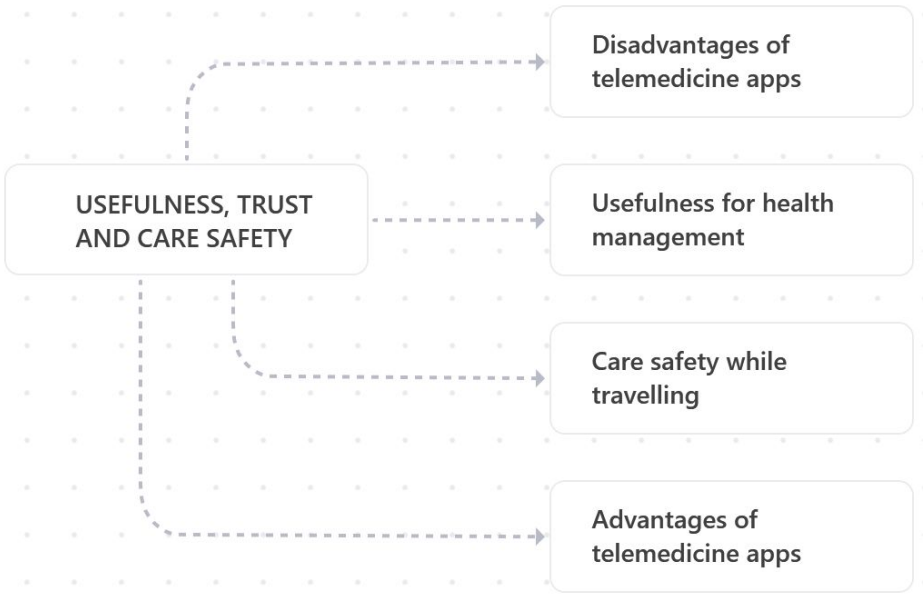

Figure 2. Usefulness, trust and healthcare safety of telemedicine *apps*.

