Navigating barriers to health technology assessment development in Iran: a qualitative exploration of stakeholder perspectives

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Abstract

Background Health Technology Assessment (HTA) plays a crucial role in informing healthcare policy and decision-making, especially in low- and middle-income countries like Iran. Despite its potential, the development of HTA in Iran faces significant barriers due to political, financial, technical, and social challenges. This study aims to explore stakeholder perspectives on the barriers hindering HTA development in Iran and to identify strategies for overcoming these obstacles.

Methods This qualitative study utilized semi-structured interviews to collect data from 18 stakeholders involved in the healthcare sector in Iran, including policymakers, healthcare professionals, and experts in health economics and policy. Thematic analysis was applied to identify key barriers and overarching themes related to HTA development.

Results Seven overarching themes emerged: [1] lack of a comprehensive legal and regulatory framework [2], financial constraints and limited funding [3], shortage of trained professionals and organizational resistance [4], low public and professional awareness [5], weak technical infrastructure and data systems [6], poor inter-organizational collaboration, and [7] political interference in health decision-making. These barriers hinder the effective integration of HTA into Iran's healthcare system. Despite these barriers, participants suggested actionable recommendations, including strengthening governance structures, increasing financial investment, enhancing stakeholder engagement, and improving technical capacity.

Conclusion This study highlights the unique misalignment between HTA priorities and national health policies in Iran, barriers less frequently reported in other LMICs. Addressing these barriers through targeted policy reforms, investment in human resources, and enhanced collaboration could facilitate HTA development and improve healthcare decision-making in Iran.

Keywords Health technology assessment, Development, Health policy, Healthcare decision-making, Iran

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Introduction

Health Technology Assessment (HTA) plays a pivotal role in modern health systems by providing evidence-based evaluations of the clinical, economic, and social implications of health technologies [1]. It serves as a critical tool in determining the value of new medical technologies, treatments, and interventions, guiding healthcare decision-making to ensure that resources are used efficiently and equitably [2]. Worldwide, HTA has become indispensable for optimizing healthcare delivery, particularly in the context of rising healthcare costs and the growing complexity of medical innovations [3]. Its impact extends beyond cost management, influencing the development of disease management guidelines, reimbursement policies, and healthcare models [4]. HTA shapes the development of these guidelines and policies by providing evidence that informs the decision-making process and enhances the alignment of health systems with evidence-based practices.

In low- and middle-income countries (LMICs), HTA is particularly vital due to limited healthcare resources and the need for cost-effective interventions [5]. These nations face unique challenges in ensuring access to quality healthcare, and HTA can support decision-makers in prioritizing the most effective and affordable health interventions [6]. By using HTA, LMICs can make informed decisions that maximize health outcomes, reduce unnecessary expenditures, and promote the efficient use of limited resources [7]. HTA also plays an important role in advancing universal health coverage (UHC), ensuring that all individuals, regardless of socioeconomic status, have access to essential health services [8]. Moreover, HTA helps improve equity in health systems by enabling governments to allocate resources more justly, ensuring that high-quality healthcare is accessible to all citizens [9].

In Iran, the development of HTA is still in its early stages, though it holds great potential for transforming the health system [10]. As healthcare costs rise and

the demand for innovative medical technologies grows, the need for a robust HTA framework becomes increasingly important [11]. A well-established HTA system in Iran could support decision-makers in making informed, evidence-based choices that ensure the sustainability and fairness of the health system [12]. However, the current state of HTA development in Iran faces numerous challenges, including limited institutional capacity, insufficient stakeholder engagement, and gaps in the integration of HTA into health policy [13]. The development of HTA in Iran has been gradual, with key agencies such as the Ministry of Health and Medical Education (MoHME) and the Health Insurance Organization being involved in the early stages. However, despite these efforts, the output produced so far remains limited, with only a few assessments conducted, primarily in the areas of pharmaceuticals and medical devices. The integration of HTA results into healthcare decision-making is still in its infancy, with HTA findings often not fully utilized in policymaking or resource allocation. These challenges are further exacerbated by factors like economic sanctions, resource constraints, and political instability, which hinder the effective establishment of HTA practices. HTA implementation varies across countries, with some nations, such as Türkiye, establishing structured frameworks to guide healthcare decision-making. Türkiye's HTA model, developed under the Ministry of Health, serves as a regional example of how systematic evaluation of health technologies can inform policy and resource allocation [14]. Understanding such models can provide valuable insights for Iran as it seeks to strengthen its HTA framework.

