FOGSI-KCDM
Koita Centre for Digital Maternal & Child Care

KOITA FOUNDATION

Blueprint for Digital Transformation in Maternal Health

A Strategic Roadmap for India

Foreword

While maternal and child care has advanced rapidly, there is significant effort needed to achieve India's long-term goals. The challenge before us is no longer what should be done, but how consistently and safely is maternal and child care delivered across diverse care settings. This blueprint is an important step in addressing that challenge.

What makes the Blueprint for Digital Transformation in Maternal Care particularly valuable is its practical orientation. It does not view Digital Health as an end in itself, but as an enabler of better clinical decision-making, continuity of care, and accountability across the maternal health continuum. By anchoring digital tools within established clinical workflows and public health priorities, the blueprint avoids the common pitfall of technology-driven solutions detached from ground realities.

From primary facilities to tertiary centres, clinicians today are navigating increasing complexity; higher patient loads, fragmented records, and growing expectations of quality and safety. Thoughtfully implemented digital systems can reduce this burden, support adherence to standards, and strengthen referral and follow-up mechanisms. This blueprint provides a structured framework to do exactly that, while remaining adaptable to local contexts.

Moreover, the Blueprint for Digital Transformation in Maternal Care will help guide the FOGSI-Koita Centre for Digital Maternal & Child Care – a new centre being established by FOGSI to drive digital adoption with FOGSI and its members across India.

I commend the FOGSI, Koita Foundation and JHPIEGO team for bringing together evidence, field experience, and professional consensus into a coherent and actionable guide. I encourage clinicians, administrators, and policymakers to engage with this blueprint not as a static document, one that evolves through learning, feedback, and shared commitment to improving outcomes for mothers and newborns.

Dr. Bhaskar Pal
President, FOGSI

Foreword

It is a privilege to introduce this Blueprint for Digital Transformation in Maternal and Newborn Care. Over the past few years, we have seen how thoughtful application of technology, when guided by clinical needs, rigorous standards, and strong partnerships, can materially improve outcomes at scale. This document, developed in collaboration with Jhpiego and FOGSI, is a timely and practical roadmap for leveraging digital technologies and AI to improve maternal and child care in India. It also maps global evidence of how digital technologies are working on the ground for clinicians, administrators, and policymakers.

What resonates most in this blueprint is its focus on three simple but essential ideas; make digital tools fit real clinical workflows; measure what matters; and build trust through standards and peer-led learning. When implemented together, these principles can reduce variation in care, improve safety, and expand access, especially where resources are constrained. I would like to thank the FOGSI leadership team and JHPIEGO for committing significant time and effort in producing a clear, clinician-centered guide on digital transformation. Hopefully the blueprint will guide hospitals, clinics, and professional bodies across India.

The Koita Foundation remains committed to supporting FOGSI and India's health system in their digital transformation journey. Together, guided by the practical steps in this blueprint, we can accelerate a digitally enabled maternal health system that is safer, fairer, and more effective for every mother and newborn.

Mr. Rizwan Koita
Director, Koita Foundation

ABOUT THIS DOCUMENT

About the Blueprint

This document serves as India's first sector-specific blueprint for the digital transformation of maternal healthcare—anchored in system diagnostics, global comparisons, and implementation-focused insights. Developed as part of a joint initiative between the Federation of Obstetric and Gynecological Societies of India (FOGSI), Koita Foundation (KF) and Jhpiego – an affiliate of Johns Hopkins University, the blueprint is intended to inform policy design, institutional action, and cross-sectoral investment in digitally enabled maternal health systems. It constitutes a sector-specific transformation blueprint, developed to inform and catalyze India's next generation of reforms in maternal healthcare.

How to Navigate this Blueprint

This blueprint is organized into five interlinked parts – each designed to address a distinct strategic layer of India's maternal digital health transformation journey. While each part can be read independently, they are best understood in a sequential read.

Part A - Background and Ecosystem Context

Frames the maternal health challenge in India—highlighting epidemiological trends, public–private delivery dynamics, and the need for digitally enabled solutions across fragmented systems.

Part B - Strategic Purpose, Methodology and Framing

Articulates the blueprint's purpose, research design, guiding questions, and target audiences. Establishes the methodological foundation for subsequent analysis.

Part C – Global Benchmark and Transferable Models

Curates global best practices from countries with mature maternal digital ecosystems. Focuses on cross-sectoral enablers, governance models, and scalable tools.

Part D - Findings from Digital Readiness Assessment

Synthesizes insights from provider surveys, qualitative interviews, and ecosystem mapping to identify digital readiness gaps, behavioral drivers, and operational bottlenecks.

Part E – References

Together, these sections provide a comprehensive, implementation-ready agenda for India's next phase of maternal health reform—anchored in digital innovation, grounded in frontline realities, and shaped by national ambition.

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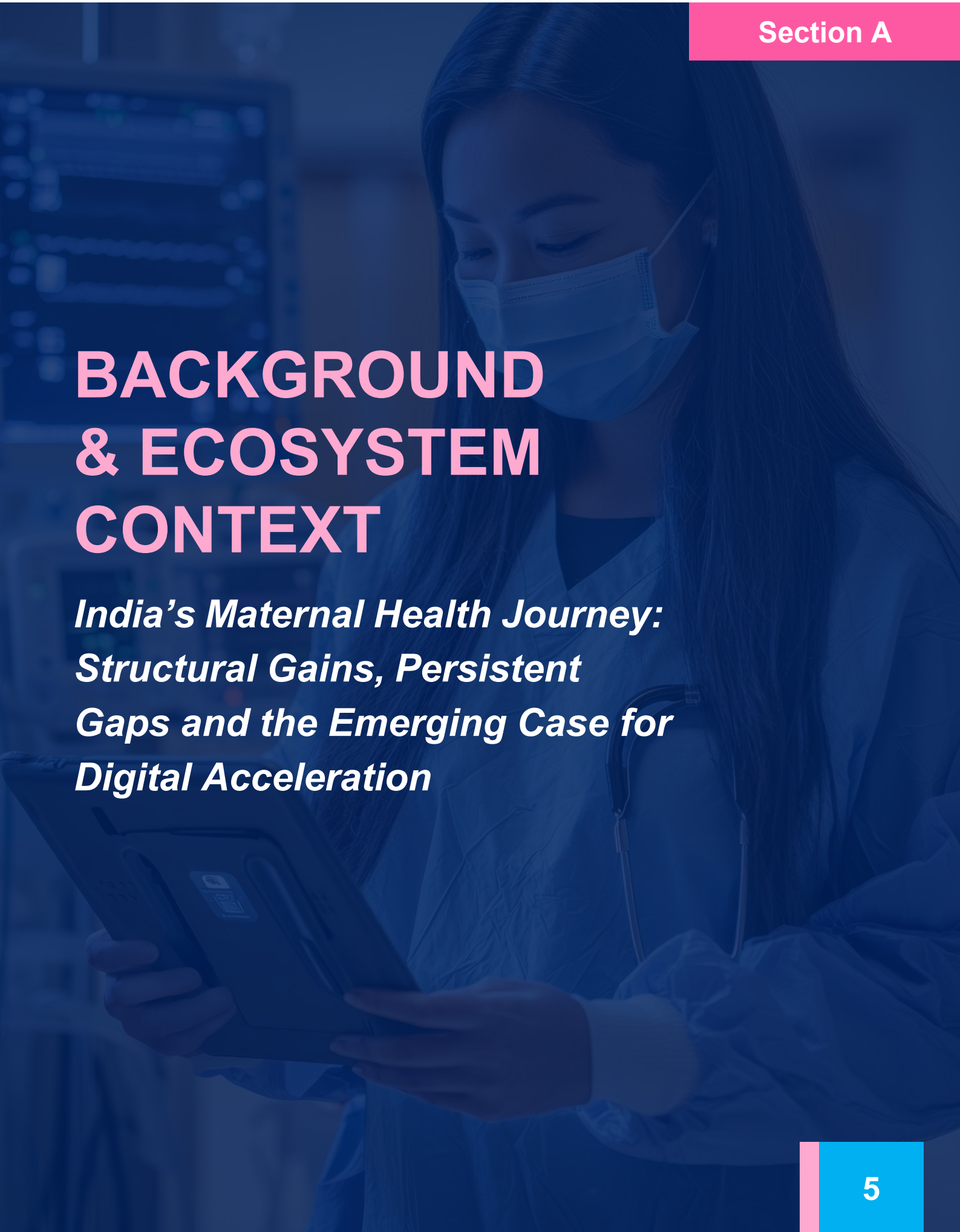
Section A



BACKGROUND & ECOSYSTEM CONTEXT

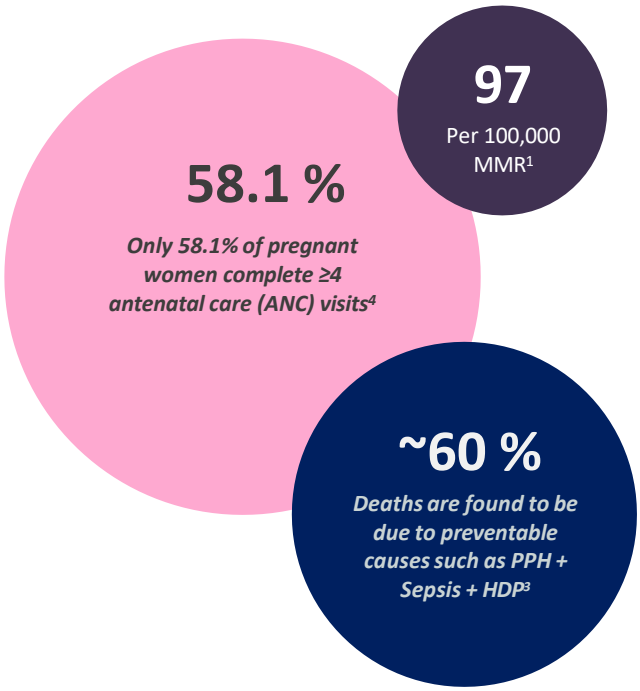
India's Maternal Health Journey: Structural Gains, Persistent Gaps and the Emerging Case for Digital Acceleration

Early Gains Set the Stage for India's Next Leap in Maternal Health

India's maternal health trajectory reflects both remarkable progress and persistent inequities.