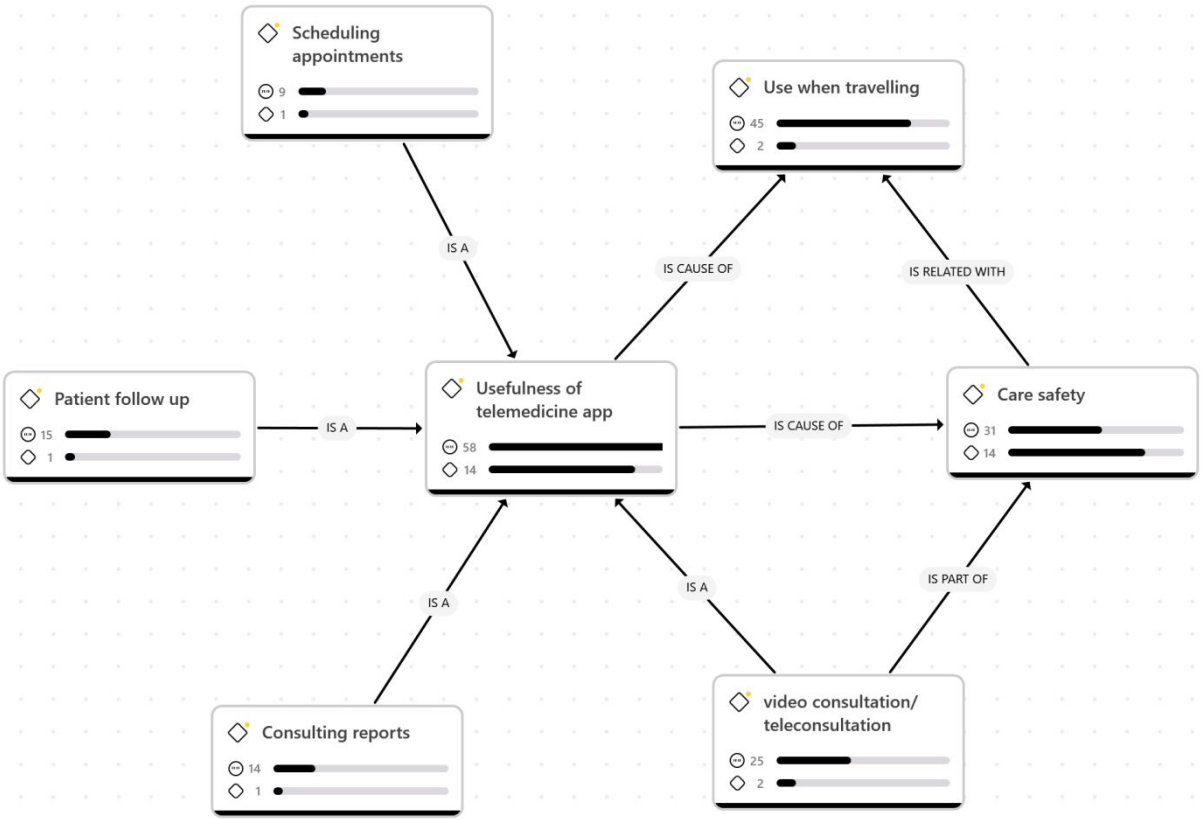

Figure 3. Usefulness of telemedicine app.

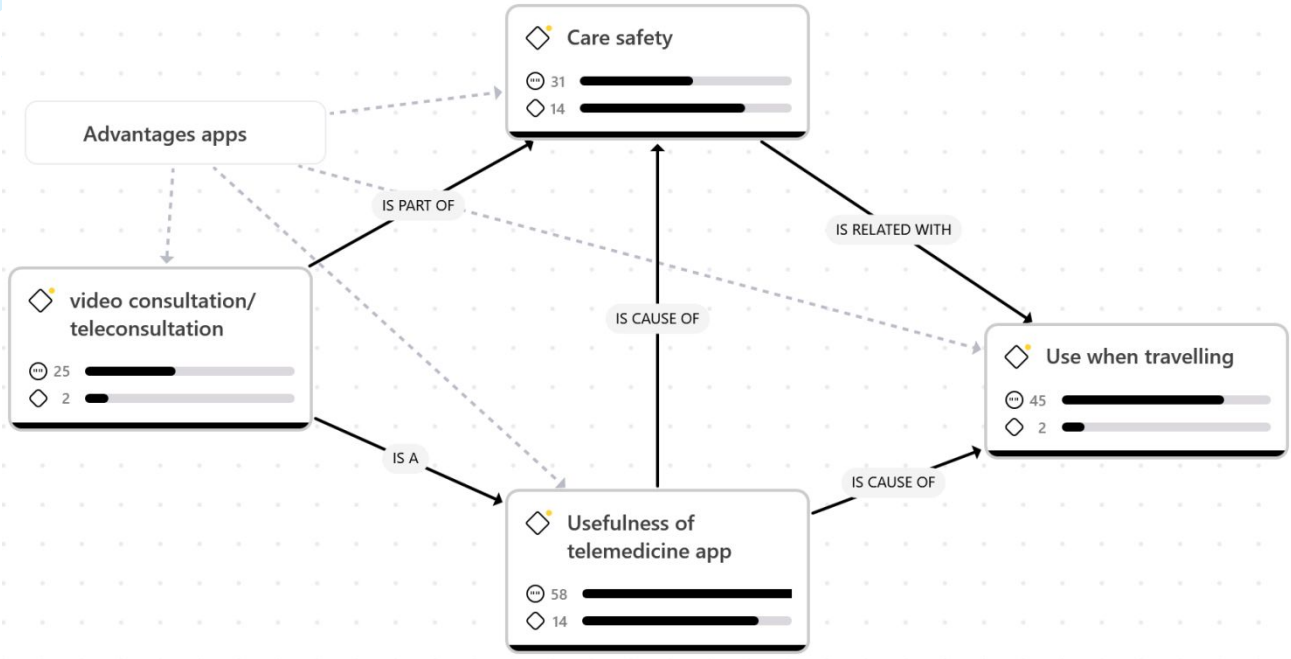

Figure 4. Advantages of telemedicine app.

