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PATIENT PERSPECTIVES ON THE USE OF AI IN MEDICAL DECISION-MAKING – EXPLORING PATIENT TRUST AND ACCEPTANCE OF AI-DRIVEN HEALTHCARE SERVICES- QUALITATIVE STUDY

Original Research

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ABSTRACT

Background: As artificial intelligence (AI) becomes increasingly integrated into healthcare, patient perspectives on trust and acceptance are critical to its successful implementation. Despite technological advancements, there remains limited qualitative insight into how patients evaluate and respond to AI-driven medical decision-making systems, particularly in non-Western settings.

Objective: To explore patient trust and acceptance of AI-driven healthcare services within the sociocultural and clinical context of Islamabad, Pakistan.

Methods: A qualitative study design was employed, utilizing semi-structured in-depth interviews with 32 adult patients exposed to AI-supported healthcare tools. Participants were purposively sampled from both public and private hospitals over an eight-month period. Interviews were transcribed, translated, and analyzed using Braun and Clarke's thematic analysis framework. Ethical approval was obtained, and informed consent was secured from all participants.

Results: Six major themes emerged: perceived trust in AI systems, comparative reliance on human versus AI decisions, emotional reactions and privacy concerns, transparency and understanding, cultural and religious influences, and willingness for future use. Patients viewed AI as potentially efficient but stressed the need for human oversight, emotional empathy, and system transparency. Trust was conditional and deeply influenced by previous healthcare experiences, data security concerns, and personal belief systems.

Conclusion: Patient trust in AI healthcare systems is multifaceted, shaped by technical, emotional, and cultural factors. Enhancing transparency, ensuring ethical safeguards, and maintaining human oversight are essential to increasing patient acceptance. These insights are crucial for designing AI systems that are both clinically effective and socially acceptable.

Keywords: Artificial Intelligence, Clinical Decision-Making, Cultural Competency, Healthcare Technology, Patient Acceptance, Patient Trust, Privacy, Qualitative Research, Trust in Health Systems, User-Centered Design.

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INTRODUCTION

The integration of Artificial Intelligence (AI) into healthcare services has emerged as one of the most transformative advancements in modern medicine. From diagnostics and treatment planning to administrative efficiency, AI holds immense potential to revolutionize how healthcare is delivered and experienced. However, as machines begin to play increasingly pivotal roles in medical decision-making, a critical question arises: do patients trust these systems, and are they willing to accept AI-driven healthcare solutions as part of their care journey? The question of patient trust in AI is not merely academic; it is central to the practical implementation of these technologies in clinical settings. Research underscores that the successful deployment of AI in healthcare is not contingent solely on technical performance, but on human acceptance—particularly by patients who are the ultimate recipients of care. While much attention has been paid to the perspectives of clinicians, the patient voice remains underrepresented in the dialogue about AI's future in medicine. This gap is particularly important given that patient trust has always been a cornerstone of effective healthcare relationships and outcomes (1,2). Several recent studies have shed light on the dynamics influencing patient trust in AI systems. Factors such as transparency, perceived risk, and the degree of explainability play a significant role in shaping trust. For instance, one study found that patients are more likely to trust AI tools when they can understand how decisions are made and when these tools are perceived as supporting—rather than replacing—human judgment (3,4). Similarly, the perceived reliability, accountability, and contextual appropriateness of AI systems influence how trustworthy patients find them (5).

Demographic factors and personal experiences also play a role in shaping acceptance. Trust levels vary significantly across different patient groups, with one study indicating that race and prior exposure to healthcare technologies may influence perceptions of AI reliability (6). Another paper highlighted that, patients with greater trust in their providers are also more likely to have positive expectations of AI in healthcare (7). This finding suggests that trust in AI is not developed in isolation, but in the broader context of interpersonal and institutional trust relationships. Ethical considerations further complicate the picture. Issues of data privacy, algorithmic bias, and a lack of regulatory clarity can erode patient confidence. As such, trust in AI cannot be built without addressing these foundational concerns. Patients are increasingly aware of these risks, and their willingness to accept AI solutions often hinges on whether they believe these systems operate within an ethical and accountable framework (8,9). Notably, trust is not simply a product of education or familiarity. While understanding how AI works can enhance comfort, the literature suggests that trust must be earned through consistent, transparent, and patient-centered implementation strategies. For example, the use of explainable AI, where systems can articulate the rationale behind their decisions, has been shown to foster higher levels of trust and reduce the psychological burden on patients engaging with these technologies (10,11).