Between 2000 and 2020, India's national Maternal Mortality Ratio (MMR) declined from 384 to 97 deaths per 100,000 live births—a 75% reduction that substantially outpaces the global average decline of 34% over the same period.[1] This achievement underscores the impact of sustained policy attention and public investment in reproductive and maternal health. Yet, the scale of India's population means that it still records the world's second-highest absolute number of maternal deaths—a stark reminder that aggregate gains can obscure deep, localized disparities.

Five states—Assam, Uttar Pradesh, Madhya Pradesh, Chhattisgarh, and Odisha—collectively account for over one-third of the country's maternal deaths,[2] making sub-national targeting not just strategic but essential.



The underlying drivers of maternal mortality remain largely preventable and well-characterized.

Postpartum hemorrhage, sepsis, and hypertensive disorders account for approximately 60% of maternal deaths, with unsafe abortion contributing an additional 8–9%.[3] These clinical causes are often compounded by systemic and structural barriers.

Despite institutional delivery coverage reaching 88.6%,[4] *first-delay* factors—such as delayed recognition of complications and late decision-making—remain prevalent. *Second- and third-delay* challenges—linked to transportation gaps and inadequate emergency obstetric readiness—

are most acute at lower-tier facilities, particularly within the highly fragmented private sector, which now accounts for 53% of urban births.[5]

Social determinants further magnify clinical and systems-level risk. One in four Indian women continues to marry before age 18; median birth spacing remains at just 31 months; female literacy stands at 70%; and over 60% of maternity-related costs are borne out-of-pocket.[6]

Addressing maternal mortality at scale, therefore, demands a dual focus: closing clinical quality gaps while simultaneously strengthening the systemic enablers that underpin timely, equitable, and high-quality maternal care across both public and private sectors.

Early Gains Set the Stage for India's Next Leap in Maternal Health

India's progress reflects the cumulative impact of large-scale public health investments

The flagship programs such as Janani Suraksha Yojana, LaQshya, and Pradhan Mantri Surakshit Matritva Abhiyan have shifted both demand- and supply-side dynamics, helping to institutionalize maternal care and standardize frontline practices.

Yet, despite these significant gains, India stands at a critical inflection point. The maternal mortality ratio (MMR) has plateaued at 97 per 100,000 live births—well below historical levels, but still short of the SDG 3.1 target of fewer than 70 maternal deaths per 100,000 by 2030. Reaching this threshold is no longer a question of access alone; it requires addressing the quality of care with urgency, consistency, and reach. The final leg of India's maternal mortality reduction journey will demand more than incremental inputs—it will require system-level transformations that prioritize precision at scale, speed of response, and equity by design.

The following sections explore how this ecosystem can be leveraged to accelerate India's transition toward a digitally enabled, quality-focused maternal health system—one that is responsive to both clinical realities and ground-level fragmentation.

Achieving un-met outcomes will require systemic solutions that go beyond conventional programmatic levers.

Traditional programmatic levers—training, infrastructure upgrades, and supply-chain fixes—while necessary, are unlikely to deliver the rapid, data-driven, and patient-centered responses now required to close the remaining gaps. This is where digital health technologies—including electronic health records, AI-based risk stratification tools, telemedicine, and real-time referral systems—offer catalytic potential. However, their impact will remain limited unless these tools are embedded within a governed, interoperable, and inclusive ecosystem—one that enables continuity of care, protects data rights, and supports providers across the public–private spectrum.

This need is particularly acute in India's highly fragmented maternal health delivery landscape, where over 50% of urban births now occur in private facilities, and thousands of small and mid-sized maternity clinics operate outside formal regulatory purview. Within this context, professional bodies such as the Federation of Obstetric and Gynecological Societies of India (FOGSI) play an outsized role in shaping clinical norms, provider behaviors, and peer-to-peer learning networks—making them indispensable actors in any national strategy aimed at digital transformation and quality improvement. In this evolving landscape, India's next frontier in maternal health must focus on building a digitally enabled, quality-assured care continuum that can respond to diverse clinical realities while overcoming deep structural fragmentation.

The Pivotal Role of Private Providers in Shaping Maternal Health Outcomes

Meeting India's maternal mortality reduction targets will be impossible without the strategic activation of the private health sector.

Non-state actors now dominate India's maternal care landscape, accounting for nearly 70% of outpatient consultations and 60% of inpatient obstetric admissions.[7] Their influence is most pronounced in urban centers and is expanding rapidly into peri-urban geographies, driven by demographic shifts and rising demand.

While tertiary hospital networks often set the technological frontier, the bulk of maternal services are delivered through a fragmented ecosystem of over 30,000 single-specialty maternity clinics and nursing homes.[2] These are typically small-scale, family-run establishments— heterogeneous in quality, variably resourced, and governed by a patchwork of state-level oversight mechanisms.[3–4] This fragmentation creates both a challenge and an opportunity: a distributed provider base that is under-regulated but highly reachable if mobilized through the right institutional conduit.

Federation of Obstetric and Gynaecological Societies of India (FOGSI)—a uniquely positioned professional body with the institutional architecture and credibility to orchestrate large- scale transformation.

Following institutional levers make FOGSI a pivotal player in India's maternal health journey:

- **Extensive professional reach** – a network of more than 39 000 obstetricians and gynecologists organized through 260 affiliated societies, giving near-universal access to frontline maternity providers.[3-4]
- **Authoritative standard-setting** – Issuance of evidence-based clinical guidelines that function as de facto norms across the private sector and are routinely referenced by regulators.
- **Accredited training infrastructure** – an established continuing-medical-education platform capable of rapidly disseminating new curricula and certifying digital competencies at scale.
- **Proven implementation capacity** – longstanding partnerships with public agencies and private stakeholders that translate national policy priorities into operational practice.
- **Policy-advocacy convening power** – regular engagement with professional councils, insurers, and state health departments, positioning FOGSI as a trusted broker for public-private alignment.

India has a universe of ~70k hospitals out of which Medium & standalone private hospitals account for 70%

Metro | Tier-1&2 | Rest of India

	Corporate chains	Large standalone hospitals	Medium standalone hospitals	Small standalone hospitals	Government hospitals
Typical ownership	Incorporated company	Both for profits and not for profits; some backed by PE funds	Single practicing doctor owned	Single practicing doctor owned	Central or state government (incl. PHCs & CHCs)
Complexity of care	Tertiary level across maximum disciplines of CONGO[1]	Upgraded secondary in majority disciplines, tertiary in CONGO[1]	General medicine, mother & child and general surgery, primary & secondary care	General medicine, mother & child and general surgery, primary & secondary care	Upgraded secondary with tertiary in a few specialties
Typical bed count	100-600	100+	20-100	<20	100-1200
% of total hospitals	~ 4k	~7k	~ 24k	~ 25k	~ 11k
Share of total beds	~7%	~37%	~19%	~5%	~32%
Share of total IP patients	~6-8%	~31-33%	~13-15%	~4-6%	~41-43%
Geographical spread of beds	66% 11% 23%	48% 39% 14%	44% 33% 23%	75% 12% 13%	32% 36% 32%

Source: Expert discussions, press search, team analysis

The Pivotal Role of Private Providers in Shaping Maternal Health Outcomes

The full value of private sector platforms cannot be realized unless three systemic constraints are addressed in parallel.

These structural constraints include:

Heterogeneous digital readiness of small and midsize maternity facilities

As per current evidence, fewer than 30 % of private facilities are enrolled in the government's Health Facility Registry, and < 10 % of rural nursing homes use even a basic HMIS.8

Limited regulatory oversight of private-sector data practices.

India is still "in the process of enacting specific laws on digital healthcare, information security and personal data protection"; a comprehensive digital-health statute has yet to be finalized.

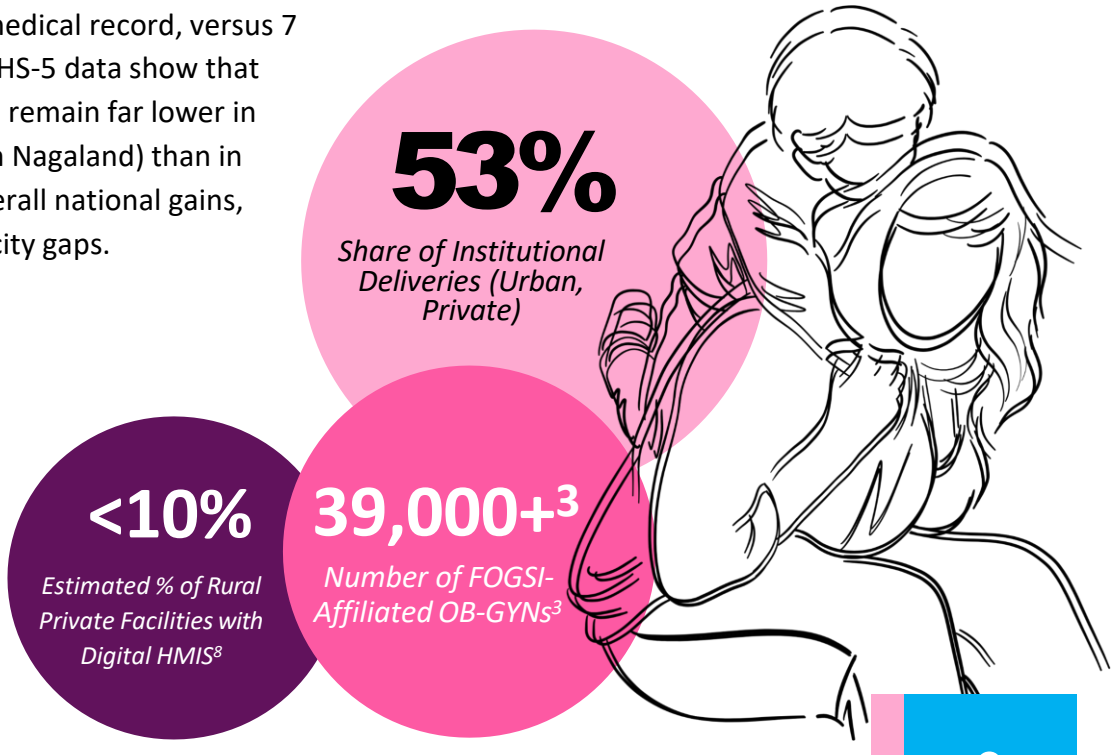
Resource asymmetries between urban tertiary centers and peri-urban or rural clinics.