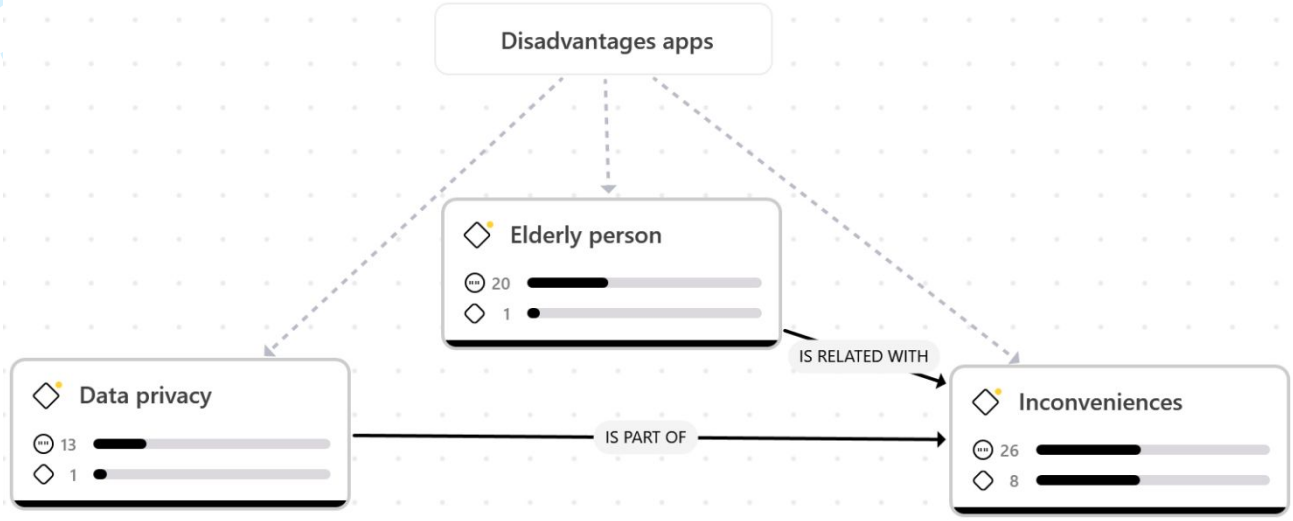

Figure 5. Disadvantages of telemedicine app.

