



Original Article

Investigating Cultural and Behavioral Barriers to the Acceptance of Tele-Health From the Perspectives of Physicians and Patients

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Introduction: Despite the expansion of technological infrastructure and the development of telehealth services in Iran, the actual use of telemedicine remains low, and a significant portion of patients and even physicians do not show sufficient willingness to employ these services. Accordingly, this study aimed to investigate the cultural, behavioral, and ethical barriers affecting the acceptance of telehealth services from the perspective of patients and physicians in Iran.

Methods: In this mixed-method research, data were collected using a standard questionnaire based on the TAM and UTAUT models from 150 participants (60 physicians and 90 patients) and evaluated using structural equation modeling and SPSS and AMOS statistical tests. Then, 15 semi-structured interviews were conducted with participants. Finally, the data were analyzed using thematic analysis based on the Brown and Clark framework to identify deeper dimensions of cultural and behavioral barriers.

Results: Quantitative results demonstrated that perceived usefulness had the most positive impact on intention to use telemedicine, while ethical and privacy concerns and cultural barriers were the strongest deterrents. Patients were more concerned and distrustful of physicians. Qualitative results revealed four main themes, including cultural resistance, concern about the decline in the quality of non-face-to-face services, fear of information disclosure, and digital literacy challenges.

Conclusion: The acceptance of telemedicine in Iran is influenced by cultural attitudes, trust levels, and security concerns of users rather than relying on technical limitations. Therefore, the successful development of these services requires strengthening data protection laws, educating users, and implementing strategies to increase social trust.

Keywords: Tele-health, Cultural barriers, Telemedicine, Healthcare

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Introduction

Over the past decade, the rapid development of communication technologies has led to a significant expansion of the use of telehealth and telemedicine services worldwide, with these technologies being recognized as key tools for improving access and efficiency of the health system.^{1,2} In many countries, especially during the COVID-19 pandemic, telehealth has emerged as a necessity for providing remote care, transforming care structures.³⁻⁵

Despite the wide-ranging benefits (e.g., improving access, reducing costs, and facilitating care in underserved areas), various challenges and barriers have prevented the full adoption of these technologies. Some studies have shown that cultural, financial, individual, organizational, technological, and legal factors play an important role in limiting the expansion of telehealth.^{5,6} In addition, system complexity, security and privacy issues, poor data integrity, and lack of technical support have been reported

as the most serious barriers at the provider level.⁷

In addition to technological and organizational barriers, studies indicate that demographic and cultural factors have a decisive role in patients' willingness to use telehealth. For example, in low-income or ethnic minority populations, social norms and the influence of communication networks influence telehealth intentions more than individual attitudes or perceived control.⁸

In rural areas, different challenges, such as lack of internet infrastructure, high cost, privacy concerns, and cultural resistance to technology, have also hindered the effective expansion of telehealth services.⁹ Similarly, global systematic reviews demonstrate that staff resistance, high cost, and technical challenges are common barriers across countries.²

In Iran, there is further evidence of the importance of culture, values, and attitudes in the adoption of telehealth. A systematic review by Pirani et al revealed that cultural factors influencing telehealth in Iran can



be categorized into eight groups: poor privacy practices, patient preference for face-to-face interaction, concerns about service quality, attitudinal and behavioral limitations, aversion to technology use in the elderly population, provider objections, language and health literacy differences, and behavioral resistance to change.¹⁰ Accordingly, culture and attitudinal factors are the most essential factors that hinder the development of telehealth in Iran.

Likewise, Amiri et al, aiming at identifying the requirements for developing a telehealth-based health management platform, found that the presence of the required technological tools does not guarantee the use of this type of technology due to the challenges in the study environment. This finding emphasizes that the development of telehealth requires simultaneous attention to technical and infrastructural needs as well as cultural and behavioral (CB) barriers among users and service providers.¹¹

Therefore, the acceptance of telehealth does not rely solely on the quality of the technology used and its accessibility, but also largely depends on the level of compatibility of telehealth with the culture and behavioral context of the target community. Moreover, the behavior of patients in resisting the use of technology and the challenges of trusting non-face-to-face communication and the reluctance of medical personnel point to the complexity of the relevant culture. However, most studies have examined one dimension of the problem, and few studies have simultaneously analyzed the perspectives of patients and physicians in an integrated framework.