Despite this growing body of work, there remains a lack of qualitative research exploring how patients experience and interpret AI in their healthcare interactions. Quantitative models provide useful frameworks, but they often miss the nuanced, subjective, and emotionally grounded perspectives of real patients. Understanding the human stories behind AI trust—how patients interpret machine-generated decisions, how they weigh human vs. machine judgment, and what influences their willingness to accept these technologies—requires a qualitative lens. This study addresses this critical gap by qualitatively exploring patient perspectives on the use of AI in medical decision-making. Specifically, it aims to uncover the emotional, cognitive, and contextual factors that shape trust and acceptance of AI-driven healthcare services. Through in-depth interviews and thematic analysis, this research seeks to offer a richer understanding of how patients engage with this evolving frontier in medicine. The objective of this study, therefore, is to explore patient trust and acceptance of AI-driven healthcare services, with a focus on understanding the underlying values, perceptions, and experiences that inform their perspectives.

METHODS

This qualitative study was conducted with the primary objective of exploring patient trust and acceptance of AI-driven healthcare services in a real-world clinical context. The setting for this inquiry was a combination of public and private healthcare institutions in Islamabad, Pakistan—a city characterized by diverse healthcare infrastructures and a socioeconomically heterogeneous patient population. The study was carried out over a period of eight months, from March to October 2024, allowing ample time for participant

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engagement, data saturation, and thematic analysis. The study employed a purposive sampling strategy, selecting adult patients (aged 18 years and above) who had been exposed to or had interacted with AI-supported healthcare services. Such exposure included automated diagnostic tools, virtual health assistants, or AI-integrated patient monitoring systems. Inclusion criteria required participants to be residents of Islamabad, fluent in either Urdu or English, and cognitively capable of providing informed consent and participating in an in-depth interview. Patients with severe cognitive impairments, those in acute clinical distress, and individuals unwilling to provide audio-recorded consent were excluded from the study. A sample size of 32 participants was determined to be sufficient for thematic saturation, based on prior qualitative research norms and the focused scope of the study (12). This estimation was guided by the principle of information power, where the more relevant and richer the data provided by each participant, the fewer participants are needed to reach thematic adequacy. This sample size also aligns with existing literature on qualitative interviews exploring perceptions in healthcare settings.

Data collection was executed using semi-structured, in-depth interviews, allowing participants to articulate their experiences, perceptions, and emotional responses related to AI involvement in their care. An interview guide was developed through literature review and expert consultation, ensuring alignment with the study's objective. Key domains included perceived trustworthiness of AI, willingness to rely on AI-based recommendations, comparisons with human healthcare providers, and concerns regarding privacy, accuracy, and empathy. Open-ended questions were followed by prompts to deepen and clarify responses. Interviews lasted between 30 to 60 minutes and were conducted in Urdu or English, depending on participant preference. All interviews were conducted in a private, quiet setting within the participating healthcare facilities, ensuring participant comfort and confidentiality. Each interview was audio-recorded with prior consent, then transcribed verbatim and translated into English where necessary. To maintain consistency and reduce translation bias, bilingual researchers independently reviewed translated transcripts. Data was analyzed using Braun and Clarke's thematic analysis framework, which involves familiarization with data, generation of initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the final report. Coding was performed manually by two independent researchers to enhance reliability. Discrepancies in coding were resolved through discussion and consensus, and NVivo 12 software was used to organize and manage the data.

Throughout the research process, rigorous steps were taken to ensure ethical integrity and participant rights. Ethical approval was obtained from the Institutional Review Board of the Pakistan Health Research Council, Islamabad. Informed consent was obtained from all participants prior to data collection. Participants were provided with a detailed information sheet outlining the study purpose, confidentiality assurances, voluntary nature of participation, and their right to withdraw at any point without consequence to their care. Anonymity was maintained by assigning numerical identifiers to transcripts, and all personal identifiers were removed during transcription and analysis. Outcome measurement in this qualitative design was centered on emergent themes reflecting levels and dimensions of patient trust and acceptance. These outcomes were assessed based on narrative depth, emotional tone, and specific contextual factors voiced by participants. While statistical tests were not applied, the study employed qualitative rigor criteria such as credibility, transferability, dependability, and confirmability. Credibility was enhanced through member checking, whereby participants reviewed summaries of their interviews for accuracy. Transferability was supported by detailed contextual descriptions, while audit trails and reflective journaling ensured dependability and confirmability. This comprehensive and transparent methodological approach allows for a deep understanding of patient attitudes toward AI in healthcare, situated within the unique cultural and institutional landscape of Islamabad. The findings aim to inform not only future research but also policy development and AI system design in healthcare, ensuring that patient perspectives are integrated at the core of technological advancement.