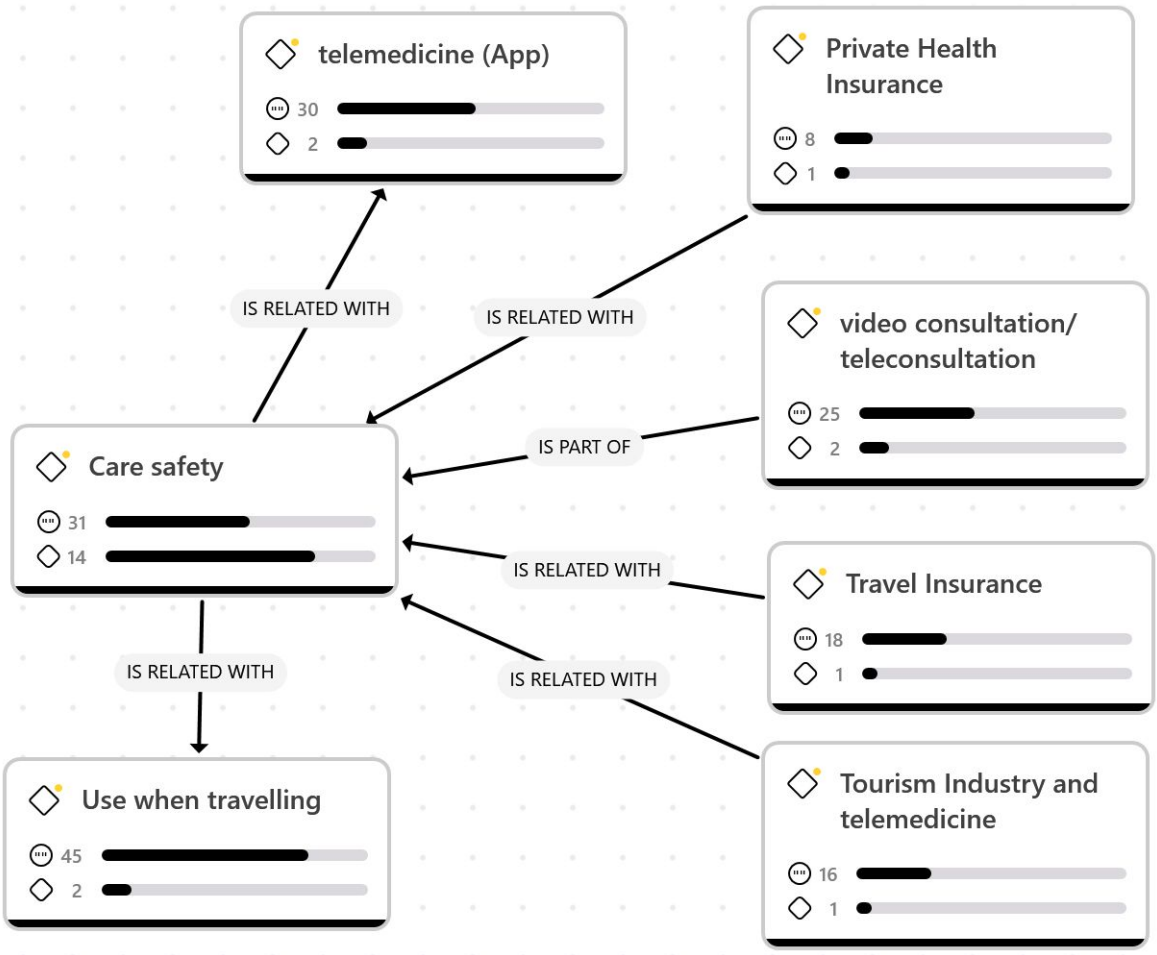

Figure 6. Healthcare safety of telemedicine app.

Table 1. Sample of experts.

EXPERT	EXPERTISE	POSITION IN 2023 (RELATED TO THEIR SPECIALISATION)	MONTH AND LOCATION	DURATION
Estefanía Artetxe	Tourism.	Director of Marketing and Distribution at Be Mate Hotels.	May 2023. Madrid.	30 min.
Luz Molano	Consumer rights.	Lawyer at OCU (Organization of Consumers and Users).	June 2023. Madrid.	30 min.
Javier Viñals	Computer *Apps*/ Telemedicine.	Founder and CEO of Careexpand. Doctor. Computer Engineer.	July 2023. Madrid.	30 min.
Alicia de la Cuerda	Medicine.	Vice-Dean of the Faculty of Health Sciences HMHospitales of the UCJC. Doctor of Medicine.	August 2023. Madrid.	35 min.
Carlos Monfort	Medicine.	Internist at HMHospitales. Doctor of Medicine.	August 2023. Madrid.	30 min.
Reinald Gimeno	Tourism.	Commercial Director at Mas Salagrós Ecoresort.	September 2023. Barcelona.	40 min.
Hilario Serrano	Consumer rights.	Lawyer at OCU (Organization of Consumers and Users)	October 2023. Madrid.	30 min.
Laura Melendo	Marketing/ Communication.	Lecturer in Communication Sciences	October 2023. Madrid.	30 min.

		from the European University of Madrid.		
Ramón Carrasco	Marketing and data mining.	Vice-Dean of Doctorate, Research and Lifelong Learning at the Faculty of Commerce and Tourism of UCM.	October 2023. Granada.	30 min.
Roberto Pérez Bona	Computer Security.	Channel Manager. Bitdefender	October 2023. Madrid.	30 min.

Table 2. Codes with the highest value frequency.

Documents												
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***Totals***
Totals	90	80	110	131	67	12	16	50	60	31	53	700
Usefulness of medical *apps* Gr=58	8	7	8	24	3	0	1	3	1	0	3	58
Use during travel Gr=45	6	9	3	8	5	0	3	3	3	2	3	45
Care safety Gr=31	6	3	4	10	3	0	2	1	0	0	2	31
Telemedicine *apps* Gr=30	5	7	1	1	1	0	0	1	4	2	8	30
Inconveniences Gr=26	3	3	3	9	2	0	0	0	4	2	0	26
Video consultation/ teleconsultation Gr=25	4	3	5	6	1	0	2	0	3	0	1	25
Ease of use Gr=23	4	1	4	3	1	1	0	2	3	0	4	23
Elderly person Gr=20	3	5	1	3	3	1	0	1	1	0	2	20
Travel Insurance Gr=18	3	7	0	1	1	0	1	4	1	0	0	18

Tourism Industry and telemedicine Gr=16	5	0	3	3	1	0	3	0	1	0	0	16
Trust Gr=15	2	3	1	5	0	1	0	0	1	1	1	15
Patient follow-up Gr=15	0	0	6	3	1	0	0	4	0	1	0	15
Consulting reports Gr=14	1	6	0	2	1	0	0	0	0	0	4	14

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Review

Manuscript Number: IJPHM-10-2024-0114

Title: "Telemedicine apps and their influence on the tourism industry. A qualitative study".