Accordingly, this study is structured with three main innovations: First, this study aims to address the perspectives of physicians and patients on the challenges of telemedicine acceptance from a CB perspective simultaneously. In addition, this study seeks to address the perspectives of study participants through a combination of quantitative and qualitative methods that can create a comprehensive model of telemedicine acceptance in Iran. Additionally, it examines the local culture of Iran in the context of the challenges of telemedicine acceptance, as this issue has been less explored in the global models of telemedicine acceptance.

Methods

Study Design

This descriptive–analytical study used a mixed-method approach to identify and analyze CB barriers affecting the acceptance of remote health services from the perspectives of physicians and patients. In the quantitative phase, required data were collected using standardized questionnaires to determine the general patterns of attitudes, while, in the qualitative phase, semi-structured interviews were conducted to gain a deeper understanding of contextual and cultural factors.

Study Population

The study population consisted of two main groups. The

first group included general practitioners and specialists working in urban and private healthcare centers who had at least some experience or familiarity with remote consultation (telephonic or online). The second group encompassed patients with a history of receiving medical consultation services or those interested in using remote health services. The inclusion criteria for physicians were a minimum of one year of clinical practice and interest in using telemedicine, while for patients, the intended criteria were being over 18 years of age and having experience with or showing a willingness to use online medical consultation services. Additionally, the ability to understand and respond to the questionnaire or participate in the interview was required for all participants.

Sampling

In the quantitative phase, stratified random sampling was employed based on the type of healthcare center, whereas, in the qualitative phase, purposive sampling was used until theoretical saturation was reached. Further, the sample size for the quantitative phase included at least 100 patients and 50 physicians to ensure statistical adequacy based on Cochran's formula or SEM power analysis. In the qualitative phase, approximately 10–15 in-depth interviews with physicians and patients were conducted to achieve data saturation.

Data Collection Tools

Quantitative Questionnaire

The quantitative instrument was developed through the lens of the technology acceptance model (TAM) and its updated model, the unified theory of acceptance and the use of technology (UTAUT). The instrument used a 5-point Likert-type scale ranging from “strongly disagree” to “strongly agree.” Furthermore, the content and face validity were determined by ascertaining the response from five health and research experts, and the instrument's Cronbach alpha value exceeded 0.8 on all the constructs. The structure of the questionnaire and representative sample items are presented in Table 1.

Qualitative Interviews

In the qualitative phase, semi-structured interviews were conducted with physicians and patients, either in person or online, in order to explore CB perspectives regarding the acceptance of remote health services. Interview questions focused on participants' attitudes toward remote care, factors causing hesitation among patients or physicians, and the presence of any cultural or value-based barriers to telemedicine adoption. Ultimately, all interviews were recorded with participants' consent, fully transcribed, and analyzed using Nvivo 20 software.

Data Analysis

Quantitative Analysis

The quantitative data were analyzed by SPSS (version 26) using descriptive statistics (means, standard deviations, and frequencies). In addition, independent t-test, Pearson

correlation test, and structural equation modeling (SEM) were employed for inference. Furthermore, SEM was performed using AMOS (version 24), and the model fit was evaluated based on standard indices, including root mean square error of approximation (RMSEA), comparative fit index (CFI), Tucker-Lewis index (TLI), and standardized root mean square (SRMR).

Qualitative Analysis

The qualitative data were analyzed through the process of thematic analysis, as proposed by Braun and Clarke (2006), which comprised familiarization, coding, theme identification, theme review, and naming of those themes. Eventually, the criteria of trustworthiness, as proposed by Lincoln and Guba (1985), were utilized to develop the trustworthiness of the theme identification process.