RESULTS

The study yielded rich qualitative data, revealing several critical themes that captured the complexity of patient perspectives on the use of AI in healthcare decision-making. Analysis of 32 participant interviews led to the identification of six overarching themes and multiple subthemes, supported by 52 distinct codes that emerged from the data. The first dominant theme was **Perceived Trust in AI Systems**, comprising twelve codes. Most participants expressed cautious optimism toward AI technologies, acknowledging their speed and efficiency in medical processes. However, trust was conditional and often linked to previous experience or the perceived oversight by a human physician. As one participant noted, "*I can trust AI for routine things, but I would feel safer if a doctor also checks what it suggests*." Another remarked, "*It's helpful, but I need to know someone human is still in charge*." Subthemes included conditional trust, influence of prior exposure, and perceptions of system reliability.

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The second theme, **Comparative Reliance on Human vs AI**, captured the frequent juxtaposition of AI against traditional human clinicians. Nine codes fell under this theme, reflecting participants' hesitation to fully substitute human judgment with algorithmic decisions. Subthemes included emotional connection with doctors, fear of misdiagnosis, and reliance on human intuition. Participants commonly emphasized the importance of empathy, which they perceived as lacking in AI interfaces.

The third major theme was **Emotional Reactions and Privacy Concerns**, reflecting the emotional spectrum patients experienced in response to AI in healthcare. Ten codes emerged, emphasizing concerns about data security, potential misuse of information, and loss of privacy. Anxiety and ambivalence were common emotional reactions. One participant stated, "*I don't want a machine knowing all my medical history; who else might get that information*?" The lack of clarity about how AI systems store and use personal data contributed to hesitancy.

Transparency and Understanding constituted the fourth theme, covering eight codes. Participants frequently mentioned that they lacked understanding of how AI made decisions, which in turn reduced their confidence in its use. Subthemes included explainability of AI outputs, desire for simplified communication, and interpretability of risk information. Patients expressed greater comfort with AI when processes and outputs were explained clearly in non-technical language.

The fifth theme, **Cultural and Religious Influences**, surfaced in six codes and highlighted how personal belief systems influenced trust in AI. Participants raised concerns over AI aligning with moral values and religious beliefs. Some individuals were skeptical about automated systems making decisions that could have ethical implications, such as end-of-life care or reproductive health interventions.

The final theme, **Willingness for Future Use**, emerged through seven codes. While initial skepticism was evident, many participants expressed openness to AI involvement in the future, provided trust could be earned through transparency, accuracy, and physician endorsement. Subthemes included the role of educational exposure, intergenerational differences in acceptance, and influence of peer opinion. Across themes, participant narratives reflected a nuanced perspective—an acceptance of AI as a tool with potential, yet bounded by concerns of safety, ethics, and human oversight. The collective insights demonstrate that patient trust in AI is not binary but layered, emerging from a balance of perceived benefit and existential concern.

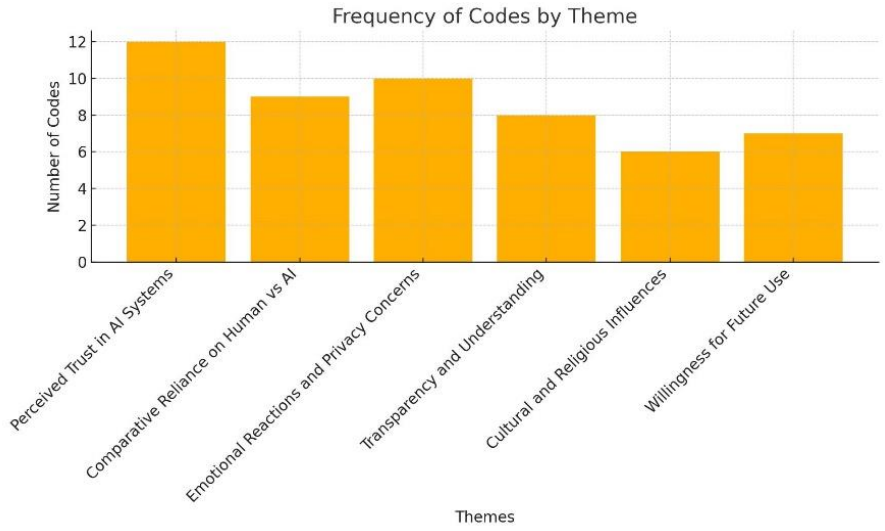


Figure 1 Frequency of Codes by Theme

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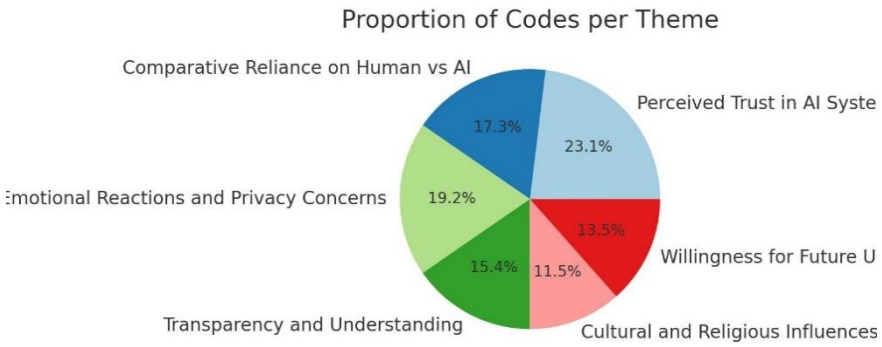


