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Exploring the challenges of developing hospital-based health technology assessment in Iran: a qualitative study

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Abstract

Background Hospital-based Health Technology Assessment (HB-HTA) is increasingly recognized as a strategy to support evidence-informed decision-making at the hospital level, particularly in resource-constrained settings. This study explored the challenges of developing HB-HTA in Iran from the perspectives of health system experts.

Methods This qualitative descriptive study was conducted from July 2023 to February 2024. Data were collected through in-depth, semi-structured interviews with 26 health system experts selected via purposive sampling and supplemented with snowball sampling. Data were analysed using thematic analysis following Braun and Clarke's six-phase framework, supported by MAXQDA version 10 software. Credibility was enhanced through member checking with five participants outside the research team, investigator triangulation involving four researchers with expertise in health policy and HTA and consensus-based resolution of coding disagreements.

Results Analysis identified five main themes and 12 subthemes describing barriers to HB-HTA development in Iran. The themes included structural and organizational challenges, resource limitations, cultural and attitudinal barriers, knowledge and capacity gaps and external systemic constraints. Findings highlighted the lack of institutionalization of HB-HTA, inadequate policy support, limited trained personnel, resistance among clinicians, weak research culture, centralized governance and poor stakeholder collaboration.

Conclusions The study provides critical insights into the multifaceted challenges hindering HB-HTA in Iran. The findings are valuable for policymakers, hospital managers and healthcare professionals by offering practical guidance to strengthen institutional capacity, improve evidence-informed decision-making and advance HTA integration into hospital systems. Addressing these barriers through targeted reforms and inclusive strategies could enhance efficiency, equity and quality of care.

Keywords Health technology assessment, Health policy, Hospital-based HTA, Qualitative study, Thematic analysis, Iran

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Introduction

Health Technology Assessment (HTA) is a critical tool used globally to inform healthcare decision-making by evaluating the clinical, economic, organizational, social and ethical implications of health technologies [1]. While national-level HTA systems have made considerable progress in many countries, the application of HTA at the hospital level, referred to as hospital-based HTA (HB-HTA), is increasingly recognized as an essential strategy to support evidence-informed decisions on technology adoption and resource allocation within healthcare institutions [2]. HB-HTA focuses on evaluating how health technologies are deployed and used at the operational level of the healthcare system, situated closer to the point of care and the delivery of medical services [3]. This approach is especially important in resource-constrained environments, where hospitals must balance clinical needs with financial limitations [4].

In a systematic review, Hinrichs-Krapels et al. [5] emphasized the critical role of multidisciplinary engagement, particularly the involvement of clinical engineers and clinicians in strengthening procurement decisions based on HB-HTA evidence. Similarly, Palozzi et al. proposed a conceptual framework that integrates clinical, economic and organizational perspectives while underscoring the active participation of key stakeholders, including clinicians, healthcare professionals, hospital managers and patients [6]. Despite these advances, adoption of HB-HTA remains limited, largely owing to complexity, lack of expertise in health economics and challenges in interpreting evidence [4, 7]. Evidence from China illustrates that inadequate staff knowledge of HTA can undermine effective implementation [4].

In Iran, the national HTA program has played a significant role in informing policy-level decisions, particularly in the evaluation of pharmaceuticals and medical devices, and has helped shape reimbursement mechanisms and clinical guidelines [8]. However, the integration of HB-HTA into hospital decision-making structures remains limited and fragmented. In most hospitals, technology adoption decisions are still primarily based on physicians' requests, managerial preferences and budgetary constraints, with little use of systematic assessment tools [9]. A lack of institutional capacity, standardized methodologies and trained personnel are significant barriers [10]. Moreover, the absence of a legal or regulatory framework leaves hospitals without clear guidance for structured evaluation and procurement [11].

Understanding these challenges is essential for strengthening HB-HTA in Iranian hospitals. By recognizing barriers such as weak institutional capacity or limited expertise, policymakers and managers can design interventions that foster evidence-informed decision-making

[12]. Conversely, ignoring these challenges risks misallocation of resources, adoption of inappropriate or low-value technologies and reduced efficiency of the health system [13]. Existing research on HTA in Iran has primarily examined the development of national HTA structures, with limited studies exploring HB-HTA implementation at the hospital level [8, 14].