Dear Reviewers,

We sincerely appreciate the time and effort you have dedicated to reviewing our manuscript "Telemedicine apps and their influence on the tourism industry: A qualitative study" submitted to the *International Journal of Pharmaceutical and Healthcare Marketing.* Your constructive feedback has been invaluable in refining our work, and we have carefully addressed each of your suggestions to enhance the manuscript's clarity, depth, and rigor.

We have thoroughly revised the manuscript to incorporate your insightful recommendations. The key changes, highlighted in the revised version, include the following:

- **Expanded literature review:** We integrated recent studies (post-2023) on telemedicine trends, regulatory frameworks (GDPR, HIPAA), and applications beyond tourism, including chronic disease management and emergency healthcare. These additions ensure our discussion reflects the latest advancements in the field.
- **Enhanced methodology:** We provided greater detail on the interview process, including recruitment, structure, and duration (30-40 minutes per interview). We

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also elaborated on the coding process (open, axial, and selective coding) and included validation measures such as triangulation and theoretical saturation to strengthen methodological rigor and transparency.

- **Refined results and discussion:** We expanded our analysis of usability barriers for older users, addressing complex interfaces, authentication challenges, and digital literacy concerns. Additionally, we provided a more in-depth discussion of data privacy concerns, including risks of data breaches, regulatory inconsistencies, and compliance with international data protection laws.
- **Strengthened policy implications:** We emphasized the need for standardized consent protocols, secure cross-border data exchange, and collaboration between telemedicine providers and tourism stakeholders. These revisions clarify how regulatory frameworks impact telemedicine adoption in tourism.
- **Improved language and readability:** We revised key sections to improve clarity, eliminate redundancies, and ensure consistency in terminology (e.g., replacing "results" with "findings" where appropriate in alignment with qualitative research conventions).

For clarity and ease of review, we have also prepared a detailed revision table summarizing each of your comments along with our corresponding modifications. Below, we provide specific responses to each of your observations:

Reviewers' comments and suggestions	Answers and improvements accomplished
Comments Reviewer #1: The paper contains significant original insights,	Reviewer #1: Thank you for your thoughtful feedback and for recognizing the originality and methodological rigor of our work. We have carefully addressed your suggestions:

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demonstrates a solid understanding of the literature, and uses appropriate methodologies. However, minor revisions are needed to enhance clarity, expand on certain results, and provide additional references to recent literature. Reviewer #12: Please check the references.	• Clarity. We have revised key sections to improve clarity, ensuring that complex ideas and findings are more accessible and well-structured. • Discussion. We have provided additional explanations and contextual analysis to strengthen the interpretation of our results. • Updated references, We have incorporated recent references to ensure our discussion reflects the latest advancements in the field. Your comments have been invaluable in refining our manuscript, and we truly appreciate your insights. Reviewer #2: Thank you for your careful review. We have included updated references. We appreciate your attention to detail, which has helped improve the quality of our manuscript.
1. Originality: Does the paper contain new and significant information adequate to justify publication? Reviewer #1: The paper presents an interesting and relatively novel exploration of the intersection between telemedicine apps and the tourism industry. This focus is unique, addressing an underexplored area that links healthcare technology with tourism safety and convenience. The research offers valuable insights into how telemedicine apps can enhance tourist	Thank you both for your valuable feedback. We really appreciate your recognition of the originality of our study and its contribution to the connection of telemedicine and tourism; an area that's still underexplored but increasingly relevant. To Reviewer #1: Thank you very much for your valuable feedback. Your insights have significantly helped us refine our manuscript, particularly in strengthening its justification and highlighting the research gap. Below, we outline the key changes made in response to your comments, which