In a 2023 BMJ Global Health survey of 1,200 private facilities, 45 % of Tier-1 city hospitals had some form of electronic medical record, versus 7 % in Tier-2/3 towns.10 NFHS-5 data show that institutional-delivery rates remain far lower in rural districts (e.g., 46 % in Nagaland) than in urban centers, despite overall national gains, reflecting persistent capacity gaps.

Why does this matter for digital transformation?

In many growing towns and peri-urban areas, private clinicians are the first and only point of contact for pregnant women. Without digitally connecting these providers to referral hubs, blood banks, risk triaging systems, and decision-support algorithms, India risks entrenching a two-speed maternal health system: one digitally enabled, the other invisible.

Conversely, if FOGSI's network can be mobilized to bring even half of India's private maternity clinics onto ABDM-compliant platforms over the next five years, the benefits would be transformative: faster detection of complications, real-time care coordination, and accelerated reductions in avoidable mortality.[8]



India's Maternal Health Systems Are Going Digital – Now Comes the Challenge of Delivering Digital Health at Scale

India's digital health transition is no longer at the margins.

Four flagship national platforms now operate at scale, collectively supporting multiple stages of the maternal–child health continuum. These platforms are not only laying the digital backbone for service delivery but are also beginning to show measurable population-level impact.

Impact evidence is beginning to emerge.

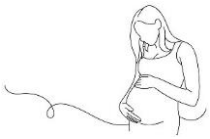
A 2023 BMJ Global Health study analysing Kilkari call logs found that the platform averages 1.2 million calls per day, with 48% of users listening to at least half the content, correlated with higher odds of timely ANC visits and early initiation of breastfeeding.[13] Evaluations of MCTS show a 22% increase in on-time tetanus toxoid immunizations in districts where data quality scores exceeded 80%.[12] Meanwhile, an AI-powered clinical decision support pilot (Predible Health) in three district hospitals reduced unnecessary eclampsia referrals by 17% through earlier detection of gestational hypertension.[16]

Table: India's Flagship Digital Health Platforms Supporting Maternal Health (non-exhaustive)

Platform	2025 Scale	Primary Value Proposition
Mother & Child Tracking System (MCTS)	> 40 million pregnancies, 33 million children registered[12]	Automated SMS reminders, real-time immunization and service coverage dashboards
Kilkari & Mobile Academy (IVR suite)	> 10 million active women; 266,000 ASHAs engaged[13]	Behavioral nudges for ANC adherence and breastfeeding; micro-training for FLWs
eSanjeevani (tele-OB network)	6,880 hub-and-spoke sites; >216 million consultations (as of Mar 2024)[14]	Specialist consultations in underserved districts via telemedicine
Ayushman Bharat Digital Mission (ABDM)	535 million Health IDs issued; open APIs active for EMR vendors[15]	Interoperability backbone for public–private data exchange

Technology Is Reshaping Maternal Health in India – From Preconception to Postpartum

India's innovation landscape features a wide array of digital solutions mapped to each stage of the maternal care pathway. These tools range from self-care and education to clinical diagnostics, labor monitoring, and postnatal support – forming the building blocks of a digitally enabled "continuum of care."

 **Preconception Care**	Sexual & reproductive health (SRH) education apps (e-learning modules, gamified learning)
	Family planning decision-support tools (chatbots, mobile apps guiding contraceptive choices)
	Fertility and risk self-assessment tools (checklist-based mHealth apps)
	Online SRH product access (e-pharmacies for contraceptives, telemedicine consults for preconception care)
 **Antenatal Care (Pregnancy)**	Digital pregnancy detection and point-of-care testing (portable kits with mobile readers)
	Electronic antenatal medical records (mobile or web-based EMRs aligned to WHO guidelines)
	Remote monitoring devices for vitals (digital BP monitors, fetal heart rate trackers connected to apps)
	Risk stratification and decision support (AI-powered high-risk pregnancy screening, clinical decision support systems for anemia, gestational diabetes, hypertension)
	Tele-ultrasound and radiology solutions (assisted ultrasound with AI, cloud-based image archiving for obstetric scans)
 **Intrapartum (Labour & Delivery)**	e-Partograph and labor room digital monitoring (tablet-based labor charts incorporating WHO Labor Care Guide, real-time maternal/fetal vitals monitoring)
	Connected fetal monitoring devices (wireless cardiotocography for fetal heart rate and uterine contractions with data logging)
	Digital labor ward dashboards (consolidated view of multiple patients' labor progress and alerts for complications)
	Referral and emergency alert systems (mobile apps triggering obstetric emergency response and linking to higher facilities)
 **Postnatal & Newborn Care**	Remote postnatal monitoring tools (wearable newborn temperature and apnea monitors in parents' phones)
	Digital lactation & nutrition support (mHealth apps with breastfeeding guidance, chat-based lactation counselors)
	Immunization tracking and reminders (mobile vaccination schedules and SMS alerts for mothers)
	Postpartum mental health support (online screening questionnaires and tele-counseling for postnatal depression)
	Follow-up telemedicine services (postnatal check-ups via video consult, facilitating specialist advice for newborn issues)
 **Continuity of Care**	Remote postnatal monitoring tools (wearable newborn temperature and apnea monitors linked to parents' phones)
	Digital lactation and nutrition support (mHealth apps with breastfeeding guidance, chat-based lactation counselors)
	Immunization tracking and reminders (mobile vaccination schedules and SMS alerts for mothers)
	Postpartum mental health support (online screening questionnaires and tele-counseling for postnatal depression
	Follow-up telemedicine services (postnatal check-ups via video consult, facilitating specialist advice for newborn issues)

Why Scale Remains Elusive: India's Digital Health Maturity Gap

Despite proven pilots, Global benchmarking consistently places India's digital health ecosystem in the mid-tier of maturity. According to the WHO's Global Digital Health Monitor (GDHM), India is currently assessed at Phase 4 – a classification that signals significant infrastructure and policy foundations, but incomplete integration and impact.[17]

The Global Digital Health Index (GDHI) and HIMSS Digital Health Indicator similarly rank India within the "Emergent" range (Phase 3–4), falling short of global exemplars that have institutionalized fully interoperable, nationwide digital ecosystems.[18–19]

In practical terms, India has made commendable strides—launching the Ayushman Bharat Digital Mission (ABDM), issuing over 500 million Health IDs, and establishing national registries for health providers, facilities, and personal health records. Yet, it has not yet achieved seamless, end-to-end digital integration across sectors, settings, and care levels.

Four Key Bottlenecks Identified to Hold India at Phase 3 – 4

1 *Workforce Readiness Is a Structural Weak Link*

A digitally literate and empowered health workforce is the bedrock of any mature ecosystem. In India, digital capacity remains limited across clinical, administrative, and frontline cadres. Globally, workforce readiness is the weakest domain in GDHM; over 64% of countries remain at Phase 1 - 2.[21]

India is no exception – its own national strategy explicitly flags workforce development as a core constraint.[23]

Despite this, digital health remains largely absent from clinical training curricula, and adoption among providers remains low, often due to lack of training, incentives, and workload alignment.

The State of Digital Health 2024 report notes that insufficient digital training – particularly for the predominantly female frontline health workforce – continues to limit impact.[24]

Four Key Bottlenecks (Contd.)

2 *Data Fragmentation and Interoperability Gaps*

Interoperability—the ability for disparate health systems to share and interpret data – is critical for patient continuity, public health surveillance, and system efficiency. India's digital landscape is still characterized by siloed platforms and uneven standards adoption.

While ABDM mandates FHIR-based APIs, only ~36% of private EMR vendors are currently sandbox-certified.[24]

Globally, 58% of countries still lack fully established health information exchanges.[24] Phase 5 leaders like Portugal and Saudi Arabia achieved maturity by investing early in unified national health data architectures.[21] Without universal data exchange and semantic standardization, India's digital health system risks operating in parallel, disconnected layers.

3 *Rural Infrastructure Gaps Persist*

While India boasts over 400 million rural internet users,[25] quality of connectivity remains inconsistent—particularly in the districts where maternal and neonatal health needs are greatest. Many sub-district health facilities still lack basic digital infrastructure: reliable electricity, functional devices, or network access. GDHM data reveal that ~17% of countries remain at Phase 1 for ICT infrastructure – anissue mirrored in India's bottom-tier public facilities.[17]

4 *Private Sector Integration Remains Limited*

India's healthcare system is predominantly private, especially in maternal and outpatient care. Yet, the private sector's integration into national digital initiatives has been slow. Initial ABDM uptake skewed heavily toward public-sector providers.[26] Many private clinics—particularly small and mid-sized facilities—lack clarity on the costs, benefits, and regulatory implications of onboarding.[27]

To address this, the National Health Authority launched the Digital Health Incentive Scheme[28] and the 100 Microsites project [29] resulting in the integration of over 236 private entities and more than 1,000 tech companies building on ABDM APIs.[25] While promising, these efforts remain nascent relative to the scale of India's private provider base.

As India Reaches a Digital Health Inflection Point, Lessons from Global Leaders Can Help India Leapfrog

These challenges are not unique to India; rather, they echo the early experiences of countries like the US, UK, and Singapore, whose digital health trajectories offer both cautionary tales and implementation blueprints.

The central insight from these nations is

that technology adoption alone does not yield transformation—it must be scaffolded by health system levers that enable adoption (such as training, financing, and standards) and supported by fit-for-purpose tools designed with the realities of end-users in mind. Singapore, for example, succeeded by developing use-case specific apps for both patients and clinicians, investing early in health IT infrastructure, and building public trust through transparent data governance. The UK's NHS invested not just in digital records, but in leadership development (e.g., the NHS Digital Academy), co-design with patients, and rigorous target setting to monitor adoption across maternity pathways.

Crucially, digital transformation must be positioned not just as a supply-side intervention to streamline service delivery, but as a demand-responsive strategy that expands access, improves patient experience, and empowers women to engage meaningfully with their own care.