This study aims to explore the barriers to HTA development in Iran by examining the perspectives of key stakeholders, including policymakers, healthcare providers, and researchers. Through a deep dive into these perspectives, this research will specifically identify barriers unique to Iran's healthcare system, which are often overlooked in broader discussions of HTA in LMICs. Understanding these challenges is critical for the successful implementation and development of HTA within Iran's health system. By addressing the identified barriers, the study will contribute to the strengthening of HTA, fostering more effective health policies and resource allocation. Moreover, the findings of this study aim to bridge the existing knowledge gap, offering valuable insights that can inform Iranian policymakers, decision-makers, and health managers in their efforts to enhance and integrate HTA into the health system. This research also distinguishes itself by focusing on the specific needs and constraints faced by Iran, an area that has been underexplored in the literature.

Methods

Study design

This study was designed as a qualitative descriptive research project, utilizing in-depth semi-structured interviews to gather data. Thematic analysis was employed to analyze the information collected from the interviews [15]. This study adhered to the Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist to ensure comprehensive reporting of methodological rigor [16] (Supplementary File 1). The research design was chosen to provide rich, detailed insights into participants' experiences and to explore the underlying themes related to the topic.

Participant selection

Purposive sampling was used to select individuals with experience and expertise in Iran's health system and those involved in HTA processes. The selection criteria included: [1] years of experience in health management or policy [2], direct involvement in HTA processes or decision-making [3], seniority within their respective organizations, and [4] diversity of sectors (e.g., public health, policy, research, and clinical practice). The participants included senior health managers, physicians, researchers, and policymakers. A total of 31 individuals were invited to participate in the study. Invitations were sent via phone calls and emails, providing complete information about the study's objectives and participation process. Out of the 31 individuals invited to participate in the study, 13 declined for various reasons. One of the primary reasons was work commitments and time constraints. Many invitees, particularly senior health managers and policymakers, had demanding schedules and were unable to allocate time for the interviews. Another reason was a lack of interest or perceived relevance to the topic. Some potential participants felt they did not possess sufficient expertise in HTA or were not particularly interested in discussing the challenges associated with its development. Concerns about the sensitivity of the topic and organizational considerations also played a role. Some key decision-makers were hesitant to share their opinions due to potential consequences or institutional restrictions. Additionally, some individuals declined for personal reasons, such as family issues, health problems, or travel commitments. Finally, Conflicts of interest or administrative barriers prevented some invitees from participating. Additionally, institutional policies in some cases required special permissions for research participation, adding complexity and delays to the process. Despite these challenges, 18 participants with relevant experience took part in the interviews.

Interviewer characteristics and relationship with participants

The interviews were conducted by two of the study's main authors, both of whom hold PhDs in health policy and have extensive experience in qualitative research. Their background ensured familiarity with the subject matter and minimized bias in data collection. No prior relationships were established between the interviewers and participants before the study. Before the interviews, participants were informed about the research objectives and the interviewers' professional backgrounds to build rapport.

Setting

Data were collected in participants' workplaces, including health offices, hospitals, and related universities. Some interviews were conducted in person, while others were conducted via video calls to accommodate participants who could not attend in person due to geographical or other limitations.

Data collection

A semi-structured interview guide (Supplementary File 2) with open-ended questions and key topics was designed and used to steer the discussions. The guide was developed based on a literature review and expert consultation and was pilot-tested with five participants before the official start of the study to ensure clarity and relevance. All interviews were conducted by two of the study's main authors. Each interview lasted between 45 and 60 min, and all interviews were audio-recorded with participants' consent. Additionally, field notes were taken to capture non-verbal cues and contextual information. Data collection continued until no new or significant information emerged.

Study duration

Interviews commenced in February 2024 and continued until October 2024. The process of inviting participants, conducting interviews, and analyzing data was completed within this timeframe.