This study addresses this gap by focusing specifically on the institutional, structural and operational challenges of HB-HTA in Iranian hospitals. The findings provide new insights into the shortcomings of previous initiatives and highlight context-specific barriers that have not been systematically studied. The results of this study will be useful for multiple stakeholders: policymakers can use the findings to guide national strategies, hospital managers can strengthen decision-making processes and HTA experts can refine methodologies adapted to the Iranian context. By identifying barriers and enablers, the study supports the development of practical strategies to enhance hospital-level capacity and ensure more effective and efficient use of limited health resources.

Methods

Study design

This study utilized a qualitative descriptive design to explore health system experts' perspectives on the development of HB-HTA in Iran. The study design followed established qualitative methodological guidance rather than the Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist, which was used only for reporting quality [15]. The research proceeded through sequential steps: (1) defining the study objectives and research questions; (2) sampling of participants; (3) developing and piloting a semi-structured interview guide; (4) conducting interviews; (5) transcribing and coding the data; (6) analyzing themes using Braun and Clarke's six-phase framework [16]; and (7) validating findings with participants. This design was selected to generate rich, contextually grounded insights into complex policy and implementation issues related to HB-HTA.

Sampling

Participants were selected using purposive and key informant sampling, complemented by snowball sampling to identify additional experts [17]. Sampling was used to ensure that individuals with substantial knowledge and involvement in HTA or hospital decision-making were included. Of 32 invited experts, 26 agreed to participate (81% response rate). Invitations were sent via email or phone, and all participants received full information about the study's objectives, procedures and

ethical considerations before providing written informed consent.

Participant selection

Participants were included on the basis of the following criteria:

- a) Work experience: minimum of 5 years in healthcare management, clinical practice or policy roles.
- b) Education field: medical sciences, health policy, health economics or related disciplines.
- c) Position level: referring to the organizational level of responsibility (e.g., senior hospital managers, mid-level administrators, policymakers, researchers or academic faculty involved in HTA-related decisions).
- d) Sectoral representation: referring to the participants' place of employment, including hospitals, clinical departments, research centres, government health offices and universities.

The exclusion criteria included: (1) less than 5 years of professional experience, (2) lack of direct involvement in HTA or related decision-making and (3) refusal to provide informed consent.

Data collection

Data collection was conducted from July 2023 to February 2024. Interviews took place in private locations such as hospital offices, university workplaces, government health offices, or online via Skyroom to accommodate participants across different regions. Both in-depth and semi-structured interviews were conducted. Semi-structured interviews enabled comparability across responses while allowing flexibility, whereas in-depth interviews helped explore complex institutional and policy issues [18].

The data collection process followed detailed, step-by-step procedures [19].

- Conducting a literature review to identify major themes and gaps related to HB-HTA.
- Developing the initial interview guide based on the reviewed evidence.
- Pilot testing the guide with five experts to assess clarity and relevance.
- Revising and refining the guide based on pilot results.
- Conducting the full set of interviews using the finalized guide.
- Recording all interviews and documenting field notes immediately after each session.
- Assessing data saturation through ongoing discussions among research team members.

A semi-structured interview guide (Supplementary File 1) was developed using a literature review in PubMed, Scopus and Web of Science with keywords such as "Hospital-Based HTA," "health technology assessment," "Iran," and "implementation challenges." The guide consisted of two sections ("Main Questions" and "Probing Questions").

A total of 26 interviews were conducted, lasting 65–150 min (mean: 70 min). Data saturation was reached after the 18th interview; two additional interviews were conducted to confirm saturation, and a further six interviews were added to ensure diversity of participants.

Interviewer characteristics and reflexivity

Interviews were conducted by two trained researchers (A.B. and Ma.B.), both with PhDs in health policy and experience in qualitative interviewing. To minimize bias, interviewers documented their assumptions about HTA and reviewed them during team meetings. No prior relationships existed between interviewers and participants, and all participants were informed about interviewer backgrounds and confidentiality measures before the interview.

Data analysis

Data were analysed using Braun and Clarke's six-phase thematic analysis framework [16]. For this study, the six steps were operationalized as follows:

- Familiarization: All transcripts were read multiple times by two authors (S.A. and B.T.).
- Generating initial codes: Both authors manually coded transcripts line-by-line.
- Searching for themes: Codes were grouped into preliminary themes using MAXQDA Version 10.
- Reviewing themes: Themes were checked against the dataset by two additional researchers (M.N. and R.H.) to ensure consistency.
- Defining and naming themes: The research team refined definitions and finalized theme labels.
- Producing the report: Themes were synthesized and illustrated with direct participant quotations.