India now has the opportunity to shape its own model – leveraging its expansive private sector, professional associations like FOGSI, and homegrown tech innovators to architect a maternal digital health ecosystem that is inclusive, intelligent, and sustainable. But to do so effectively, India must map where it stands and where it needs to go. Two critical lenses can enable this:

- **Mapping of digital health tools** across the maternal care continuum, segmented by end-user (clinicians vs. administrators) and point of care (from preconception to postnatal care). This helps us understand which digital interventions are actually reaching whom, and where the highest-value opportunities lie for scaling tools that are underused or misaligned.
- **Mapping of health system levers** that have been successfully used – domestically and globally – to propagate digital health adoption. These include financial incentives, standards enforcement, digital capacity-building, procurement models, and regulatory pathways. By organizing these levers systematically, we can better identify which enablers are in place, which are emerging, and which require urgent investment or reform.

Section B

STRATEGIC PURPOSE, METHODOLOGY AND FRAMING

What We Asked, How We Analyzed, and Why It Matters

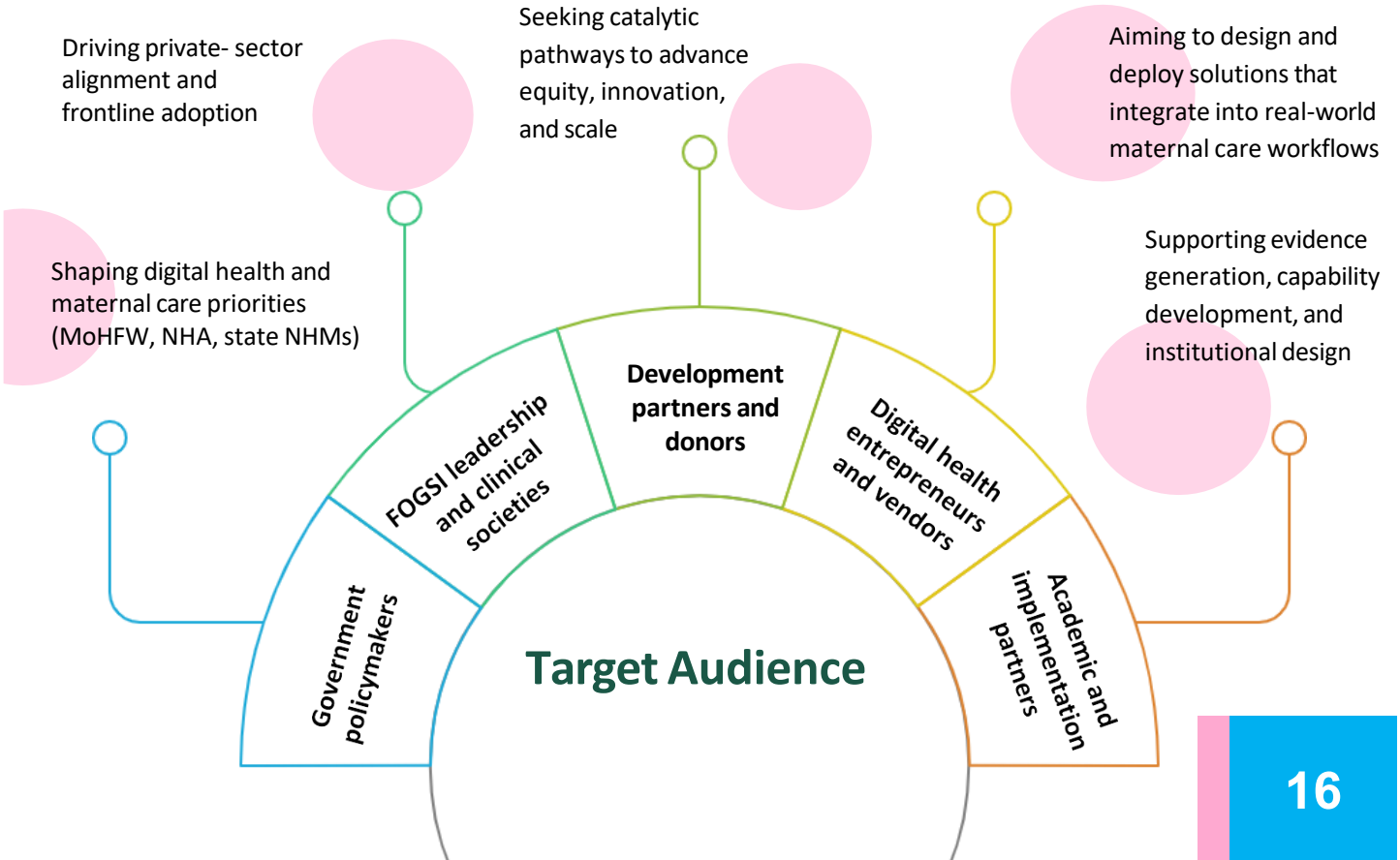
Purpose, Strategic Questions and Primary Audience

This blueprint serves as a strategic and operational guide for accelerating India's maternal digital health transformation. It is designed to inform national and subnational stakeholders on how to systematically scale digital health innovations across the private maternity care ecosystem, anchored by the institutional reach and convening power of FOGSI.

With India's maternal health agenda at an inflection point, and digital health platforms reaching critical mass in the public sector, this document aims to articulate a coherent pathway for extending digital integration across the country's diverse network of private providers.

The blueprint is organized around four guiding questions that shape the analysis and recommendations:

1	What are the most critical gaps and enablers for digital transformation across FOGSI's provider network, particularly in small and mid-sized maternity facilities?
2	Which global models and solution architectures are transferable to India's context, and what adaptations are required for successful uptake?
3	How can a digital health strategy for maternal care be structured to ensure operational feasibility, financial sustainability, and systems integration?
4	What implementation models are best suited to support nationwide scale-up, with FOGSI as a central institutional anchor?



Methodological Pillars and Processes

The development of this blueprint followed a structured, multi-phase process over 16 weeks, drawing on four methodological pillars.

1. National Survey of Private Maternity Providers

A structured Digital Health Readiness Survey was administered to all FOGSI-affiliated obstetricians across India, covering a spectrum of provider archetypes single-speciality nursing homes, urban maternity hospitals, and rural clinics.

2. Qualitative Consultations and Practitioner Sprint Sessions

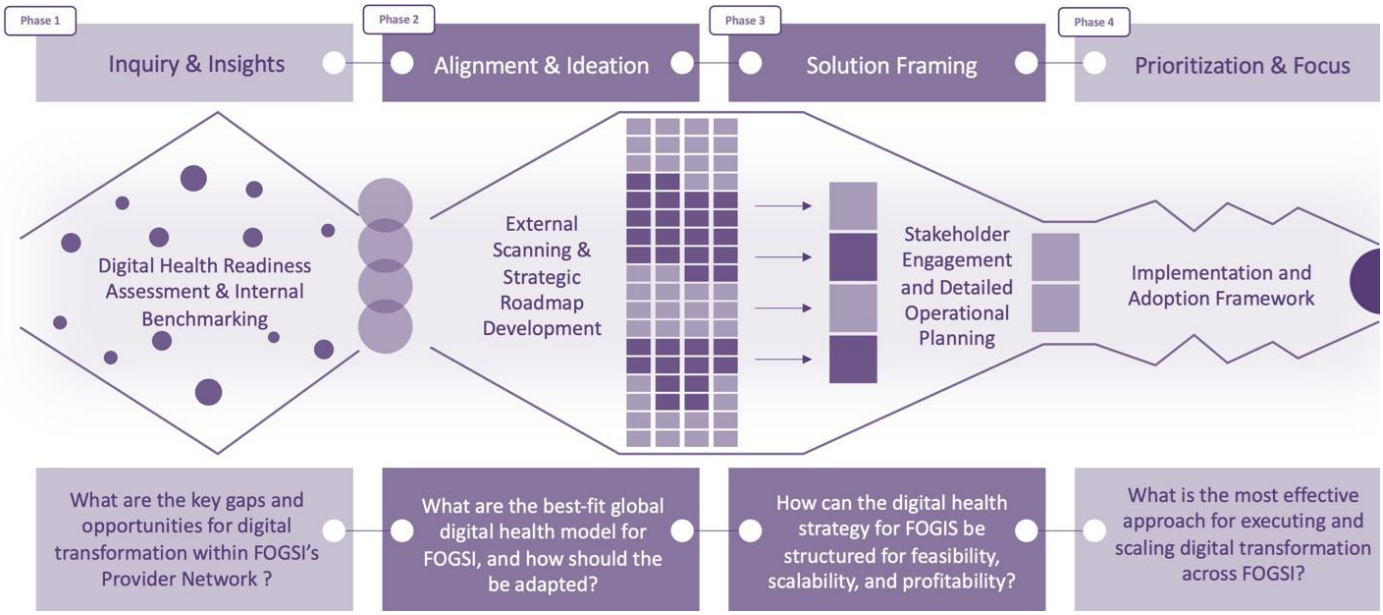
Over 20 expert consultations and focus group discussions were held with OB- GYNs, digital health startups, hospital administrators and clinical informatics leads. These sessions generated granular, practitioner- driven insights on real-world barriers and enablers to digital tool adoption.

3. Comparative Global Benchmarking

Six exemplar countries were analyzed—the United Kingdom, United States, Singapore, Thailand, Vietnam, and Indonesia—through the lens of their maternal digital health architecture, enabling policies, and implementation mechanisms. Countries were selected using a structured rubric drawing on the Global Digital Health Monitor (GDHM)and the OECD Digital Wellbeing Hub.

4. Co-Design and Stakeholder Validation

A series of iterative workshops and expert reviews were conducted to align insights with the priorities of FOGSI leadership, government stakeholders, and ecosystem partners. These sessions informed the roadmap design, ensuring institutional relevance, operational feasibility, and alignment with the digital priorities of private sector providers.



Taken together, these inputs inform a practical, systems-level response to a singular question:
How can India move from digital promise to digital performance in maternal care, at speed, at scale, and with inclusion?

Primary-Research Design (Nationwide Survey + In Depth Interviews)

This blueprint draws significantly on a structured programme of primary research conducted between February and April 2025, targeting India's diverse private maternity care landscape. The research design featured two core components:

- A nationally administered Digital Health Readiness Survey disseminated across FOGSI's provider network.
- A series of structured in-depth interviews (IDIs) with clinicians and administrators representing a cross-section of provider archetypes.

1 National Digital Health Readiness Survey

A self administered semi-structured, survey instrument was distributed to all the FOGSI-affiliated obstetricians, spanning over 25 Indian states, ensuring representation across various facility types and geographic tiers.

The survey instrument—co-developed by Jhpiego and Feedback Insights—was designed to elicit data on adoption patterns, operational constraints, perceived utility, and support needs related to digital maternal health tools.