Data analysis

The Braun and Clarke approach was used for data analysis [17]. Thematic analysis was used to identify patterns, themes, and key concepts related to the barriers to HTA development in Iran. This approach allowed for an in-depth examination of the experiences and perspectives of health professionals. This approach consists of the following steps: Familiarization with the Data: Engaging deeply with the data by thoroughly reading it multiple times. Generating initial codes: systematically identifying and coding notable features across the entire dataset. Searching for themes: organizing the codes into potential

themes. Reviewing themes: refining and adjusting themes to ensure they accurately represent the data. Defining and naming themes: establishing clear definitions and labels for each theme. Producing the report: composing the report by integrating themes with relevant data excerpts. These models guide researchers in systematically organizing qualitative data, allowing them to identify meaningful themes that contribute to broader insights and theoretical understanding. While no specific theoretical framework was used for data coding, the analysis was informed by established qualitative research practices, including the identification of emergent themes and theories derived from participants' perspectives. The data analysis process was conducted alongside data collection. Coding was performed iteratively by two authors (MB and SA). Following this, two authors (MeB and AB) independently reviewed, debated, and evaluated the identified codes and sub-themes, leading to the final themes. The analysis results were shared with participants for validation. To ensure consistency and accurate interpretation, methodological triangulation was applied, involving interviewers, co-authors, and participants in the data analysis. The expert author (MY) critically monitored and evaluated this process. Any disagreements among the authors were resolved through discussion sessions, and this step was carried out manually. Data were analyzed using the MAXQDA Version 10 software.

Several approaches have been utilized to ensure the precision and dependability of qualitative studies by strengthening the verifiability, validity, reliability, and transferability of the findings. To achieve this, the research team employed various strategies, such as: (a) confirming the analysis results with participants (credibility); (b) sustained involvement of the first and corresponding authors in the projects, along with expert evaluation of the findings (validation); (c) including authors with diverse operational and academic expertise in the data analysis (reliability); (d) incorporating quotes from most participants throughout the manuscript (authenticity); and (e) selecting participants with different specializations and clinical experiences (transferability).

The study was approved by the ethical committee at Lorestan University of Medical Sciences (IR.LUMS.REC.1402.310).

Results

The participants in this study included 14 males and 4 females, with an average age of 42.35 ± 7.30 years and an average work experience of 16.65 ± 4.97 years. A total of 12 interviews were conducted virtually, while 6 were conducted in person. A summary of participant characteristics, including roles, years of experience, and sectors, is provided in Table 1.

In this study, 14 sub-themes emerged across seven main themes, highlighting the barriers to developing HTA in Iran. Figure 1 illustrates the key themes and their corresponding sub-theme. The seven themes were policy and governance, economic and financial, human resource and expertise, cultural and social, technical and infrastructure, collaborative and communication, and political issues. Through the analysis of participant interviews, seven overarching themes emerged, each capturing key barriers related to the development of HTA in Iran. These themes, along with their sub-themes and associated participant quotes, provide a comprehensive understanding

Table 1 Demographic characteristics of participants

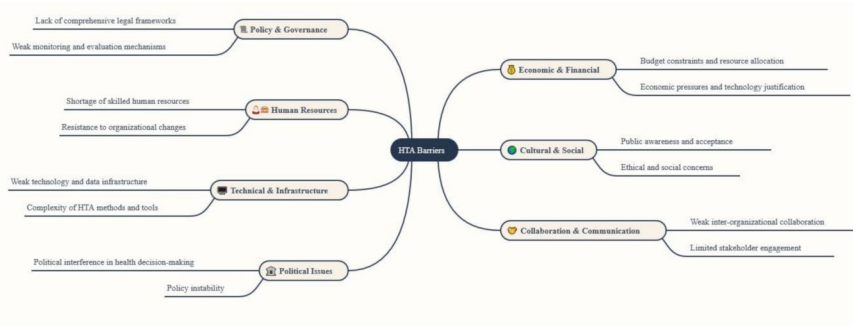| ID	Sex	Age	Work Experience	Specialty	Type of activity	Interview Format
1	Male	43	18	Policy maker	Public / Government	Virtual
2	Female	38	13	Researcher	Public / Government	Virtual
3	Male	43	18	Physician	Private	In-person
4	Female	39	14	Insurance manager	Public / Government	Virtual
5	Male	40	15	Associate Professor of the health economic	Public / Government	Virtual
6	Male	44	19	Insurance manager	Private	Virtual
7	Male	38	13	Pharmacist	Public / Government	In-person
8	Female	41	16	Researcher	Public / Government	In-person
9	Male	57	25	Associate Professor of health policy	Public / Government	In-person
10	Male	62	26	Medical specialist	Public / Government	In-person
11	Female	31	12	Hospital manager	Public / Government	Virtual
12	Male	41	16	Physician	Public / Government	Virtual
13	Male	38	13	Professor of the Faculty	Public / Government	In-person
14	Male	40	15	Researcher	Public / Government	Virtual
15	Female	35	10	Pharmacist	Private	Virtual
16	Male	43	18	Professor of the health economic	Public / Government	Virtual
17	Female	38	13	Bachelor's degree in HTA	Public / Government	Virtual
18	Male	49	21	Professor of the health policy	Public / Government	Virtual

Fig. 1 Themes and sub-themes emerging from the analysis

of the multifaceted challenges hindering the advancement of HTA in the country.