Five participants reviewed the summarized findings (participant checking), and their feedback was integrated into the final analysis.

Trustworthiness and rigour

To ensure rigour, the following strategies were applied [20]:

- a) Credibility: prolonged engagement with participants during interviews, triangulation among research

team members and member checking. Specifically, five participants reviewed a summary of the preliminary themes and selected illustrative quotations to assess the accuracy and resonance of the interpretations. Their feedback resulted in minor clarifications to thematic labels and refinement of wording in several quotations; however, no major themes were added, removed or substantially revised.

- b) Dependability: maintenance of detailed documentation, including coding files, memos and audit trails.
- c) Confirmability: independent coding by two researchers and external review by two additional researchers.
- d) Transferability: purposive sampling of diverse experts across organizational levels and employment settings, with detailed descriptions provided.
- e) Authenticity: inclusion of rich, direct quotations to represent participants' voices accurately.

Results

A total of 26 individuals with expertise in Iran's health system participated in the study. The participants included 14 males (53.8%) and 12 females (46.2%). Their educational backgrounds were PhD (10; 38.5%), MD (6; 23.1%), MSc (9; 34.6%) and BSc (1; 3.8%). Work experience was categorized as 5–10 years (six participants; 23.1%), 11–15 years (seven participants; 26.9%), 16–20 years (seven participants; 26.9%) and more than 20 years (six participants; 23.1%). The average age was 40.6 ± 4.7 years. Regarding organizational affiliation, 18 participants (69.2%) were from government institutions and 8 (30.8%) from the private sector. By professional field, participants represented clinical medicine (8; 30.8%), health policy/management (6; 23.1%), public health (7; 26.9%), health economics/pharmacy (5; 19.2%). Interviews were conducted in person (17; 65.4%) or online (9; 34.6%). Table 1 presents a summary of the participants' characteristics. The qualitative analysis of expert interviews identified five overarching themes with 12 subthemes and multiple codes. Table 2 summarizes the themes, subthemes and associated codes.

Theme 1: structural and organizational challenges

This theme captures the systemic absence of formalized structures, governance mechanisms and coordinated internal pathways necessary for implementing HB-HTA. These limitations prevent hospitals from institutionalizing evidence-informed technology decision-making.

Sub-theme 1.1: lack of institutionalization of HB-HTA

This sub-theme reflects the absence of dedicated HTA units, defined responsibilities and systematic

Table 1 Demographic and professional characteristics of study participants ($n = 26$)

Variable	Category	n (%)
Gender	Male	14 (53.8)
	Female	12 (46.2)
Education	PhD	10 (38.5)
	MD	6 (23.1)
	MSc	9 (34.6)
	BSc	1 (3.8)
Work experience (years)	5–10	6 (23.1)
	11–15	7 (26.9)
	16–20	7 (26.9)
	> 20	6 (23.1)
Organization type	Government	18 (69.2)
	Private	8 (30.8)
Professional field	Clinical medicine	8 (30.8)
	Health policy/management	6 (23.1)
	Public health	7 (26.9)
	Health economics/pharmacy	5 (19.2)
Interview type	In person	17 (65.4)
	Online	9 (34.6)

processes needed to embed HB-HTA into routine hospital functions.

"There is no formal body or even a designated team in hospitals to take charge of HTA. It's something we talk about occasionally, but in reality, there's no structure or system to make it operational on the ground." (Hospital administrator).

"Without a framework from the top or a clear internal unit to lead HB-HTA, hospitals don't know where to begin. Everyone assumes it's someone else's responsibility, so nothing actually happens." (Policy expert).

Sub-theme 1.2: inadequate policy and regulatory support

This sub-theme highlights the lack of practical national guidelines or regulatory frameworks, resulting in uncertainty and inconsistent interpretation of HTA expectations at the hospital level.

"We are encouraged to use HTA, but when we look for policy direction, there's nothing concrete. There are no national frameworks or protocols, so we're left guessing how to proceed." (Policy-maker).

"The Ministry sets certain HTA-related expectations, but hospitals aren't equipped or mandated to follow through. There's a disconnect between what's expected and what's feasible." (Hospital manager).