Respondents were segmented along five empirically grounded provider archetypes:

- Independent Clinic Owners
- Small Hospital/Nursing Home Operators
- Consultant OB-GYNs
- Hospital Administrators or Managers
- Hybrid Profiles (e.g., clinic owner + hospital consultant)

Within each archetype, the survey further stratified responses between users and non-users of digital tools, enabling a diagnosis of differential adoption pathways.

The tool gathered insights on 10+ digital interventions—including EMRs, teleconsultation platforms, fetal monitoring applications, patient portals, and clinical dashboards—across both outpatient and inpatient settings.

Additionally, it mapped challenges (e.g., cost, interoperability, staff resistance) and solicited practitioner views on areas where FOGSI could play a catalytic support role. The final survey tool is included in the Annexure (see Digital Health Survey Questionnaire).

2 Key-Informant Interviews (IDIs) with Practitioners and Administrators

To supplement the survey's quantitative breadth with experiential depth, over 20 in-depth interviews were conducted with OB-GYN clinicians, facility administrators, and digital system users/non-users across urban and peri-urban settings.

These interviews explored real-world decision-making processes, bottlenecks in implementation, institutional dynamics, and perceived value of digital tools in clinical care and workflow optimization.

The IDIs followed a structured protocol covering adoption triggers, resistance factors, care quality perceptions, and system-level integration issues.

Distinct pathways emerged across archetypes, such as clinicians prioritizing EMR usability versus administrators emphasizing workforce capacity and return on investment. Interviewees also surfaced latent demand for clinical decision support, streamlined referrals, and integrated maternal health dashboards. Notably, varying levels of awareness and comfort with national initiatives such as the Ayushman Bharat Digital Mission (ABDM) highlighted opportunities for targeted alignment and sensitization.

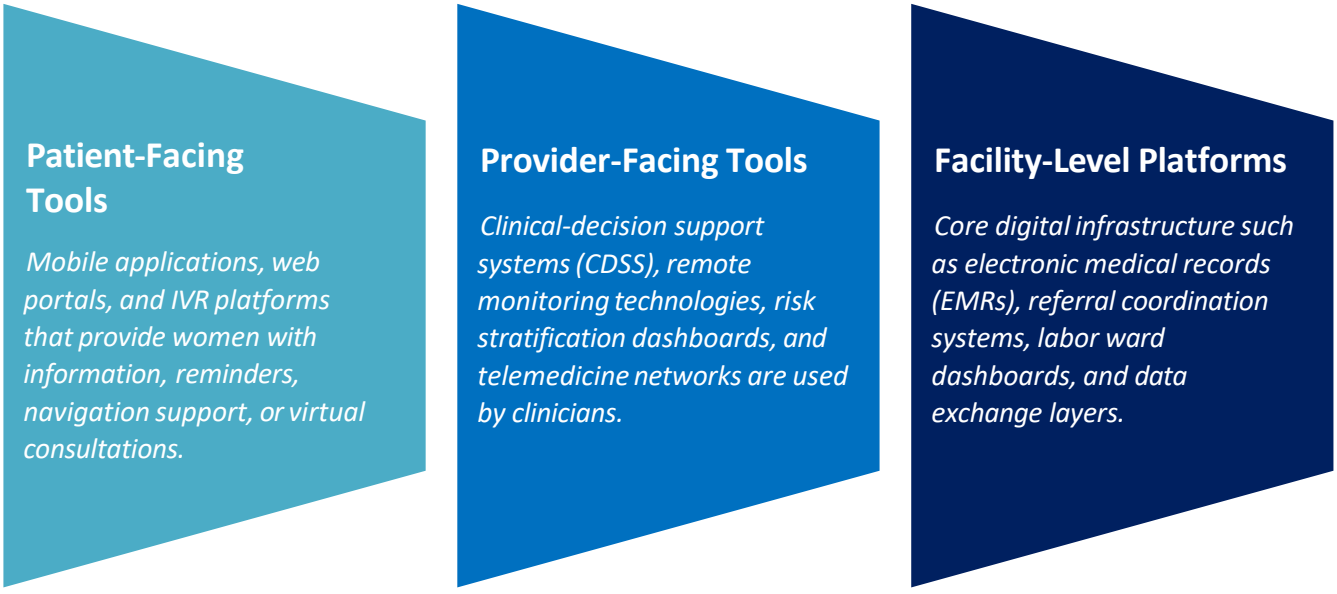
The interview guide is available in the Annexure (see IDI Guide – FOGSI Digital Health Assessment).

Analytical Framework, Secondary Sources and Limitations

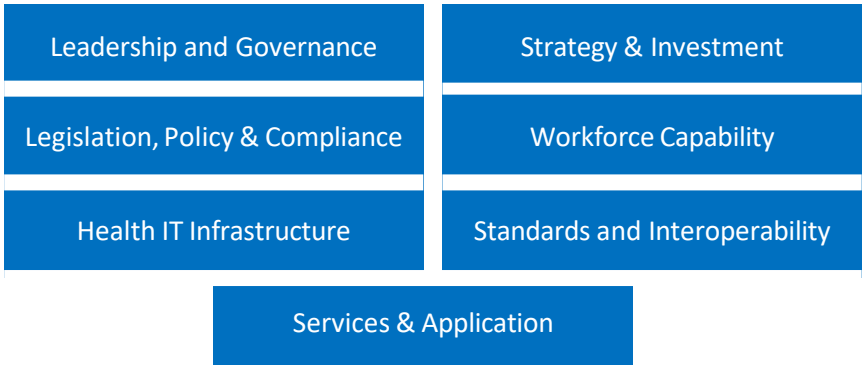
Analytical Scope and Framework

The analysis pursues three goals. First, it documents, with a consistent analytical lens, the most mature tools now operating across the maternal-care continuum in a set of peer and aspirational countries. Second, it examines the policy, financing, and delivery mechanisms that have enabled those tools to move beyond pilot scale. Finally, it distils lessons that can be adopted or adapted by India's private providers and professional bodies, or intentionally parked when context makes transfer unwise.

The analytical scope of this blueprint is purposefully bounded to digital health interventions that support women and newborns across the continuum of care, from pre-conception to six weeks post-delivery. Within this pathway, three categories of digital solutions were examined:.



This tool-level analysis was complemented by a systemic diagnostic across **seven foundational health system enablers**, adapted from WHO frameworks and contextualized for India's mixed provider environment:



Overall, this approach integrates both **demand-side realities** (provider capabilities, user behavior, systems integration) and **supply-side enablers** (policy, technology architecture, institutional levers).

Country Selection Criteria and Benchmarking Rationale

To anchor recommendations in internationally validated models, six countries were selected for benchmarking through a structured rubric. The selection drew from the WHO Global Digital Health Monitor (GDHM) and OECD Digital Wellbeing Hub datasets, focusing on countries with:

1. A comparable or higher level of digital health maturity
2. A delivery system that mirrors India's in either private-sector involvement or governance complexity

The final sample includes the United Kingdom, United States, Singapore, Thailand, Vietnam, and Indonesia—representing a spectrum of high-income digital exemplars and regional peers in Asia. India serves as the reference country for all benchmarking exercises.

Evidence Base

The benchmarking draws on more than 120 primary and secondary sources, including WHO and GDHI data, national digital-health strategies, academic evaluations of flagship programmes such as the NHS Maternity Transformation Programme and Singapore's Smart Health initiatives, and semi-structured interviews with 18 policymakers, funders and digital-health entrepreneurs across the six exemplar markets.

The synthesis reflects rigorous desk research and expert consultations, with all factual references grounded in authoritative sources and all qualitative perspectives analyzed through a structured, anonymized framework aligned with Jhpiego's research standards.

Analytical Limitations

Despite the methodological rigor applied, several limitations should be acknowledged when interpreting the findings of this analysis:

Self-Reported Readiness Bias

The survey-based assessment (n = 200 private-sector respondents) relied on self-reported data, which may reflect aspirational perspectives rather than operational realities. Respondents—particularly clinicians—may overstate adoption readiness or underreport infrastructural and behavioral constraints, especially in Tier 2 and Tier 3 geographies.

Limited Cross-Country Metric Standardization

The absence of universally accepted benchmarking indicators necessitated the use of proxy variables—such as out-of-pocket expenditure shares and governance centralization indices—which may not fully capture institutional or operational nuance.

Evolving Policy and Implementation Landscapes

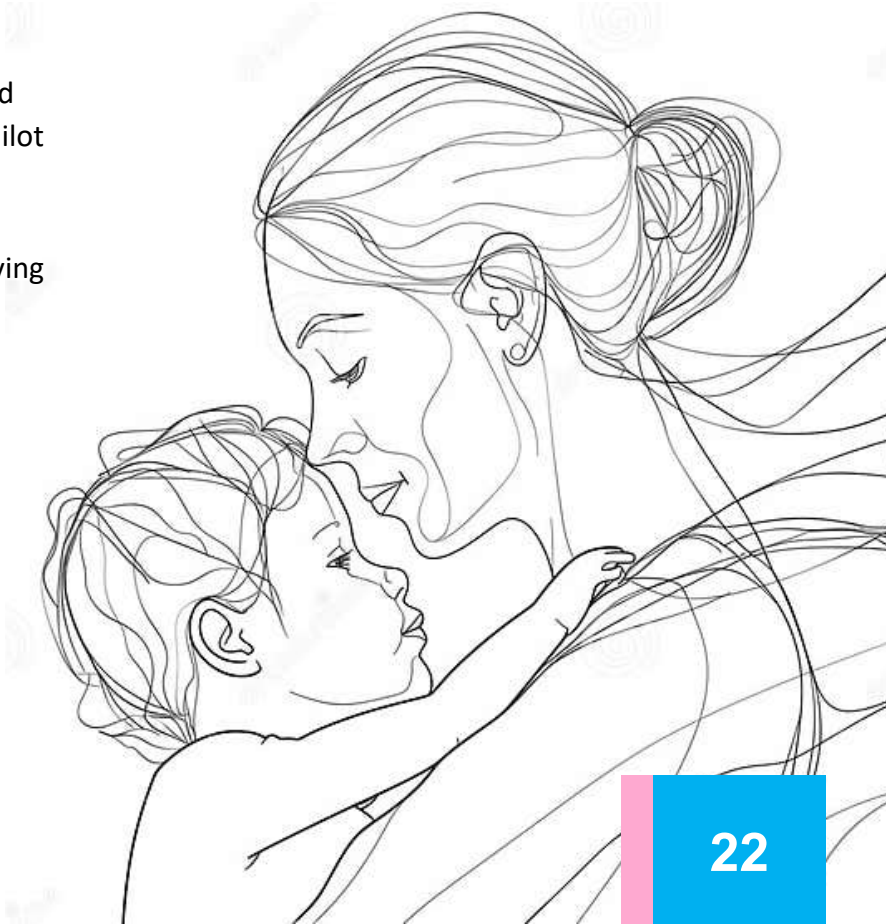
The analysis reflects the most recent validated data as of 2023; however, ongoing reforms, pilot programs, or scaled interventions introduced thereafter may not be captured, potentially omitting significant developments in fast-moving health systems.