Policy and governance

The policy and governance theme highlighted significant challenges associated with legal, regulatory, and leadership frameworks in HTA. Participants consistently mentioned the lack of comprehensive legal and regulatory frameworks.

Many interviewees pointed out the absence of clear regulations and laws, which hinders the full integration of HTA into decision-making processes:

"The existing regulations for HTA do not fully cover our needs, and we need more up-to-date legal frameworks. For example, there are no clear guidelines on how to prioritize health technologies or how to allocate resources based on HTA findings. This creates confusion and delays in decision-making." (P4, P11, P15, P18).

In addition, there was a misalignment between health policies and HTA needs, with several respondents expressing concern that current health policies do not prioritize HTA:

"Our current health policies do not align with the actual needs of HTA. Higher-level policies are more focused on other issues, and HTA is often overlooked. For instance, when new technologies are introduced, there is no systematic process to evaluate their cost-effectiveness or long-term impact on the health system." (P1, P16, P19).

A recurring issue was the weak monitoring and evaluation mechanisms. The lack of mechanisms to track HTA implementation and its impact on policy decisions was frequently mentioned:

"Currently, there is no specific system in place to track and monitor the implementation of HTA. Without proper monitoring, it is difficult to assess whether HTA recommendations are being followed or if they are having the intended impact on health outcomes." (P4, P9, P12, P14, P15).

Economic and financial

Economic constraints were a pervasive concern. Under the economic and financial theme, participants emphasized the budget constraints and resource allocation issues that limit the effectiveness of HTA. A lack of financial resources was repeatedly identified as a primary obstacle:

"The budget allocated for HTA is very limited, and this has prevented us from properly evaluating all technologies. For example, we often have to prioritize only a few technologies due to financial constraints, leaving many others unevaluated and potentially harmful or ineffective." (P3, P5, P8, P9, P11).

Another significant challenge was the economic pressures and justification of new technologies. Participants described difficulties in justifying the cost-effectiveness of new technologies, which complicates the decision-making process:

"Many new technologies are challenging in terms of cost-effectiveness. We cannot always find a financial justification for their adoption in the health system. For instance, some technologies are expensive but offer only marginal benefits, making it hard to justify their use given our limited resources." (P7, P12, P14, P15).

Human resource and expertise

The human resource and expertise theme revealed a shortage of skilled professionals, with participants noting the limited availability of individuals with sufficient expertise in HTA:

"One of our main problems is the shortage of experienced and skilled professionals in HTA. For example, we have very few people who are trained in advanced methods of economic evaluation or data analysis, which are critical for conducting high-quality HTAs." (P1, P6, P9, P11, P16, P17, P18).

There was also considerable resistance to organizational changes from both staff and management, which further complicated the adoption of HTA:

"Any change related to technology or structure is met with negative reactions, which slows down the progress of

HTA. For instance, when we tried to introduce new evaluation tools, many staff members were reluctant to adopt them, citing a lack of training or fear of increased workload." (P5, P7, P9, P14).

Cultural and social

Participants highlighted the cultural and social challenges, particularly the lack of public awareness and acceptance of HTA. The lack of awareness among healthcare professionals and the public often prevents the effective use of HTA:

"Many people, including healthcare staff, have no awareness of HTA. This lack of recognition prevents the use of this important tool. For example, when we present HTA findings to policymakers, they often do not understand the value of the data or how it can inform their decisions." (P3, P8, P11, P15).

Moreover, ethical and social concerns related to patient rights and data privacy were frequently raised. One participant voiced concerns about inequitable access to health technologies:

"Some patients cannot access these technologies due to financial or geographical issues, which undermines their rights. For instance, patients in rural areas often miss out on advanced treatments because the infrastructure and resources are concentrated in urban centers." (P2, P7, P18).