Ethical Considerations

All ethical considerations were observed in this study. Written or online informed consent was obtained from all participants. Further, confidentiality and anonymity of responses were ensured, and participants could withdraw from the study at any stage without any coercion.

Limitations

One limitation of this study was that, due to a lack of access to centers with active telemedicine systems, some participants may have responded based on theoretical knowledge or informal experience. Additionally, cultural diversity across different regions of Iran may have limited the generalizability and interpretation of results. Finally, the self-reported nature of the data increased the possibility of response bias.

Results

The total number of participants in this study was 150, with 60 (40%) being physicians and 90 (60%) being patients. The mean age of the entire group was 38.7, while the SD was 10.4, showing a wide age range of the participants. Out of the 60 doctors involved in this research, 55% were specialists and 45% were general practitioners, indicating the high level of expertise among the doctors, giving them greater exposure to health-related technology.

Of the patients, 26% had experience in using online or telephoned medical facilities, whereas 74% had no such experience, signifying that there is a considerable gap between the community and the actual utilization

of telemedicine. With regard to the educational level, the proportion of the participants was 33% with a diploma, 36% with a bachelor's degree, and 31% with higher education (either Master's or Ph.D. degrees). Concerning geographical distribution, 57%, 28%, and 15% of the participants were from large cities, small cities, and countryside settings, respectively, thus permitting the evaluation of the disparities in attitudes and barriers toward telemedicine within various cultural and infrastructure milieus. Table 2 provides the characteristics of participants.

Descriptive Analysis of the Main Constructs

A descriptive statistical analysis was conducted to examine the central tendencies and dispersion of the main constructs included in the study. All items were measured on a five-point Likert-type scale ranging from "strongly disagree" (1) to "strongly agree" (5). Table 3 summarizes the mean scores and SDs for each construct.

The findings indicated that ethical and privacy concerns (mean = 4.21, SD = 0.66) and CB barriers (mean = 4.12, SD = 0.71) obtained the highest mean scores among all constructs, demonstrating that these two factors represent the most substantial obstacles to the adoption of telehealth within the studied population. In contrast, perceived usefulness (PU) displayed a comparatively high mean (mean = 3.94, SD = 0.77), suggesting that participants

Table 2. Demographic Characteristics of the Participants

Variable	Category	Frequency (N)	Percentage (%)
Participant group	Physicians	60	40
	Patients	90	60
Mean age (years)		38.7	SD = 10.4
Physician type	Specialists	33	55*
	General practitioners	27	45*
Patients' experience with telehealth	At least one prior use	23	26*
	No prior experience	67	74*
Educational level	High school diploma	50	33
	Bachelor's degree	54	36
	Master's or Ph.D. degree	46	31
Place of residence	Large cities	86	57
	Small cities	42	28
	Rural areas	22	15

Note. *Percentages for physician type and patients' experience were calculated within each subgroup.

Table 1. Summary of the questionnaire sections and representative items used in this study

Section	Variable	Sample Item
1	Awareness of telemedicine	"I am familiar with the concept of remote health services."
2	Perceived usefulness	"Telemedicine can improve my access to healthcare services."
3	Perceived ease of use	"Using online medical services is easy for me."
4	Cultural/behavioral concerns	"Remote care reduces trust between physicians and patients."
5	Security/ethical concerns	"Patient personal information may be exposed in telemedicine."
6	Behavioral intention	"I am willing to use telemedicine in the future."

acknowledge the potential value of telemedicine; however, this PU appears to be mitigated by relatively low trust (mean = 3.26, SD = 0.88) and persistent cultural resistance.

Comparative Analysis of Doctors and Patients

The comparative analysis between physicians and patients revealed several statistically significant differences across key constructs. CB barriers showed a markedly higher mean among patients (mean = 4.31) compared to physicians (mean = 3.78), with a statistically meaningful difference ($P=0.001$). This finding implies that patients perceive telemedicine as culturally less acceptable to a considerably greater extent than physicians.