Insufficient Visibility into Private Sector Interventions

In many LMICs, including India, private-sector-led digital innovations often remain undocumented in official databases or academic literature. This lack of systematic listing limits the comprehensiveness of benchmarking exercises and may result in an underestimation of private sector contributions to digital transformation.

Qualitative Sample Limitations

While the 20 in-depth interviews and participatory design sessions yielded rich insights, their sample may not reflect the full diversity of India's private maternity landscape. Responses were concentrated in urban and peri-urban zones and may miss nuances from Tier-3 towns or informal maternity providers.



Section C

GLOBAL BENCHMARKS & TRANSFERABLE MODELS

Comparative Insights on Digital Maturity, Health System Design, and Maternal Innovation Pathways

Benchmarking Global Systems to Inform India's Maternal Digital Health Transformation

As India seeks to accelerate digital transformation in maternal health, the question is no longer whether to adopt digital tools, but how to scale them equitably, effectively, and systemically.

As India moves toward transforming its maternal health system through digital innovation, global benchmarking becomes a critical instrument.

Countries around the world have traversed diverse paths to digitally mature maternal health ecosystems. Systematically analyzing these trajectories offers India a pragmatic opportunity to reflect, recalibrate, and realign its digital strategy. This comparative benchmarking effort was structured not as an academic exercise but as a strategic lens for identifying lessons that are both relevant and implementable within India's uniquely complex health architecture. The objective was to move beyond one-size-fits-all models and identify practical insights—tools, governance levers, and policy architectures—that can support digital scale-up in a mixed health- delivery system.

The benchmarking framework was developed with three mutually reinforcing aims:

Establish Global Reference Points

Define what constitutes a digitally mature maternal health ecosystem across different contexts—allowing India's current landscape to be positioned along an internationally validated continuum.

Identify Transferable Practices

Surface design elements, institutional mechanisms, and policy levers that have been successfully used to enable digital adoption— especially in systems with similar public–private dynamics or federal structures.

Contextualize India's Trajectory

Surface design elements, institutional mechanisms, and policy levers that have been successfully used to enable digital adoption— especially in systems with similar public–private dynamics or federal structures.

Rubric for Country Selection and Comparative Analysis

To ensure rigor and relevance, countries were selected using a structured, three-dimensional rubric (see Table D1.1). The rubric triangulates indicators from the WHO's Global Digital Health Monitor (GDHM), the OECD Digital Wellbeing Hub, and global health system typologies. The three selection dimensions are:

A Digital Health Maturity

Countries were assessed based on their GDHM phase rating (1 to 5) and complementary indices, including interoperability frameworks, electronic health record (EHR) penetration, and API-based ecosystem development.

B Maternal Health Delivery Structure

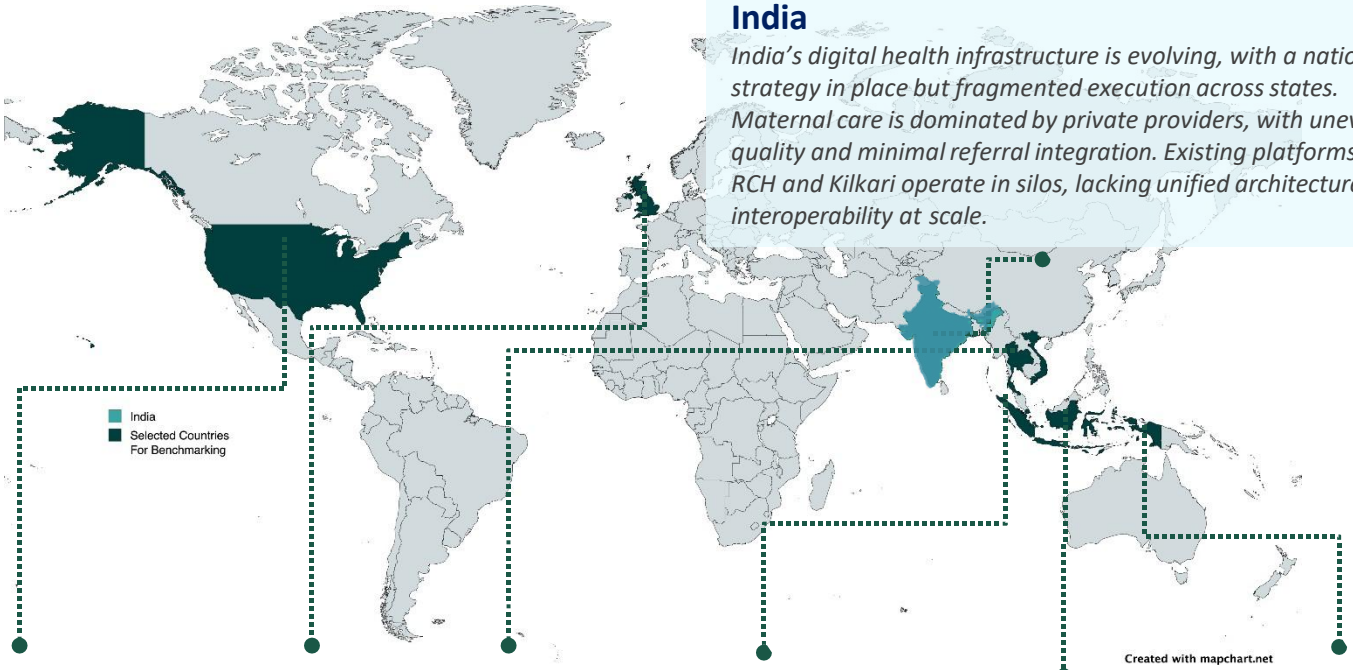
Systems were analyzed for three attributes crucial to India's implementation feasibility: (a) degree of decentralization, (b) public vs. private care balance, and (c) autonomy at the facility level. These determine the transferability of adoption pathways.

C Digital Ecosystem and Regulatory Setup

This dimension evaluates whether national maternal digital platforms exist, how seamlessly they integrate data across service levels, and whether enabling regulatory instruments (e.g., data standards, digital ID, financing norms) are operationalized.

Comparative Landscape of Digital Maturity and Maternal Health Architecture

The six countries—United Kingdom, United States, Singapore, Thailand, Vietnam, and Indonesia— were deliberately selected to represent a strategic cross-section of global digital maturity, regional comparability, and maternal health innovation. Unlike broader or generic scans, this benchmark set balances aspirational systems (UK, Singapore) that exemplify advanced digital integration, innovation- driven mixed markets (US) that highlight private-sector potential, and regionally proximate LMICs (Thailand, Vietnam, Indonesia) that mirror India's demographic, economic, and health system complexity. These countries were prioritized over others due to their documented national maternal digital health programs, availability of WHO GDHM data, and policy architectures that offer transferable insights across governance, infrastructure, and patient-facing technologies. This focused selection ensures contextual relevance and practical applicability to India's federal, mixed- provider landscape—allowing deeper analysis rather than diffuse comparison.



India

India's digital health infrastructure is evolving, with a national strategy in place but fragmented execution across states. Maternal care is dominated by private providers, with uneven quality and minimal referral integration. Existing platforms like RCH and Kilkari operate in silos, lacking unified architecture or interoperability at scale.

United States

Innovation- driven mixed- market system highlighting private-sector- led digital transformation models.

United Kingdom

A model of full- stack digital integration with strong policy and regulatory alignment.

Thailand

Regionally proximate LMIC with successful integration of maternal digital tools in a public UHC setting.

Singapore

High-performing, end-to-end digital ecosystem – offering transferable insights on interoperability and system coherence.

Vietnam

Comparable LMIC peer with cost-effective digital innovations and structural parallels to India.

Indonesia

Most structurally aligned LMIC, mirroring India's scale, complexity, and delivery mix.

A detailed comparative benchmarking matrix—including maturity phases, delivery structure profiles, and digital architecture diagnostics—is provided below.

Comparative Landscape of Digital Maturity and Maternal Health Architecture

The table below offers a comparative snapshot of seven benchmark countries across four key dimensions—digital health maturity, maternal health delivery architecture, platform coherence, and private sector adoption outlook. Each country represents a distinct system archetype, ranging from fully integrated public models to fragmented, innovation-led ecosystems.