Technical and infrastructure

A recurrent issue under the technical and infrastructure theme was the weak technology and data infrastructure. Many participants expressed concerns over the inadequate infrastructure for data collection and analysis:

"We really need more advanced infrastructure for data collection and analysis. Without this infrastructure, HTA cannot be properly conducted. For example, we often struggle to access reliable data on patient outcomes or costs, which limits the accuracy of our evaluations." (P5, P9, P11, P14, P18).

Additionally, the complexity of HTA methods and evaluation tools was a significant barrier, with many interviewees struggling to use existing tools effectively:

"The tools required for evaluating health technologies are very complex. Many staff members cannot use these tools properly due to insufficient training. For instance, some of the software used for economic modeling is highly specialized, and without proper training, it is difficult to generate reliable results." (P3, P8, P17).

Collaborative and communication

The collaborative and communication theme highlighted the weak inter-organizational collaboration between key stakeholders, including government institutions, universities, and the private sector. Participants lamented the lack of interaction, which they felt undermined the effectiveness of HTA:

"There is almost no interaction between government agencies, universities, and the private sector in the field of HTA. For example, when we conduct evaluations, we often do not have access to data or expertise from other sectors, which limits the comprehensiveness of our assessments." (P6, P9).

Limited stakeholder engagement was another significant issue, with participants noting the low involvement of patients, healthcare workers, and policymakers:

"In the HTA process, key stakeholders like patients and healthcare staff do not actively participate. This issue leads to final results that are less reflective of actual needs. For instance, when patients are not consulted, we may overlook important factors such as quality of life or patient preferences in our evaluations." (P10, P13, P16).

Political issues

Finally, the political theme captured the political interference in health decision-making, where decisions on health technologies were often influenced by political interests rather than evidence-based evaluations:

"Sometimes decisions regarding the selection of health technologies are influenced by politicians, without considering the actual needs of the health system. For example, a new technology may be adopted because it is supported by a powerful political figure, even if the evidence shows that it is not cost-effective or beneficial for patients." (P5, P9, P13, P14).

Participants also noted the challenge of policy instability, with frequent changes in health policies leading to uncertainty and inconsistent decision-making:

"Frequent changes in health policies and a lack of long-term stability undermine the effectiveness of health interventions. For instance, a policy that supports HTA one year may be completely abandoned the next, leaving us with no clear direction or resources to continue our work." (P6, P11, P16).

Discussion

This study examined stakeholder perspectives on the barriers hindering the development of HTA in Iran. Using qualitative analysis, seven overarching themes were identified: policy and governance, economic and financial constraints, human resources and expertise, cultural and social factors, technical and infrastructure challenges, collaboration and communication issues, and political barriers. These themes highlight the complex and multifaceted nature of the obstacles that impede both the development and effective integration of HTA into Iran's healthcare system.

Policy and governance

One of the key barriers highlighted by participants was the lack of a comprehensive legal and regulatory framework for HTA, which is consistent with studies conducted in countries like Brazil and Thailand, where the absence of such frameworks has been identified as a major obstacle to HTA development [18, 19]. This study underscores the need for transparent policies and governance structures to support HTA development in Iran. Without updated regulations and policies prioritizing HTA, its integration into decision-making processes will remain limited [8]. Weak oversight and evaluation mechanisms, as noted by participants, exacerbate this issue. Effective governance requires not only policymaking but also continuous monitoring to ensure that HTA is utilized to its full potential [11]. In this study, participants expressed frustration with the lack of clear regulations, weak oversight, and the absence of a system to track the implementation of HTA, concerns that are echoed in the literature [20]. However, a unique finding in the context of Iran is the significant misalignment between health policies and HTA needs, which appears to be more pronounced compared to other LMICs [5]. Aligning HTA with national health priorities, as emphasized in studies from other countries, must be a primary focus of reform efforts [21]. This gap between national health priorities and HTA integration may not be unique to Iran, but it does suggest that LMICs with similar political contexts may face even greater challenges in aligning HTA with their healthcare systems. This gap highlights the need for a more comprehensive policy overhaul to ensure that HTA can effectively inform evidence-based decision-making in the national health agenda.