Similarly, ethical and privacy concerns were remarkably more pronounced among patients (mean = 4.37) than physicians (mean = 3.94), as evidenced by the P -value of 0.003, representing that patients exhibit substantially greater fear regarding potential breaches of personal medical information.

Contrarily, the construct of trust in telemedicine demonstrated an opposite pattern; physicians reported a higher level of trust (mean = 3.54) compared to patients (mean = 3.05), and this difference was statistically significant ($P=0.014$). This suggests that despite their concerns, physicians maintain a relatively greater confidence in the reliability and accuracy of telehealth services compared to patients.

Correlation Analysis

The results of the Pearson correlation analysis revealed several statistically significant associations among the key constructs. PU confirmed a strong positive correlation with behavioral intention ($r=0.62$, $P<0.001$), indicating that higher PU is strongly associated with an increased likelihood of adopting telehealth services. Moreover, perceived ease of use was moderately correlated with behavioral intention ($r=0.47$, $P=0.002$), implying that

usability plays a meaningful, though less dominant, role in shaping intention to use telemedicine.

Conversely, CB barriers were strongly and negatively correlated with trust ($r=-0.58$, $P<0.001$), highlighting that greater cultural resistance is related to substantially lower levels of trust in telehealth systems. The strongest negative relationship was observed between ethical and privacy concerns and behavioral intention ($r=-0.66$, $P<0.001$), emphasizing that concerns about data confidentiality and ethical issues represent the most significant deterrent to telehealth adoption.

Overall, these correlations suggest that security-related concerns and cultural resistance constitute the most influential impediments to the acceptance and use of telemedicine services.

Structural Equation Modeling Results

The final structural model was developed based on an integrated UTAUT–TAM framework in order to assess the direct and indirect influences of key determinants on the behavioral intention to use telehealth services.

Goodness-of-Fit Indices: The model exhibited a strong and acceptable fit across all major indices:

- $\chi^2/df=2.48$
- RMSEA = 0.061
- CFI = 0.94
- TLI = 0.92
- SRMR = 0.046

Generally, these indicators confirm that the proposed model demonstrates an excellent overall fit and is appropriate for interpreting the structural relationships among the constructs. The standardized path coefficients and their statistical significance are presented in Table 4.

Qualitative Results

Four main themes and several subthemes were extracted based on the content analysis of 15 semi-structured

Table 3. Descriptive Statistics of Key Constructs

Construct	Mean	SD	Interpretation
Awareness and experience	3.62	0.81	Indicating a relatively adequate level of familiarity with telehealth services
Perceived usefulness	3.94	0.77	Reflecting a generally positive perception of the potential benefits of telemedicine
Perceived ease of use	3.58	0.84	Suggesting a moderately high level of perceived usability of remote health platforms
Cultural and behavioral barriers	4.12	0.71	Demonstrating the presence of considerable and meaningful cultural constraints affecting adoption
Ethical and privacy concerns	4.21	0.66	Revealing extremely high levels of concern regarding data security and ethical issues
Trust and overall attitude	3.26	0.88	Demonstrating moderately low levels of trust toward telehealth services
Behavioral intention	3.41	0.79	Representing a moderate tendency toward future use of telemedicine

Note. SD: Standard deviation.

Table 4. Standardized Path Coefficients of the Structural Equation Model

Path	P-value	β	Interpretation
PU → BI	<0.001	0.41	Perceived usefulness (PU) is the strongest positive predictor of behavioral intention (BI).
PE → PU	0.005	0.28	Perceived ease of use significantly enhances PU.
CB → TR	<0.001	−0.36	Cultural and behavioral barriers sharply decrease levels of trust.
EP → BI	<0.001	−0.44	Ethical and privacy concerns are the most influential negative determinant of behavioral intention.
TR → BI	0.018	0.22	Trust plays a mediating role in strengthening BI.

interviews with physicians and patients. These themes shed light on the cultural, attitudinal, experiential, and ethical dimensions associated with the acceptance of telehealth.