Dimension	India	United Kingdom	United States	Singapore	Thailand	Vietnam	Indonesia
Digital Health Maturity	Moderate (Phase 3–4 on WHO GDHM). NDHE strategy articulated but limited penetration at facility level; state-led implementations vary widely. Interoperability remains nascent with ongoing ABDM rollout.[52]	Very high (Phase 5). NHS advancing toward universal maternity records; strong national standards using SNOMED/FHIR; Better Births vision under executions.[56]	Very high (Phase 5). High innovation and adoption driven by federal mandates (HITECH, Cures Act). EHR coverage ~96% in hospitals; decentralized vendor landscape.[59]	Very high (Phase 5). National EHR links all public and private hospitals; universal citizen health IDs enable seamless records across care touchpoints.[62]	High (Phase 4). Strong Ministry of Public Health (MoPH) stewardship. Health zones digitizing rapidly. Paper–digital transitions ongoing in peripheral areas[65]	High (Phase 4). Accelerated national e-health rollout. 100% EMR mandated in public hospitals by end-2025. Provincial innovation hubs driving adoption[69]	High (Phase 4). Digital Health Blueprint being implemented. Provincial-level deployments with MoH monitoring. Interoperability driven by SATUSEHAT data exchange[73]
Maternal Health Delivery Structure	Mixed system with ~72% private expenditure; fragmented pathways and high out-of-pocket costs dominate. Urban care is largely private; rural regions rely on under-resourced public services.[53]	Fully public NHS model (~21% private share). Standardized midwife-led continuity models reduce institutional fragmentation.[57]	Mixed system (~50% private spend). High fragmentation across insurance, providers, and geographies. Wide variability in maternal pathways and outcomes.[60]	Public–private mix (~31% OOP post-reform). Central governance ensures low variation in maternal pathways. Consistent protocols used across providers[63]	UHC backbone (~23% private share). MCH services delivered through health promotion hospitals with standardized ANC protocols.[66]	SHI coverage ~87%; ~41% OOP. Midwife deployment rising. Public PHC forms base, with private clinics gaining ground.[70]	JKN covers ~85%; OOP ~47%. Care is pluralistic with village midwives playing key role. Mixed private–public referrals common.[74]
Platform Architecture & Policy Coherence	No unified maternal No unified digital backbone. Programs like RCH, Kilkari, and ASMAN exist in silos. Lifecycle tracking and EMR continuity are weak.[54]	Maternity Transformation Programme ensures unified architecture; NHS App and patient-held records are being scaled. Feedback loops embedded in system design.[56]	Programs like Connected MOM embed remote monitoring and AI tools. However, lack of national EHR and non-uniform data sharing [61]	Smart Health ecosystem ensures data continuity and centralized scheduling. EMR linked to ID and synchronized across providers. National Health Stack includes maternal data modules[62]	Digital maternal handbooks (e.g., KhunLook) integrated with EMRs. SMS reminders linked to data systems. National midwifery platform expanding.[67]	Maternal HMIS and immunization-linked registries under rollout. AI tools like Momby piloted for ANC risk screening. Co-creation models with NGOs prevalent.[71]	Systems like mPosyandu and Temenin digitize CHW records. Village-level data uploads standardized. Performance-linked incentives support compliance.[75]
Private Sector Digital Health Outlook	Large private hospitals exhibit moderate digital uptake; small clinics and labs lag. Only ~30% of ABDM-registered facilities are private. Adoption hampered by limited incentives and unclear regulatory mandate.[55]	NHS mandates digitization across all trusts; ~90% EHR coverage achieved. Private clinics remain separate with minimal NHS integration, though patient-facing digital access is robust[58]	EHRs and portals like MyChart widely used in private facilities. Adoption incentivized by Meaningful Use payments. Telehealth now reimbursed nationally (Medicare/Medicaid).[59]	NEHR mandates private provider enrollment; upcoming Health Information Bill will enforce compliance. Near-universal private-sector adoption driven by subsidies and regulatory alignment.[64]	Leading private hospitals have advanced systems (e.g., Bumrungrad). Growth in tele-ANC platforms, but no unified private data exchange yet. Regulatory ecosystem maturing under "Thailand 4.0"[68]	Government issued EMR and telehealth regulations (Circular 46/49); adoption expanding. Private platforms growing but most facilities still paper-based. Partnerships and FDI encouraged for acceleration.[72]	~96% of hospitals have EMRs; ~92–98% are linked to SATUSEHAT. Private sector included via mandates and subsidies. National insurance-linked incentives boost digital adoption among clinics.[76]

Country Spotlight – United Kingdom (UK)

How a centrally-governed NHS reached Phase-5 digital maturity with keen focus on maternity care[77-121]

United Kingdom Health System "At-A-Glance"

Demographics

~ 68 Million

Annual Livebirths (2023) - 623,207

MMR - 11.7 / 100 000

14 Million

Women in reproductive-age band (15-49)

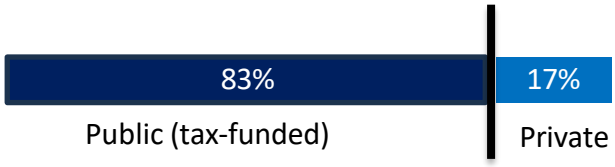
Health System Overview - UK

Number of health facilities

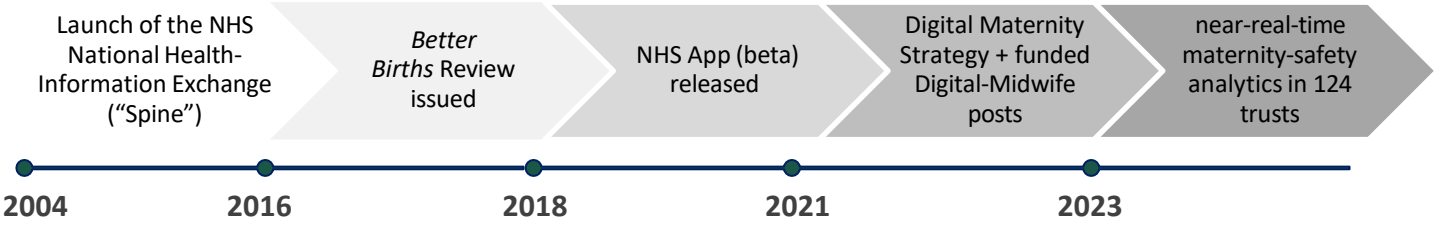
Current NHS asset registers list ≈ *1,220 licensed care-delivery sites across the UK** (acute hospitals, specialist centres and community hospitals combined)

- ***GP Practices – acting as first point of contact*** → ~6,300
- ***NHS trusts with maternity services*** → 122
- ***Maternity Units*** → 325
- ***Neonatal units*** → 156

Provider Mix



Digital-health evolution in the NHS maternity pathway – milestones and "why it worked"



By coupling a national health-information exchange ('Spine') with open standards, ring-fenced digital budgets, and ward-level 'Digital Midwife' champions, the NHS converted maternity care from paper files to patient-held, interoperable records in less than a decade—proving that clear governance and frontline ownership, not technology alone, determine the pace of digital transformation.

Country Spotlight – United Kingdom (UK)

How a centrally-governed NHS reached Phase-5 digital maturity with keen focus on maternity care[77-121]

United Kingdom | Digital-Maternity Tool Landscape Across the Care Continuum

	Patient Facing Tools	Provider Facing Tools	Facility Level Platforms
Continuum of Care	**Baby Buddy –** *A free smartphone coach created with parent groups. Short videos and check-lists cover fertility, nutrition and mental health. >500 000 downloads and formal RCT evidence of improved breastfeeding confidence.*	No provider or system layer yet—goal here is to prime women before they ever meet a midwife.	
Post-natal and newborn care	**NHS App – "Maternity" tile** *Lets a woman self-book her first scan, see blood-test results, and receive push reminders. Rolling out to the 34 million people already on the NHS App.*	**Badger Notes -** *Midwives and obstetricians type directly into a cloud record that the woman can read on her phone. Live in 122 maternity trusts; ~45 % of all UK pregnancies already captured*	**BadgerNet HER -** *The underlying interoperable record that flows to the national Spine exchange, so every hospital can see the same antenatal history.*
Labour and Birth	**GDm-Health & BPm-Health** *Bluetooth glucometer or blood-pressure cuff beams data to the care team; app triages urgent readings. Deployed in 60+ trusts.*	**Risk dashboards** *Traffic-light screens flag women needing review; escalation pathways are pre-built.*	**Trust data lakes & NIHR analytics (system).** *Continuous feeds power safety research and cost-effectiveness studies.*
	No dedicated patient app. During labour women are already in facilities; value shifts to bedside decision-support.	**Digital MEWS & e-Partograph** *Tablets capture vitals; an early-warning score pages the obstetric team before a crisis. Mandatory rollout by 2024.*	**Central labour-ward boards** *Large displays combine CTG traces, MEWS scores and staffing snapshots, giving the shift leader a live risk map.*
	eRedbook *The paper "Red Book" replaced by a mobile growth chart and automatic vaccine reminders. Piloted in >80 localities, moving to national scale.*	**Health-visitor app** *Syncs well-baby checks directly into the child-health system, cutting double data-entry.*	**Child-Health Information Service** *A national warehouse that reconciles birth notifications, screening results and immunisations.*
	Single NHS Login *One credential unlocks mother-and-child records for life.*	**FHIR APIs** *Third-party AI or audit tools can query the longitudinal record—because everything sits on the same standard*	**Maternity – Safety Dashboard** *Near-real-time indicators (e.g., sepsis rate, emergency CS) displayed in 124 trusts for rapid quality-improvement cycles*

Country Spotlight – United Kingdom (UK)

How a centrally-governed NHS reached Phase-5 digital maturity with keen focus on maternity care[77-121]

Ecosystem Architecture and Stack

System Enablers That Shape the Rules of the Game

Policy Mandate and Funding Flow – Department of Health & Social Care (statutory policy) | HM Treasury / NHS England Tech-Capital envelope

Governance and Standards–
- NHS England Transformation Directorate (strategy, targets)
- Care Quality Commission (regulator / inspection)
- NICE + NHS Digital Standards (evidence & FHIR conformity)

Professional and clinical leadership -
- Royal College (RCOG, RCM)
- Digital Midwife Network & Topol Fellows

Execution Levers That Operationalize at Scale

Service Delivery Network–
- 122 NHS Trusts with maternity units
- 6300 + GP practices
- Community health visitors

Innovation and Vendor Layer -
- System C/Clevermed (BadgerNet)
- Huma (remote monitoring suite)
- 100 + SME apps vetted via NHS Apps library

Patient and Civil Society
- National Maternity Voices (>120 MVP Groups)
- Parent charities (e.g. Best Beginnings – Baby Buddy)

Cross Cutting – Research & Evaluation
NIHR, Academic Health Science Networks → Provides rapid RCTs, health economic studies, and acts as improvement hubs

"Procure Once, Assure Once, Scale Nation-Wide" — How Three NHS Mechanisms Opened the Maternity Market to Private Digital Innovators

Enabler	How it Works
Digital Maternity Information- Systems Procurement Framework	NHS England negotiates a standing "catalogue contract" for maternity EHRs and add-ons. Vendors qualify only after passing FHIR-interoperability, cyber-security (DCB 0129) and clinical-safety checks linked to the *Digital Maternity Record Standard*. Trusts can place a call-off order in weeks instead of running full tenders.
NHS Apps Library (maternity channel)	Public portal maintained by NHS Digital. Apps are listed only after a three-stage filter: clinical validity, GDPR/data-security review, and evidence graded against NICE's *Digital Health Evidence Standards*. Badge appears in the iOS/Android stores. Current catalogue includes Baby Buddy, GDm-Health, BPm- Health and peri-labour mental-health tools.
Clinical Entrepreneur Programme & NHSX Regulatory Sandbox	National fellowship that gives clinicians protected time, business mentors and venture-capital introductions; alumni built GDm-Health and Badger Media. The Sandbox (run with ICO & MHRA) lets start-ups and Trusts test data-sharing models under regulator supervision before live deployment.