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experiences by improving access to healthcare services during travel. While the topic is innovative, more emphasis on the specific gaps this study addresses in comparison to existing research would strengthen the justification for publication. Reviewer #2: The originality is ok.	have notably improved the clarity and contribution of our study. • Abstract. We emphasized the novelty of our research by explicitly stating the lack of studies on telemedicine's impact in the tourism sector. The abstract now highlights how our study addresses this gap. • Introduction. We removed generic references to globalization and instead clarified that existing research focuses mostly on medical tourism, overlooking general tourists' healthcare needs. • Literature review. Section 2.3. We replaced a vague mention of a lack of studies with a more specific explanation of how research has overlooked the everyday healthcare challenges tourists face. • Methodology. We revised the explanation of our qualitative approach, specifying that it was chosen due to the absence of theoretical models linking telemedicine and tourism. • Results and conclusion. We explicitly stated that our findings provide new insights into the connection between telemedicine and tourism. To Reviewer #2: Thank you for your feedback. We appreciate your acknowledgment that the originality of our study is solid. While the topic is still emerging, we have made some refinements to better highlight the specific gaps our

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	research fills and reinforce its contribution to the field.
2. Relationship to Literature: Does the paper demonstrate an adequate understanding of the relevant literature in the field and cite an appropriate range of literature sources? Is any significant work ignored? Reviewer #1: The paper demonstrates a strong The article demonstrates a broad overview with relevant literature, referencing key works on telemedicine, healthcare technologies, and tourism. The inclusion of theories like the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT) is appropriate and reflects a solid understanding of the technological adoption literature. However some revision is needed 1.Some sections could benefit from citing more recent works (post-2023) especially trend and technology review. 2. A comparison with similar studies in telemedicine for other industries (beyond tourism) might provide a broader context. Reviewer #2: There is a need to extend literature section. The author briefly showed the literature section.	Reviewer #1 and Reviewer #2: We appreciate your insightful comments on the literature review. To address your suggestions: • We have incorporated multiple post-2023 studies, particularly on emerging telemedicine trends, technology adoption, and regulatory frameworks, ensuring the literature is up to date. • We have expanded the discussion to include telemedicine adoption in other sectors. • We have added further analysis on technological innovations, including IoT, AI-driven diagnostics. These enhancements strengthen the theoretical foundation and contextual relevance of our study. Thank you for your valuable feedback.
3. Methodology: Is the paper's	To Reviewer #1: Thank you for your

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argument built on an appropriate base of theory, concepts, or other ideas? Has the research or equivalent intellectual work on which the paper is based been well designed? Are the methods employed appropriate?:	insightful feedback. Your suggestion to provide more details on the interview process, coding steps, and validation measures has been extremely valuable in improving the transparency and replicability of our study.
Reviewer #1: More details on the interview process, coding steps, and validation measures could enhance transparency and replicability.	We have made the following revisions: • Interview process: We have also clarified that interviews followed a semi-structured protocol, lasted between 30 to 40 minutes. • Coding steps: The description of our Grounded Theory approach has been expanded to detail the three coding phases (open, axial, and selective) and their role in theory development. • Validation measures: We have added a dedicated subsection outlining the strategies used to ensure methodological rigor, including theoretical saturation, triangulation across three data sources. These revisions significantly strengthen the methodological section and improve the study's clarity and reproducibility. We sincerely appreciate your constructive feedback, which has helped us refine our research and better communicate its contributions.
Reviewer #2: Methodology section was shown perfectly.	To Reviewer #2: Thank you for your positive feedback on the methodology section. We appreciate your recognition of its clarity and structure. While no major changes were necessary, we have further refined certain

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	aspects to enhance transparency and replicability. Specifically, we expanded on the interview process, detailed the coding steps, and added a section on validation measures to reinforce methodological rigor. Your assessment reassures us that the methodological framework is well-structured and effectively presented. We truly appreciate your time and review.
4. Results: Are results presented clearly and analyzed appropriately? Do the conclusions adequately tie together the other elements of the paper? Reviewer #1: The discussion of drawbacks, particularly data privacy and elderly users' difficulties, could be expanded with more robust analysis. Reviewer #2: 1. In qualitative research, we use the term "findings" instead of "result" Further, I suggest to include a table for the participants'	To Reviewer #1: Thank you for your valuable feedback. Your suggestion to expand the discussion on the drawbacks of telemedicine apps, particularly regarding data privacy and usability challenges for older users, has been extremely helpful in strengthening our analysis. In response, we have made the following key improvements: • Expanded the discussion on usability barriers for older users, detailing specific difficulties such as complex user interfaces, multi-step authentication, and digital literacy challenges. • Provided a more in-depth analysis of data privacy concerns, acknowledging the variation in user trust and highlighting potential risks such as data breaches, unauthorized access, and compliance with international regulations (e.g., GDPR, HIPAA). These revisions enhance the clarity, and applicability of our findings, directly addressing your recommendation and improving the overall impact of the study. We sincerely appreciate your thoughtful

