

Evolution of Health Technology Assessment (HTA) in India: A Scoping Review and Thematic Analysis

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Background and Objectives

- Health Technology Assessment (HTA) provides a globally accepted, evidence-based framework for healthcare decision-making and priority setting, which is being increasingly adopted worldwide, including in developing countries¹
- Health Technology Assessment in India (HTAI) has evolved significantly since its establishment under the Department of Health Research (DHR) in 2017
- This scoping review evaluates the current status of HTAI, implementation and the challenges encountered. Additionally, a comparative analysis of HTA practices in six other Asia-Pacific countries with India is also presented

METHODS

- A literature search was conducted using databases such as PubMed, Google Scholar, and official government websites
- The search focused on identifying published studies and government policy documents related to HTA implementation and governance
- Further, this was supplemented by a review of regional HTA agencies and Health Ministry websites of six other Asia-Pacific countries (China, Japan, Taiwan, Thailand, South Korea, and Singapore)

RESULTS

- Established in 2017, HTAI aims to promote equitable, efficient, and high-quality health systems through evidence-based decision-making²
- Since its inception, it has evolved into a well-institutionalized body under the DHR, with robust national capacity including cost databases, research hubs, and technical partners (Figure 1)^{1,4}

Figure 1: Milestones in HTAI Progress



Abbreviations: HTAI, Health Technology Assessment India; HTA, Health Technology Assessment; DHR, Department of Health Research; BIA, Budget Impact analysis; HRC, Human Resource and Capacity Development; EQ-5D-5L, European Quality of Life 5 Dimensions 5 Level Version; UGC, University Grants Commission.

- HTAI functions as an attached office under the DHR, governed by a Board chaired by a NITI Aayog Member, supported by Technical Appraisal Committees, a secretariat, and resource centers across India for study implementation¹
- Over the years, HTAI has undergone significant restructuring, leading to a substantial progress, with 98 reports completed and 71 ongoing HTA evaluations, reflecting its expanding role in evidence-based health policymaking (Figure 2)^{1,3}
- Compared with the six APAC countries, India prioritises clinical benefit and cost-effectiveness, while equity, patient perspectives, and societal values are less consistently applied (Table 1)^{1, 13-16}

Table 1: HTA Evaluation Criteria Across Countries

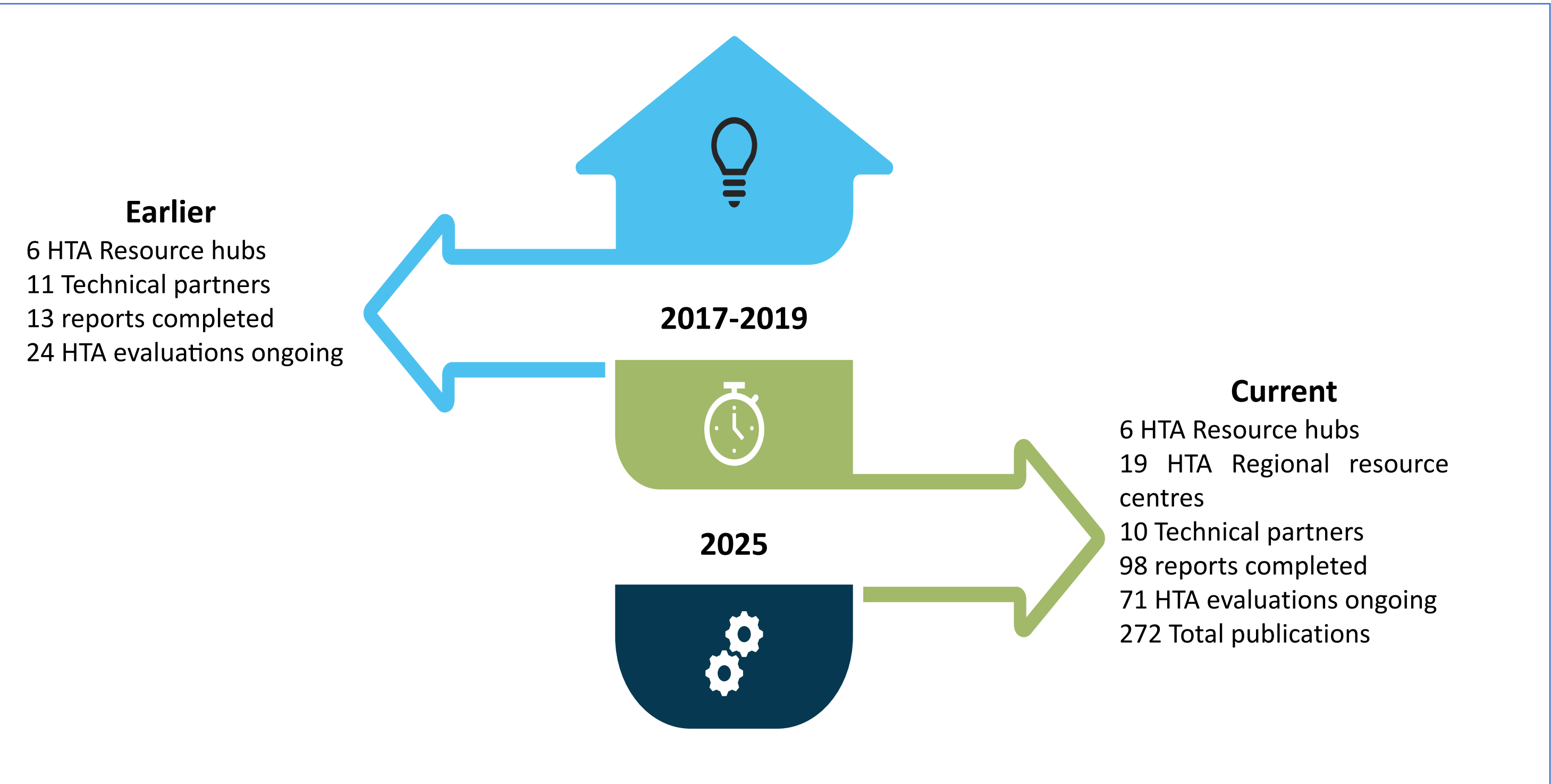
| Evaluation criteria | India | China | Japan | Singapore | South Korea | Taiwan | Thailand |
|--------------------------|-------|-------|-------|-----------|-------------|--------|----------|
| Clinical benefits | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Cost-effectiveness | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Budget impact analysis | ⚠ | ✔ | ⚠ | ✔ | ⚠ | ✔ | ✔ |
| Quality of life | ⚠ | ✔ | ✔ | ✔ | ✔ | ✔ | ⚠ |
| HCPs and Patient opinion | ✖ | ✔ | ✖ | ✔ | ⚠ | ✔ | ⚠ |
| Equity | ⚠ | ✔ | ✖ | - | ⚠ | ✔ | ⚠ |
| Focus on societal values | ✖ | ✖ | ⚠ | ✔ | ⚠ | ✖ | ⚠ |