Sub-theme 1.3: fragmented decision-making processes

This sub-theme describes the lack of coordinated, standardized processes across departments, resulting

Table 2 Summary of identified themes, subthemes and representative codes related to barriers to HB-HTA implementation in Iran

Theme	Subtheme	Codes
Structural and organizational challenges	Lack of institutionalization of HB-HTA	No formal HTA body; unclear responsibilities
	Inadequate policy and regulatory support	No national framework; unrealistic top-down policies
	Fragmented decision-making processes	Siloed departments; lack of coordination
Resource limitations	Human resource constraints	Lack of HTA experts; staff overload
	Financial constraints	No HTA budget; inability to act on findings
	Limited access to data/infrastructure	Poor IT systems; difficulty extracting data
Cultural and attitudinal challenges	Resistance to change	Clinician autonomy threatened; suspicion of cost-saving motives
	Low awareness of HTA value	Misconceptions; need for education
Knowledge and capacity gaps	Lack of training and capacity building	No HTA training; lack of exposure
	Weak research culture	Hospitals service-oriented; HTA seen as academic
External systemic challenges	Centralized health system governance	Bureaucratic approvals; limited autonomy
	Weak stakeholder engagement	Poor collaboration; lack of inclusiveness

in inconsistent criteria for technology evaluation and procurement.

“Each department makes its own decisions. One may consider evidence; another might rely on supplier relationships or urgency. There’s no unified process for evaluating new technologies.” (Hospital clinician).

“The finance team, clinicians and procurement rarely sit at the same table. Without integration across departments, HTA doesn’t have a natural place in hospital operations.” (Hospital administrator).

Theme 2: resource limitations

This theme refers to shortages of qualified personnel, financial capacity and technical infrastructure, all of which restrict hospitals’ ability to conduct and apply HB-HTA.

Sub-theme 2.1: human resource constraints

This sub-theme reflects insufficient staffing, limited expertise and heavy workloads that prevent personnel from engaging in HTA-related tasks.

“We don’t have HTA experts in the hospital. Even those who are interested don’t have the training or time to engage, because their clinical or administrative workload is already overwhelming.” (Senior clinician).

“Asking staff to contribute to HTA studies or decisions is unrealistic unless they’re properly trained and have protected time for these responsibilities—which they don’t.” (Policy expert).

Sub-theme 2.2: financial constraints

This sub-theme highlights the lack of earmarked funding required for conducting assessments, capacity-building and implementing HTA recommendations.

“HTA requires investment—not just in research, but in applying the findings to procurement and planning. Right now, hospitals barely have enough funds to maintain operations.” (Hospital director).

“Even if we complete an HTA study, the financial capacity to act on its recommendations is often missing. It ends up being an academic exercise with no follow-through.” (Health economist).

Sub-theme 2.3: limited access to data and infrastructure

This sub-theme reflects the inadequacy of hospital information systems and the difficulty of obtaining timely, accurate data for assessment activities.

“We have difficulty accessing accurate, timely data. Hospital systems aren’t integrated or user-friendly enough to support HTA or any kind of analytical work.” (Researcher).

“Data extraction is a nightmare. You spend hours compiling basic stats, which makes it very hard to do anything rigorous or evidence-based.” (Hospital administrator).

Theme 3: cultural and attitudinal challenges

This theme encompasses entrenched attitudes, misconceptions and resistance within the clinical and managerial culture that impede HB-HTA acceptance and utilization.

Sub-theme 3.1: resistance to change among clinicians and managers

This sub-theme highlights professional autonomy concerns and skepticism toward structured evaluation processes that are perceived as restrictive.

“Doctors are trained to make independent decisions based on their experience, not economic or administrative frameworks. They often see HTA as a threat to their freedom to choose what’s best for patients.” (Clinician).

“When HTA suggests cost-saving measures that go against preferred treatments, it’s immediately viewed with suspicion. Clinicians worry it’s more about saving money than improving care.” (Hospital manager).

Sub-theme 3.2: low awareness of HTA value

This sub-theme reflects misunderstandings about HTA’s purpose, with many staff equating it solely with cost control rather than improved patient care and efficiency.

“Most staff don’t really know what HTA is. They think it’s just about reducing costs or denying services, not about improving quality or making smarter decisions.” (Health policy expert).