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	review, which has helped us refine and strengthen our work. To Reviewer #2: Thank you for your valuable feedback. Following your suggestion, we have substituted the term "results" with "findings" where pertinent and in alignment with qualitative research. Additionally, regarding your recommendation to include a table for participants, we would like to highlight that "Table 1. Sample of experts" is already included in the manuscript. This table is mentioned and explained in Section 3.2 (Data Collection). We truly appreciate your insights, which have helped refine our manuscript. Thank you again for your thoughtful review and constructive suggestions.
5. Implications for research, practice and/or society: Does the paper identify clearly any implications for research, practice and/or society? Does the paper bridge the gap between theory and practice? How can the research be used in practice (economic and commercial impact), in teaching, to influence public policy, in research (contributing to the body of knowledge)? What is the impact upon society (influencing public attitudes, affecting quality of life)? Are these implications consistent with the findings and conclusions of	To Reviewer #1: Thank you for your valuable feedback regarding the policy implications of telemedicine, particularly in relation to data protection regulations such as GDPR and HIPAA. Your suggestion has been instrumental in strengthening the discussion on the regulatory and societal impact of telemedicine in tourism. In response, we have: • Improved social Implications section of the abstract, explicitly addressing GDPR (Europe) and HIPAA (United States). • Refined the conclusions section by highlighting the need for secure cross-border data exchange, standardized consent protocols, and interoperability

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the paper? Reviewer #1: Consideration of policy implications, such as data protection regulations (GDPR, HIPAA), could deepen the societal impact discussion. Reviewer #2: Implication section is sufficient.	between national healthcare systems to ensure compliance with international regulations. These revisions deepen the discussion on policy implications and ensure that the study's findings are aligned with real-world regulatory frameworks. To Reviewer #2: Thank you for your positive feedback. We appreciate your assessment. While no major revisions were required, we have made enhancements to further strengthen the discussion, particularly regarding policy implications related to GDPR and HIPAA compliance. Your feedback reassures us that the manuscript clearly articulates its implications for research, practice, and society, and we sincerely appreciate your time and thoughtful review.

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6. Quality of Communication: Does the paper clearly express its case, measured against the technical language of the field and the expected knowledge of the journal's readership? Has attention been paid to the clarity of expression and readability, such as sentence structure, jargon use, acronyms, etc. Reviewer #1: The paper is generally well-written and organized, but there are some areas where clarity and readability could be improved. The technical language is appropriate for the journal's readership, but some sentences are overly complex. Reviewer #2: Yes, the author(s) used simple and clear language.	To Reviewer #1: Thank you for your insightful feedback on clarity and readability. We appreciate your recognition of the manuscript's organization and technical appropriateness while highlighting areas for improvement. To enhance readability and precision, we have made the following changes: • Simplified complex sentences. • Eliminated redundancies in abstract and findings sections. • Clarified technical explanations to make key concepts more accessible to the journal's readership. • Improved transitions and sentence flow for better coherence. These refinements have made the manuscript clearer, more engaging, and aligned with qualitative research standards while maintaining its depth. Your valuable feedback has significantly contributed to improving the paper's overall quality, and we truly appreciate your time and effort. To Reviewer #2: Thank you for your positive feedback on the clarity and language of our manuscript.

We are grateful for your thoughtful feedback, which has greatly contributed to strengthening our manuscript. We firmly believe that these revisions have improved the clarity, methodological rigor, and overall quality of our work. We sincerely appreciate your efforts in helping us refine our study for publication.

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We look forward to your feedback on the revised manuscript and remain open to any further refinements you may suggest.

Thank you once again for your valuable time and insights.

Warm regards,

The authors