Theme 1: Cultural Resistance and Preference for Traditional Care

This theme shows that many patients and even some physicians consider in-person visits to be the “dominant culture” and the “valid method of treatment.” Based on the findings, feelings of distrust, historical habit of in-person visits, and perceptions of the inadequacy of non-face-to-face treatment were the main barriers.

Subthemes

- Preference for face-to-face contact as a sign of quality of care
- Concern about the loss of the human doctor-patient relationship
- Resistance to changes and innovations

Selected Quotes

Patient: “When I don’t visit the doctor in person, I feel that the diagnosis is not complete. Our culture is so ingrained that the doctor must perform an in-person examination.”

Physician: “Most of my patients still expect to come into the office. It’s strange for them to be treated without physical contact or examination.”

Patient: “I told my mother to have a remote consultation with the doctor on her phone, but she refused. She mentioned that receiving remote treatment doesn’t inspire trust.”

Theme 2: Trust and Perceived Quality of Care

This theme deals with challenges to trust; respondents were concerned that the quality of diagnosis, follow-up care, or the doctor’s accuracy would be reduced remotely. Similarly, some past unsuccessful experiences had contributed to distrust.

Subthemes

- Doubts about the accuracy of diagnosis in the absence of a physical examination
- Concerns about insufficient follow-ups
- Feelings indicating that virtual consultations are ineffective or superficial

Selected Quotes

Patient: “I had an online consultation last year, and it was very cursory. I felt like I wasted my time.”

Physician: “Sometimes patients think that because it’s online, we’re not being thorough enough; this mindset can make even good consultations rather than inspiring trust.”

Patient: “I think telemedicine is more suitable for simple tasks, not serious illnesses.”

Theme 3: Ethical and Privacy Concerns

This theme was one of the strongest qualitative findings, which was quite consistent with the quantitative results (mean 4.21). Most patients had serious concerns about the storage of medical information and the possibility of data disclosure or misuse.

Subthemes

- Fear of disclosing medical and family data
- Lack of awareness of platform security mechanisms
- Uncertainty about laws and legal responsibilities

Selected Quotes

Patient: “How do I know that my information will not be published on the internet? I don’t see any guarantees.”

Physician: “There is no specific law on liability for data leakage. This is a concern for both the physician and the patient.”

Patient: “I feel insecure when I have to upload test data. I don’t know who has access to them.”

Theme 4: Digital Literacy and User Readiness

This theme refers to technical-cognitive barriers, including a lack of digital skills, internet problems, and the inability of the elderly to operate devices. This factor was more severe in rural areas and small towns.

Subthemes

- Unfamiliarity with online platforms and tools
- Connectivity problems as well as internet quality and equipment
- Severe challenges for the elderly

Selected Quotes

Doctor: “Most elderly patients cannot install the app or access the consultation link.”

Rural patient: “The internet connection is weak. It disconnects every time in the middle of the conversation. How can I trust this method?”

Patient: “I don’t know how to send my medical records. That’s why I give up.”

Qualitative results revealed that the following four factors play the most significant role in the acceptance or rejection of telehealth:

1. Cultural factors and social beliefs (preference for in-person visits and belief in the superiority of traditional diagnosis)
2. Perceived trust and quality (superficial consultation and lack of belief in the accuracy of remote diagnosis)
3. Security and ethical concerns (fear of information disclosure and lack of clear rules)
4. Digital literacy and infrastructure barriers (internet problems, elderly disability, and complexity of tools)

These findings provided a deep and human-centered picture of the barriers to telehealth adoption and well complemented and strengthened the quantitative results.

Discussion

The present mixed-method study investigated the cultural, behavioral, and ethical barriers that influence the acceptance of telehealth among physicians and patients in Iran. The integration of quantitative SEM results with qualitative thematic findings could provide a comprehensive and context-informed understanding of telehealth adoption challenges. Overall, the results demonstrated that although telehealth is perceived as beneficial and somewhat easy to use, its adoption is substantially impeded by cultural norms, trust-related issues, and ethical/privacy concerns, which are barriers that appear to be more pronounced in patients than in physicians.