“The idea that HTA can actually enhance patient care is not well understood. People need to see it as a practical tool, not just a bureaucratic hurdle.” (Pharmacist).

Theme 4: knowledge and capacity gaps

This theme captures the lack of training opportunities, educational resources and institutional support needed to build HB-HTA capacity within hospitals.

Sub-theme 4.1: lack of training and capacity-building programs

This sub-theme highlights the absence of structured training initiatives, leaving staff without the foundational skills needed to conduct or use HTA.

“There are no training sessions or workshops tailored to hospital staff. Even those in leadership positions often have no formal education in HTA.” (Researcher).

“You can’t expect people to implement something they’ve never been exposed to. Without basic training, HTA remains a foreign concept to most.” (Hospital manager).

Sub-theme 4.2: weak research culture in hospitals

This sub-theme describes the low prioritization of research and analytical activities, limiting the institutional readiness for HB-HTA.

“Research is not part of our daily culture. We focus on service delivery, and most staff see research as something academic—not relevant to their day-to-day work.” (Clinician).

“HTA is seen as something that happens in universities. Until we create a research-oriented mindset in hospitals, it will never be fully embraced.” (Hospital administrator).

Theme 5: external systemic challenges

This theme describes constraints arising from broader governance structures and weak interorganizational collaboration that shape the HB-HTA environment.

Sub-theme 5.1: centralized health system governance

This sub-theme reflects how central control limits decision-making flexibility and delays efforts to adopt or act on HB-HTA findings.

“Hospitals don’t have the authority to make decisions independently. Even small initiatives require Ministry approval, which discourages innovation and local adaptation.” (Hospital leader).

“We often wait months for approvals that should take days. By the time we get a green light, the opportunity to act on HTA findings may have passed.” (Manager, Ministry of Health).

Sub-theme 5.2: weak stakeholder engagement and collaboration

This sub-theme highlights the limited interaction between hospitals and external stakeholders that reduces opportunities for comprehensive, multidisciplinary HTA.

“There’s very little collaboration between hospitals and external actors. Everyone works in their own corner, which limits the depth and quality of HTA work.” (NGO expert).

“We miss out on valuable insights because we’re not engaging other sectors—universities, suppliers, even patients. HTA needs to be more inclusive to be effective.” (Health economist).

Discussion

This study provides critical insights into the multifaceted challenges hindering the development of HB-HTA in Iran, drawing on the perspectives of diverse health system stakeholders. The qualitative analysis identified five key themes: structural and organizational challenges, resource limitations, cultural and attitudinal barriers, knowledge and capacity gaps and external systemic constraints that collectively impede the institutionalization of HB-HTA.

Our findings are consistent with broader literature on HTA implementation, which emphasizes that integrating HTA into health systems requires supportive organizational environments, adequate resources and stakeholder engagement [21–23]. China is classified as an upper-middle-income country and Poland as a high-income country; however, both contexts report structural and operational constraints at the hospital level that resemble those identified in our study. Rather than suggesting uniformity across all LMICs, our results indicate that health systems with transitional governance and resource pressures face comparable institutional barriers to embedding HTA within hospitals [11, 24]. By highlighting the interplay of these challenges, our study underscores the

need for a coordinated, multi-level approach to embed HB-HTA within Iran's hospital system.

The absence of formal structures and institutional frameworks for HB-HTA emerged as a primary barrier. This finding is consistent with international literature emphasizing the importance of organizational embedding for effective HTA integration [12, 25]. Comparable experiences have been reported in Spain (2024), where hospitals faced difficulties in institutionalizing HTA without national mandates, and in a European study (2020), which found that unclear mandates and fragmented governance delayed adoption [26, 27]. Our participants noted the lack of designated HB-HTA units or teams in Iranian hospitals, leading to ambiguity in roles and accountability. Fragmented decision-making processes, where departments operate in silos, exacerbate this problem. Similar barriers were documented in Italy (2023), where siloed governance reduced the effectiveness of hospital-level HTA [28]. Importantly, participants repeatedly described the absence of a clear focal point for evidence appraisal within hospitals, resulting in ad hoc and non-transparent decision-making. Based on this finding, and consistent with international experiences demonstrating the value of formalized structures, establishing dedicated HTA units or clearly mandated HTA functions within hospitals emerges as one potential structural response. However, the feasibility and effectiveness of such models in Iran would require further evaluation, as alternative organizational approaches have also been adopted in other settings.