✔ Strongly included ⚠ Limited/partially addressed ✖ Not addressed

Abbreviation: HCPs, Health care professionals.

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Figure 2: Comparative progress of HTAI activities over the years



Abbreviations: HTA, Health Technology Assessment.

- The challenges encountered by the HTAI to perform its activities, as reported in the literature, were thematically grouped into four domains: institutional and governance barriers, technical capacity and digital health governance, economic and financial considerations, and ethical, equity and social considerations (Table 2)
- Overall, HTAI is hindered by limited institutional capacity, weak digital systems, financial constraints, and insufficient integration of equity
- Addressing these barriers requires strengthened governance, digital and human resource investment, sustainable funding, and equity-oriented assessment frameworks

Table 2: Challenges and Recommended Strategies – A Thematic Overview

| Domains | Challenges | Recommendations |
|---|--|--|
| 1. Institutional and Governance Barriers | 1.1 Private sector dominance and resistance from policymakers and interest groups hinder effective HTA implementation by the government ^{2,4} | Strengthen public-private collaboration, create a legislative framework for HTA, and ensure transparency in decision-making ^{2,5} |
| | 1.2 Weak public healthcare sector and ineffective regulation hinder HTA adoption ^{2,5-6} | Need for legislative support and transparency in decision-making, and HTA should be mandatory for pharmaceuticals and medical devices ^{2,5-6} |
| | 1.3 Limited government HTA capacity could cause delays in approvals ⁶ | Expanding the HTA infrastructure in India, HTA committee should include experts from diverse domains and all regions of India ⁶ |
| | 1.4 Unclear regulatory pathway for private HTA reports ⁶ | Public-private partnership model ⁶ |
| | 1.5 Limited integration of HTA into state-level decision-making ⁷ | HTA should be linked to formal policy-making for greater impact ⁵ |
| 2. Technical Capacity and Digital Health Governance | 2.1 Limited human resource and expertise ^{2,6,8-9} | Expand systematic competency-based training programs and academic curriculum, Regional collaboration and capacity building can strengthen HTA in Asia ^{5,8-9} |
| | 2.2 India's digital health ecosystem lacks proper infrastructure and governance ^{4,7,9} | Invest in digital health infrastructure and create national databases ¹⁰ |
| | 2.3 Data security and privacy ^{7,12} | Promote data anonymization and transparency to safeguard privacy ¹² |
| 3. Economic and Financial Considerations | 3.1 Uncertain Funding for HTA Programs ⁹ | Secure dedicated funding through government budgets and strategic partnerships ⁵ |
| | 3.2 Reliance on outdated GDP-based thresholds limits effective value-for-money assessment ¹¹ | Use alternative approaches such as budget impact analysis, league tables, and affordability assessments ¹¹ |
| 4. Ethical, Equity and Social Considerations | 4.1 Existing HTA methodologies do not fully incorporate social determinants ² | Develop context-specific frameworks for equity-based HTA ¹⁰ |
| | 4.2 Influence of caste, religion, and geography on healthcare access ² | |

Abbreviations: HTA, Health Technology Assessment.

CONCLUSIONS

- To ensure, HTAI effectively and equitably informs national decisions, sustained efforts are required to overcome barriers, strengthen collaboration, and align processes with health priorities, thereby guaranteeing its long-term impact and sustainability
- Future priorities include integrating real-world evidence, enhancing transparency, and embedding societal values into HTA assessments

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