Economic and financial

Financial constraints were a dominant concern, reflecting the broader economic pressures facing Iran's healthcare system. Consistent with findings from studies in Latin America and India, budgetary limitations hinder comprehensive assessments of new technologies and limit HTA's ability to influence policy and resource allocation [22, 23]. These financial constraints are not unique to Iran, as many LMICs struggle to allocate sufficient resources to HTA activities [5]. The difficulty in justifying the cost-effectiveness of new technologies complicates decision-making, especially when high upfront costs overshadow long-term benefits. This challenge has been documented in several studies, particularly in countries with constrained healthcare budgets [7, 24]. Strengthening financial support for HTA is crucial for its success and a more structured approach to budgeting and prioritization may help address this barrier [25]. However, the specific challenge of justifying the cost-effectiveness of new technologies seems to be a more pressing concern in Iran compared to other settings. This can be attributed to Iran's economic environment, characterized by inflation, budget constraints, and economic sanctions, which exacerbate the difficulty of integrating new technologies, even when their long-term cost-effectiveness is evident [26]. While financial constraints are a global challenge in LMICs, **Iran's unique political and economic conditions** further intensify these barriers, suggesting that innovative financial models or international collaborations may be necessary to address these issues and promote more sustainable HTA implementation across similar regions [7].

Human resources and expertise

The shortage of trained professionals with expertise in HTA, as reported by participants, aligns with findings from other LMICs, including South Africa and Vietnam [27, 28]. Adequate human resources are essential for successful HTA implementation, yet training opportunities in Iran are scarce. Organizational resistance to change also poses a significant challenge. However, while human resource shortages are common among LMICs, this study revealed a significant level of organizational resistance to HTA adoption, which has not been prominently highlighted in previous studies [5, 29]. Resistance to organizational change from both staff and management points to deep-rooted cultural and structural barriers within Iran's health system. This suggests that other LMICs facing similar structural challenges might also encounter resistance in adopting HTA, necessitating not only capacity-building but also organizational change management strategies. To integrate HTA into healthcare decision-making, both management and staff must be prepared to adopt new methods and technologies [6]. This underscores the need for structured capacity-building initiatives and educational programs in HTA, which could help alleviate the shortage of skilled professionals and reduce resistance to change [30]. Iran's health system, beyond education and capacity-building efforts, must focus on organizational change management to facilitate smoother HTA development.

Cultural and social

The cultural and social barriers identified in this study, particularly the lack of public awareness about HTA, reflect findings in other settings. Similar to other LMICs, the lack of public awareness of HTA was identified as a significant barrier in this study [5, 7]. For example, research in Brazil, India and Ethiopia has emphasized the importance of raising HTA awareness among healthcare professionals and the public [18, 23, 31]. In Iran, this issue is compounded by a cultural environment where technology assessments are not fully understood or accepted. The challenges observed in Iran also suggest that public

and professional engagement in HTA must be prioritized in other LMICs to enhance its effectiveness. Public and professional understanding of HTA is crucial for its effective application. In Iran, where the concept of HTA is relatively new, there is a need for awareness campaigns to promote its importance at all levels of the health system [29]. Ethical and social concerns, particularly regarding unequal access to healthcare technologies, also emerged as significant issues. This mirrors the global challenges where HTA often grapples with concerns about equity and balancing technological advancement with accessibility [32]. The ethical concerns raised about unequal access to health technologies highlight a challenge that may stem from geographic and socioeconomic inequalities in Iran [12]. These ethical concerns suggest that for Iran's HTA system to be successfully implemented, it must address broader social issues, including healthcare equity.

Technical and infrastructure

Participants frequently cited technical infrastructure as a major barrier to HTA development. Similar findings have been reported in Uganda and Egypt, where weak data collection and analysis systems impede effective HTA use [30, 33]. Advanced data systems and robust assessment tools are fundamental to HTA success, yet in Iran, the lack of adequate technological infrastructure hampers progress [29]. Additionally, the complexity of HTA methodologies and insufficient staff training were significant barriers to its broader adoption, reflecting a common challenge in many countries attempting to implement HTA [5]. The need for infrastructure development in Iran is not isolated but speaks to a broader trend in LMICs where technical capacity in health systems needs urgent attention to facilitate HTA integration. Addressing these technical issues through infrastructure investment and training is a critical step toward overcoming these barriers [24]. This involves not only improving infrastructure but also developing specialized training programs that address the technical complexity of HTA tools. The combination of inadequate infrastructure and lack of technical expertise suggests that Iran may face a steeper learning curve compared to other LMICs in building the necessary capacity for effective HTA.