Figure 2 Proportion of Codes per Theme

DISCUSSION

The findings of this study provide an in-depth understanding of how patients perceive and interact with AI-driven healthcare services, particularly in terms of trust and acceptance. The thematic patterns identified echo existing concerns in literature while also introducing context-specific nuances, particularly within a South Asian urban setting like Islamabad. Trust emerged as a conditional and multi-layered concept, shaped by prior experience, transparency, emotional comfort, and sociocultural dynamics. These findings resonate with prior research indicating that patient trust is central to the successful adoption of AI in healthcare and is influenced by the system's perceived reliability, ethical grounding, and human oversight (13,14). Consistent with recent global studies, the participants in this research expressed greater trust in AI systems when they were presented as supportive tools rather than autonomous decision-makers. AI was accepted as efficient for routine monitoring and basic diagnostics, but its involvement in complex, emotionally laden decisions elicited skepticism. These perceptions align with findings of a study, which observed that AI was more favorably received when it complemented human expertise rather than replaced it (15-19).

A prominent barrier identified in this study was the limited understanding of how AI systems operate, a sentiment echoed in work, which emphasized the importance of explainability and user education in fostering AI trust among healthcare users. The lack of transparency and comprehensible feedback from AI systems diminished confidence, regardless of clinical accuracy (20). This reinforces the growing consensus that technical robustness must be accompanied by explainability to earn patient trust, particularly in low-resource or lower-literacy environments. This study also explored emotional responses, including fear, anxiety, and uncertainty, as pivotal in shaping acceptance, echoing the observations of a study, which linked these sentiments to ethical concerns such as data privacy, fairness, and algorithmic bias (21). Religious and cultural beliefs further nuanced this distrust, which remains underexplored in AI literature. For many participants, moral acceptability was as significant as technical competence—a dimension that may gain more relevance as AI engages with ethically sensitive medical decisions. Importantly, the study reinforces the finding that interpersonal trust in clinicians significantly influences whether patients are willing to extend trust to the AI systems they use. Trust in technology was not viewed in isolation, but as deeply intertwined with the physician-patient relationship and institutional reputation (22,23).

The primary strength of this study lies in its focus on the patient voice within a localized healthcare environment, capturing the cultural and institutional contours that shape acceptance. The use of qualitative methodology allowed for the exploration of complex emotions and values often missed in quantitative research. The diversity of participants ensured a robust representation across age, gender, and healthcare experience. Nonetheless, certain limitations must be acknowledged. The study was geographically limited to Islamabad, potentially limiting generalizability across rural or less technologically advanced regions. Social desirability bias may also have influenced participants' responses, especially when discussing views on trust and religion. Additionally, while data saturation was achieved, the sample size may still fall short of capturing outlier perspectives. Future research should include longitudinal assessments to evaluate how patient trust evolves with sustained exposure and changing AI functionalities. Further studies are also warranted to explore trust-building interventions, such as co-design models involving patients in AI system development or community-level digital literacy programs. The role of clinicians as intermediaries in trust transfer mechanisms between AI systems and patients also deserves

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greater empirical attention. In conclusion, the findings of this study confirm that patient trust in AI is shaped by a constellation of technical, emotional, ethical, and sociocultural factors. AI acceptance is enhanced when systems are transparent, empathetic, and supervised by trusted human professionals. For AI to be successfully integrated into healthcare, especially in complex sociocultural settings, patient-centered design and ethical integrity must remain paramount.

CONCLUSION

This study concludes that patient trust and acceptance of AI-driven healthcare services are shaped by a blend of perceived reliability, emotional comfort, transparency, and cultural context. While patients recognize the potential of AI, human oversight and ethical integrity remain essential for meaningful integration. These findings emphasize the need for patient-centered design, explainable systems, and inclusive policy frameworks to ensure ethical and effective adoption of AI in clinical care.

AUTHOR CONTRIBUTION

Author	Contribution
Ihsan Ullah Khan	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Urva Rehman*	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Sidra Hanif	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Humaira Mehwish	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Wesam Taher Almagharbeh	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Muhammad Shahid	Substantial Contribution to study design and Data Analysis Has given Final Approval of the version to be published
Muhammad Waleed Khan	Contributed to study concept and Data collection Has given Final Approval of the version to be published

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