Resource constraints encompassing human, financial and infrastructural limitations pose significant obstacles to HB-HTA development. The shortage of trained HTA professionals, coupled with overwhelming workloads, creates an unsustainable environment for evidence-based practice. Our participants highlighted the shortage of trained HTA professionals, coupled with high clinical workloads, which resonates with findings from France, Hungary, Italy, Kazakhstan, Poland, Switzerland and Ukraine (2024), where limited human resources restricted hospital-level HTA decision-making [12, 24]. Financial barriers further exacerbated the problem. For instance, in China (2023), lack of dedicated funding was a decisive factor preventing HB-HTA, while in Kazakhstan (2019), weak IT infrastructure slowed its implementation [24, 29]. These parallels underscore that Iran requires targeted investment in human capacity, IT systems and financial resources to build resilient HB-HTA structures. Although Iran has established master's degree programs in HTA at several medical universities, participants indicated that graduates are often absorbed into national or academic roles rather than hospital-level positions and no formal

career pathways exist for HTA professionals within hospitals. Consequently, despite educational initiatives, the translation of trained capacity into operational HB-HTA teams remains limited, helping to explain the persistence of human resource constraints.

Cultural resistance among clinicians and managers also emerged strongly in our study. Many clinicians perceived HTA as a cost-containment tool threatening professional autonomy, while managers viewed it as additional administrative work. This mirrors findings in Brazil (2025), where clinicians expressed skepticism toward HTA, and in Italy (2023), where managers resisted HTA integration [2, 28]. Evidence further suggests that clinician resistance can be mitigated by demonstrating HTA's positive effects on patient outcomes, as highlighted in international studies [30]. Therefore, involving clinicians early in the assessment process could build ownership and reduce skepticism in Iranian hospitals.

The lack of formal training and weak research culture further hindered HB-HTA adoption. This finding aligns with Kallio et al. (2016), who stressed that structured training is crucial to build HTA literacy [19]. In addition, Poland (2024) highlighted how partnerships between hospitals and academic institutions enhanced integration of HTA into daily practice [12]. Positive outcomes were also documented in Italy (2023) and Spain (2024), where academic collaborations improved methodological rigour and sustainability [26, 28]. Iran's hospital system remains heavily service-oriented, undervaluing research and capacity-building. Strengthening both pre-service and in-service training, alongside hospital–university partnerships, could help overcome these gaps.

External systemic constraints were another barrier. Iran's highly centralized governance and bureaucratic structures reduced hospital autonomy and delayed innovation. This is consistent with evidence from Turkey (2021), where centralization slowed HB-HTA progress, while Sweden (2021) demonstrated that decentralized governance enabled hospitals to tailor HTA to local needs [31, 32]. Reforming decision-making authority and streamlining approval processes could therefore allow Iranian hospitals to adopt more context-sensitive and responsive HB-HTA models.

Weak stakeholder engagement was also evident. Our participants noted limited collaboration with insurers, universities and patient groups, undermining the legitimacy and uptake of HB-HTA results. Comparable barriers were identified in Poland (2024) and Italy (2023), where stronger stakeholder participation improved credibility and sustainability [12, 28]. Similarly, in Sweden (2021), active patient involvement increased the uptake of hospital-level HTA recommendations [32]. For Iran, establishing advisory committees and formal engagement

mechanisms would likely enhance legitimacy and external support.

Our findings are also consistent with the earlier Iranian study by Mohtasham et al., which reported that many senior hospital managers did not perceive a clear need for HB-HTA and emphasized systemic challenges before its establishment [33]. Similar to our results, that study identified limited managerial demand and structural constraints as key barriers. While Mohtasham et al. focused primarily on public hospitals and pre-implementation perceptions, our study extends this evidence by incorporating a broader range of stakeholders and identifying additional themes such as centralized governance, stakeholder engagement gaps and emerging technological opportunities. Together, these studies suggest that managerial culture and institutional readiness remain central issues for HB-HTA development in Iran.

Finally, the role of emerging technologies deserves attention. Recent studies (2022–2025) highlight the potential of artificial intelligence (AI) in HTA by automating data extraction, supporting predictive modeling and reducing evidence synthesis time [34–36]. These innovations are especially relevant to Iran, where resource shortages and weak IT systems persist [37–39]. International experiences show that integrating AI into HB-HTA can reduce clinician workload, accelerate decision-making and improve methodological rigour [40, 41].