Collaborative and communication

Effective collaboration among stakeholders is vital for HTA success. Participants in this study reported weak inter-organizational collaboration, particularly between government agencies, universities, and the private sector. This lack of collaboration hinders HTA development, a finding consistent with other research that emphasizes the need for coordinated efforts across sectors [29]. Additionally, limited stakeholder engagement was a recurring theme, highlighting the importance of involving patients, healthcare workers, and policymakers in the HTA process to ensure that assessments reflect the real needs of the health system [12]. Several studies have similarly emphasized the importance of inclusive stakeholder participation for the success of HTA programs [20, 30, 31].

Political issues

Political instability and interference in health decision-making were major concerns among participants. The political influence on health technology decisions, often at the expense of evidence-based evaluations, reflects findings from LMICs, where political considerations can distort health policy outcomes and overshadow evidence-based decisions [20, 34]. Policy instability, driven by frequent changes in government priorities, exacerbates the challenge of developing long-term HTA strategies [35]. While these issues are common in LMICs, Iran's unique political pressures highlight the urgent need for stronger policy frameworks and political stability to shield HTA from political interference and these insights may be relevant for similar political contexts. The need for political stability and a commitment to evidence-based policy-making is a recurring theme in HTA development literature [20, 36]. This political instability, combined with the influence of political interests on health technology decisions, suggests that Iran faces unique political pressures that may require stronger policy frameworks to shield HTA from political interference.

Limitations

The study focuses on stakeholders in Iran, which has a unique healthcare system and HTA framework, so the findings may not be directly applicable to other LMICs with different healthcare contexts, political environments, and HTA structures. While 18 participants provided valuable insights, a larger and more diverse sample might have offered a broader perspective on the challenges facing HTA development in Iran. Given the interview format, participants may have been influenced by social desirability, leading to responses that reflect favorable opinions rather than openly discussing all challenges. The findings may be influenced by the specific time and context in which the study was conducted, particularly given the rapidly changing healthcare and political landscapes in Iran, which could limit the applicability of results over time. The study's reliance on participant self-reports through interviews may introduce subjectivity, as respondents' personal experiences and perceptions could vary widely, potentially affecting the accuracy of the findings. The qualitative nature of the study provides rich insights but lacks quantitative data that might help quantify the prevalence or magnitude of the identified challenges across the broader health system. Additionally,

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the study may be subject to biases inherent in qualitative research, including researcher bias and confirmation bias, which could affect how the data was interpreted and analyzed.

Conclusion

The development of HTA in Iran faces numerous barriers across political, financial, human resource, technical, social, and political domains. These findings highlight the need for a multifaceted approach to overcoming these barriers. Strengthening legal and regulatory frameworks, improving financial support, building human resource capacity, enhancing technical infrastructure, fostering collaboration, and reducing political interference are essential steps to advancing HTA in Iran. By addressing these barriers, Iran can utilize HTA to improve healthcare decision-making and resource allocation, ultimately enhancing the quality and equity of healthcare services in the country.

Abbreviations
HTA   Health Technology Assessment
LMICs   Low- and middle-income countries
COREQ   Consolidated criteria for reporting qualitative research

Supplementary information

The online version contains supplementary material available at https://doi.org/10.1186/s13690-025-01566-8.

> Supplementary 1: Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist
>
> Supplementary 2: Semi-structured interview guide

Author contributions
MaB, MY, SA, AA, and AB contributed to the development of the idea for this article. MeB, AB, SS, BDT, MaB and BDT partook in the acquisition and analysis of data. All co-authors joined them in critically interpreting and discussing the data. MaB, AA, SS, BDT, and MY wrote sub-sections of this article and provided input into further sub-sections of the article, along with MaB, MeB, AB, SA, AA, MY and SS. All authors have critically revised content, have approved the submitted version of this article, and are accountable for the accuracy or integrity of any part of the work.

Data availability
The datasets generated and/or analysed during the current study are not publicly available due but are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
The study was approved by the ethical committee at Lorestan University of Medical Sciences (IR.LUMS.REC.1402.310). All the respondents were explained about the study and asked to sign the informed consent before confirming their participation. Written informed consent was obtained from each study participant before initiating each key informant interview. Verbal informed consent was obtained from each participant before initiating the study. The study procedures and methods were conducted following the ethical principles and guidance in the World Medical Association Declaration of Helsinki.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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