Interpretation of Quantitative Findings

The SEM revealed that PU was the strongest positive predictor of behavioral intention ($\beta=0.41$), consistent with the TAM. This aligns with the results of previous studies in other regions, confirming that perceived performance benefits are central to telehealth uptake.¹² Similarly, perceived ease of use (PE) indirectly enhanced intention through its significant effect on usefulness ($\beta=0.28$), which has been widely acknowledged in telemedicine adoption literature.

Despite positive views regarding usefulness, CB barriers (CB) and ethical/privacy concerns (EP) scored the highest among all constructs (means=4.12 and 4.21, respectively), indicating their dominant influence in this context. Likewise, the strong negative effect of EP on behavioral intention ($\beta=-0.44$) underscores the magnitude of privacy-related fears. Although concerns system unreliability, lack of legal frameworks, and insecurity of patient data have been globally reported,⁷ our results showed that they carry even greater weight in the Iranian context.

Moreover, CB barriers significantly reduced trust ($\beta=-0.36$), reinforcing the idea that technology acceptance cannot be separated from cultural values, interpersonal norms, and attitudes toward traditional care. This is in conformity with cultural constraints reported by Pirani et al in Iran, identifying persistent preferences for face-to-face consultations, skepticism toward remote care, and resistance to technological change.¹⁰

Differences Between Physicians and Patients

Comparative analysis revealed important divergences in perceptions:

Patients reported significantly higher cultural-ethical concerns and substantially lower trust. Despite acknowledging barriers, physicians exhibited higher trust and lower cultural resistance.

This difference suggests that while healthcare providers may possess greater familiarity with digital tools, patients remain deeply influenced by cultural norms, limited digital literacy, and mistrust of non-traditional care models. This pattern conforms to the findings of stroke rehabilitation studies where patients' cultural preferences

shaped their willingness to adopt tele-rehabilitation more strongly than clinicians' assessments of utility.¹³

Interpretation of Qualitative Findings

The qualitative themes further contextualized the SEM results:

Theme 1: Cultural Resistance and Preference for Traditional Care

Participants emphasized the cultural primacy of face-to-face interaction. Many patients also believed that physical examination is essential for diagnostic accuracy. This cultural preference has been echoed in Middle Eastern and rural telehealth literature as well.^{6,9}

Theme 2: Trust and Perceived Quality

Concerns about superficial consultations, incomplete assessments, and lack of follow-ups contributed to diminished trust. Distrust was further documented in Jordanian studies where healthcare professionals expressed concerns regarding care quality delivered online.⁵

Theme 3: Ethical and Privacy Concerns

Participants expressed widespread fear of data breaches, unclear legal responsibilities, and mistrust regarding data storage, closely paralleling the barriers highlighted in global systematic reviews⁷ and telehealth platform development studies in Iran.¹¹

Theme 4: Digital Literacy and Infrastructure

Both patients and physicians reported challenges with digital skills, poor internet infrastructure, and difficulties among elderly users, which strongly corroborates the findings of rural telehealth adoption studies in India and worldwide reviews identifying "technically challenged users" as a top barrier.²

Integrating Quantitative and Qualitative Insights

The combination of results underscores several key patterns:

Cultural norms have a structural impact on trust

The SEM results and interview themes revealed that cultural expectations surrounding in-person care significantly undermine trust in telehealth. Thus, trust is not merely a technological issue but a cultural and relational construct.

Privacy concerns are the most powerful barrier

Both datasets identify privacy fears as the strongest deterrent, which is in line with the global telemedicine literature but is intensified in Iran due to weak data governance structures, lack of unified cyber-security laws, and low public confidence in digital confidentiality.

Usability is less important than culture and ethics

Although ease of use influenced PU, it was not the

dominant barrier, suggesting that even highly intuitive platforms will face adoption challenges without addressing cultural, ethical, and trust-based issues.

Comparison With Global and Regional Studies

Our findings corroborate international literature in several ways:

Globally, technical challenges, resistance to change, and privacy concerns are top barriers,^{2,7} which were similarly evident in this study.