Taken together, our findings demonstrate that the challenges facing Iran are not unique but mirror those reported internationally in Brazil (2025), China (2023), Spain (2024), Italy (2023) and Kazakhstan (2019) [2, 24, 26, 28, 29]. However, the Iranian context intensifies these barriers owing to its severe resource constraints and centralized governance. Given the qualitative nature of this study, the strategies discussed above should be interpreted as analytically derived implications grounded in participants' reported barriers and supported by international experiences, rather than as definitive policy prescriptions. Further implementation research and comparative evaluation would be necessary to determine the most appropriate organizational model for HB-HTA in Iran.

Limitations

The qualitative descriptive design, while appropriate for capturing perspectives on HB-HTA in Iran, limits the transferability of findings to other hospital contexts in the country. In particular, smaller hospitals and rural or under-resourced regions were not adequately represented, which may limit the applicability of findings to those settings. The purposive sampling strategy successfully included 26 experts from diverse sectors and roles; however, frontline clinicians and junior staff directly

involved in technology adoption were underrepresented, which may have narrowed the range of operational insights captured. To mitigate this, we ensured variation across government, private, clinical, administrative and policy roles. Additionally, the reliance on snowball sampling for a portion of recruitment may have introduced network bias, potentially amplifying shared perspectives. This was addressed by cross-checking referrals against institutional directories to ensure diversity of participants. The use of both in-person and virtual interviews accommodated geographical barriers; however, virtual interviews occasionally faced technical disruptions, which may have influenced the depth of discussion. To reduce this risk, protocols such as pre-session testing and interviewer field notes were used. Although thematic saturation was achieved after 18 interviews, the extension to 26 interviews was deliberately done to strengthen representativeness.

Member checking was conducted with five participants who reviewed summarized interpretations of the findings. Their feedback resulted in minor clarifications of thematic labels and refinement of selected quotations, but no major thematic revisions were required. This process has been described in detail in the trustworthiness section to enhance methodological transparency.

Finally, the study excluded patient and community perspectives, focusing solely on experts. This narrow scope strengthens the policy relevance of findings but limits the understanding of HB-HTA's broader social and patient-level implications. Future research could address these limitations by incorporating non-expert staff and patients [42], conducting site-specific case studies in rural hospitals and using mixed-methods approaches to triangulate qualitative findings with quantitative evidence, as has been done in our recent study [43].

Conclusions

This study identified structural, organizational, cultural and systemic barriers that currently hinder the development of HB-HTA in Iran. Within the scope of qualitative evidence generated from expert stakeholders, the findings suggest that clearer organizational mandates, strengthened human resource pathways, improved information infrastructure and enhanced stakeholder engagement may facilitate future HB-HTA development. Rather than providing prescriptive solutions, the results highlight priority areas requiring policy attention and further empirical evaluation. Policymakers and hospital managers may use these findings as contextual evidence when considering reforms related to hospital governance, capacity-building initiatives and integration of evidence-informed decision-making processes. At the health system level, the results offer an

empirically grounded overview of institutional readiness gaps that should be addressed before large-scale implementation of HB-HTA. By approaching reform incrementally and evaluating alternative organizational models, Iran can work toward strengthening hospital-level evidence use while ensuring alignment with national governance structures and available resources.

Abbreviations

AI	Artificial Intelligence
BSc	Bachelor of Science
COREQ	Consolidated Criteria for Reporting Qualitative Research
HB-HTA	Hospital-Based Health Technology Assessment
HTA	Health Technology Assessment
LMICs	Low- and Middle-Income Countries
MD	Doctor of Medicine
MSc	Master of Science
PhD	Doctor of Philosophy

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12961-026-01475-4>.

Additional file1 (PDF 123 KB)

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Author contributions

MasoudB, BT, AfshinA, AB, MN and SA contributed to the development of the idea for this article. MeysamB, BT, MY, AidinA, MN and MasoudB partook in the acquisition and analysis of data. All co-authors joined them in critically interpreting and discussing the data. MasoudB, BDT, AfshinA and RH wrote sub-sections of this article and provided input into further sub-sections of the article, along with MasoudB, BT, AB, SA, BDT, MY, SS and RH. 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.

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Availability of data and materials

The datasets generated during and/or analysed during the current study 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 in accordance with 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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