In Middle Eastern countries, the cultural expectation of in-person care remains a dominant issue,⁶ which is a pattern that is strongly reflected in the Iranian context.

In addition, research on low-income or minority groups highlights the importance of social norms and trust,⁸ which is consistent with the psychological dimensions observed in patient interviews.

Likewise, rural telehealth literature emphasizes infrastructure gaps and digital illiteracy,⁹ which is strongly echoed in rural participant responses.

However, the present study made unique contributions:

1. Simultaneous comparison of physicians and patients exposed divergent perceptions that had been rarely examined in prior Iranian research.
2. Integration of SEM with thematic qualitative data also yielded a deeper, multi-dimensional understanding.
3. Our findings further underlined cultural mechanisms shaping trust, an area underrepresented in global telehealth models.

Implications for Policy and Practice

Based on these results, several strategies can enhance telehealth adoption in Iran:

- Culturally tailored trust-building interventions (e.g., physician-led video demonstrations, introductory sessions, and blended care models)
- Clear legal frameworks for data security and privacy to reduce users' perception of risk
- Training programs for patients, especially elderly users, to improve digital literacy
- Hybrid care models that combine initial face-to-face visits with subsequent telehealth follow-ups, addressing cultural expectations while gradually normalizing digital interactions
- Public awareness campaigns that emphasize evidence-based benefits and safety

Strengths and Contributions

This study used a mixed-method design, offering both breadth and depth. In addition, it compared two key stakeholder groups. Moreover, a strong model fit was employed, supporting the robustness of our findings. Finally, the study provided complementary qualitative insights, offering contextual richness to the findings.

Limitations

One of the main limitations of the study was the limited practical experience of many participants with advanced

telemedicine systems, so that a significant portion of the responses were based on subjective impressions, initial impressions, or limited and scattered experiences. This issue could affect the accuracy of assessing attitudes and the actual level of acceptance. In addition, given the wide cultural, linguistic, and social diversity of Iran, caution should be exercised when generalizing these findings to the wider population.

On the other hand, data were collected based on self-report instruments, which may be affected by biases such as the tendency to socially desirable responses or memory errors. Moreover, infrastructural limitations in accessing some health centers active in the field of telemedicine indicated that the study sample was not representative of the full spectrum of potential users. Likewise, the smaller number of participants in the qualitative section compared to the target population size limited the possibility of discovering all local subvariables.

Despite these limitations, the simultaneous use of quantitative and qualitative methods, the validity of the statistical model, and the convergence of the results from the two parts increased the strength and validity of the research conclusions, provide a relatively comprehensive and reliable picture of the CB barriers to telehealth adoption.

Conclusion

Our findings revealed that telehealth adoption in Iran is less constrained by technological limitations and more by deep-rooted cultural norms, trust-related concerns, and fear of privacy violations. Accordingly, addressing these socio-cultural determinants is essential for increasing adoption rates. Policymakers must, therefore, prioritize legal reforms, trust-building strategies, and culturally sensitive implementation frameworks to thoroughly perceive the benefits of telehealth within the Iranian healthcare system.

Authors' Contribution

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Competing Interests

The authors declared that they have no competing interests, financial or non-financial, that could have influenced the results or interpretation of this study.

Ethical Approval

This study was conducted independently as a research project that adhered to the ethical principles outlined in the Declaration of Helsinki and national research ethics guidelines. Due to the independent nature of the study, no formal institutional review board approval was obtained prior to commencement. However, all ethical standards were precisely observed:

Written or verbal informed consent was obtained from all participants after providing them with a full explanation of the study objectives, procedures, voluntary participation, and their right to withdraw from the study at any time with no consequence. In addition, participants' anonymity and confidentiality were strictly protected, and no personally identifiable information was collected. Moreover, interview recordings were transcribed anonymously, and all data were stored securely and accessible only to the research team. Additionally, special attention was given to the sensitivity of health-related information and the physician-patient relationship. It should be noted that participation in the study had no impact on participants' medical care or professional status.

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