Country Spotlight – United Kingdom (UK)

How a centrally-governed NHS reached Phase-5 digital maturity with keen focus on maternity care[77-121]

Translating UK Wins into an Indian Playbook: What FOGSI & Private-Sector Maternity Networks Can Do Next

The United Kingdom has employed a set of coordinated, system-wide strategies to accelerate the digitization of its health services, particularly in maternal and reproductive health.

Four key enablers stand out:

1. **Interoperability Standards:** Widespread adoption of FHIR and SNOMED CT has enabled seamless exchange across electronic medical records, third-party applications, and national platforms—ensuring consistency and continuity of care.
2. **Data Governance and Privacy Controls:** Through mechanisms like the National Data Opt-Out and strict adherence to GDPR, patient data agency over secondary use of their health data, while providers operate within a clear, trust-enabling regulatory framework.
3. **Digital Workforce Enablement:** The NHS has invested in building digital capability through mandatory training, dedicated "Digital Midwives," and the establishment of Digital Champions—ensuring frontline readiness and ownership of digital tools.
4. **Phased, Modular Rollout:** By first establishing foundational infrastructure (e.g., shared records and secure logins) and layering in advanced tools such as AI and analytics, the UK has followed an adaptive, risk-mitigated path to system transformation.

Catalytic Lessons from the UK: Key Considerations for India's Next-Phase Digital-Maternity Push

1 Create a "single-window" procurement rail before asking thousands of clinics to digitise.

The NHS moved rapidly from paper to interoperable electronic maternity records because every Trust could tap the *Digital Maternity Procurement Framework*—a national catalogue that pre-vetted vendors against open FHIR standards, cybersecurity rules and outcomes evidence. Adoption leapt to >87 % of Trusts within two years because contracting and compliance friction disappeared .

Opportunity: FOGSI and ABDM can co-host a similar catalogue that bundles plug-and-play EMR templates, remote-monitoring kits and API integrations.

2 Invest in a cadre of frontline "digital champions" who own last-mile change.

More than 325 NHS "Digital Midwives"—trained by the Royal College of Midwives and funded as full- time posts—became on-ward troubleshooters and peer mentors. Trusts with a champion reached full BadgerNet deployment almost a year faster than those without .

Opportunity: A formally recognised FOGSI Digital-Champion network (mirroring UK digital-midwife roles) can demystify tech, mentor peers and feed product feedback to vendors—plugging the skills gap the National Digital Health Blueprint flagged.

Country Spotlight – United States of America (USA)

How a market-driven health system used federal incentives, open-API mandates, and payer pressure to attain near-universal EHR adoption[122-162]

The United States of America (USA) Health System "At-A-Glance"

Demographics

~ 334 Million

Annual Livebirths (2022) - 3,667,758

MMR - 18.6 / 100 000 (2023)

~71 Million (21% of population)

Women in reproductive-age band (15-49)

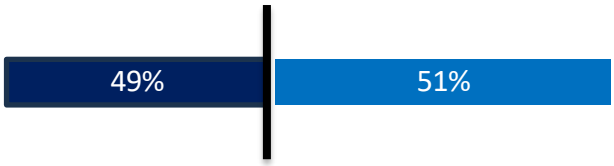
Health System Overview - USA

Number of health facilities

6 129 total hospitals (AHA 2023); ~5 139 community hospitals (non-federal, short-term)

≈ 2 700 hospitals maintain labour & delivery units

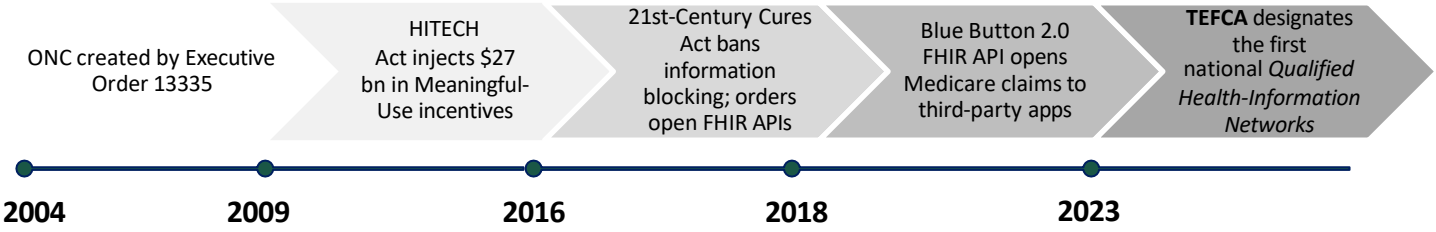
Provider Mix



Public (Medicare, Medicaid, CHIP, VA)

Private (Commercial insurance + OOP)

Digital-health evolution in the USA's maternity pathway – milestones and "why it worked"



A 20-year sequence of "carrots" (HITECH dollars) followed by "sticks" (information-blocking penalties) and, finally, open-API mandates created a functioning health-data marketplace; private vendors now innovate on top of infrastructure that 96 % of US acute-care hospitals already possess.

But the absence of a single purchaser still leaves maternity data siloed across 900+ payers and 50 state Medicaid schemes.

Country Spotlight – United States of America (USA)

How a market-driven health system used federal incentives, open-API mandates, and payer pressure to attain near-universal EHR adoption[122-162]

United States | Digital-Maternity Tool Landscape Across the Care Continuum

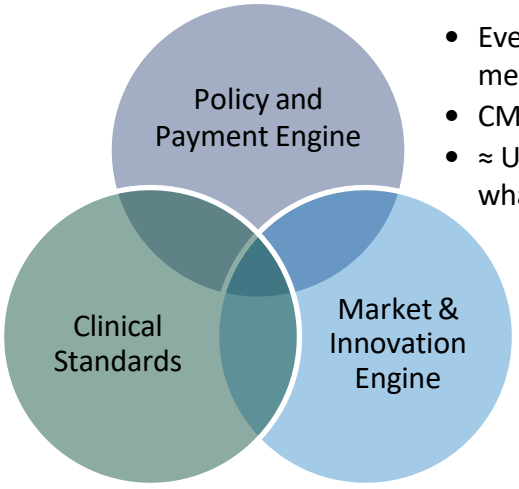
	Patient Facing Tools	Provider Facing Tools	Facility Level Platforms
Continuum of Care	**Ovia Fertility** – *A free cycle-tracking and conception coach with symptom logging and AI-based fertile-window tips. >15 million lifetime downloads; peer-reviewed data show earlier prenatal-care booking among users.*	No provider or system layer yet—goal here is to prime women before they ever meet a midwife.	
Post-natal and newborn care	**Epic MyChart "Pregnancy" tile** – *Lets women self-book ultrasounds, view labs and receive week-specific education inside the patient portal that already serves 155 million Americans. In Epic Stork sites, 94 % of gravidas activate the tile.*	**Epic Stork module** – *Pulls every scan, lab and note into a single longitudinal chart; built-in check-lists align with ACOG guidelines, reducing omitted risk screens by 27 %*	**FHIR Patient-API** – *Federal certification forces every major EHR to expose the same data endpoints, so consumer apps (e.g., Ovia) can import vitals and export histories with consent*
Labour and Birth	**BabyScripts** – *Ships a Bluetooth BP cuff, scale and glucose meter; colour-coded alerts flow to care teams. Deployed in 300+ hospital systems across 34 states; prospective study showed 42 % fewer pre-term births among adherent users*	**BabyScripts Care Navigator dashboard** – *Nurses triage red/amber alerts in 30 seconds; auto-documentation drops into Epic or Oracle Health, enabling remote-monitoring reimbursement (CPT 99454 series).*	**CMS Remote-Physiologic-Monitoring codes** – *National payment rules that let providers bill up to USD 120 per patient per month, making remote kits financially viable*
	No dedicated patient app. During labour women are already in facilities; value shifts to bedside decision-support.	**PeriWatch Vigilance** – *AI watches continuous CTG tracings and pages clinicians when patterns suggest evolving hypoxia. Live in >300 labour units; validation study found alerts fired a median 14 min earlier than human reading.*	**Unit "Oval Board" acuity dashboard** – *Real-time feed of CTG scores, MEWS and staffing ratios helps charge nurses redeploy staff; piloted in 72 hospitals under AWHONN safe-birth bundle.*
	Ovia Parenting – *Extends daily coaching, vaccination reminders and milestone check-lists through a child's second birthday; user survey found 88 % of parents reported improved vaccination timeliness.*	**Epic Child-Proxy MyChart** – *Parents view growth curves, message paediatricians and download Blue Button C-CDA files; 4.2 million newborn proxy records active in 2024*	**State Immunisation Information Systems (IIS)** – *All EHRs auto-push newborn vaccine records to IIS, which then feed the CDC PeriStats population dashboard for real-time coverage tracking*
	Maven Clinic – *Employer-paid virtual maternity bundle (24/7 tele-OB, mental-health, lactation). Covers ~15 million lives; claims analysis showed a 20 % lower C-section rate versus matched controls.*	**Epic Cosmos & Oracle "Insights"** – *De-identified warehouses pooling >200 million patient records allow safety-signal detection (e.g., hypertension rates by ZIP code) within days*	**TEFCA Qualified HINs (e.g., CommonWell, eHealth Exchange)** – *Nationwide backbone that shuttles discharge summaries and imaging between 92 % of US hospitals, closing referral loops regardless of vendor.*[1]

Country Spotlight – United States of America (USA)

How a market-driven health system used federal incentives, open-API mandates, and payer pressure to attain near-universal EHR adoption[122-162]

Ecosystem Architecture and Stack

The Three Engines that Actually Move U.S. Digital-Maternity Adoption



- Every certified EHR/app must meet ONC technical rules
- CMS payment (e.g., RPM codes
- ≈ US $120 pmpm) determines what providers will buy.

- Payers decide coverage
- Employers add apps to benefits
- > US $4 bn VC funding since 2015 fuels rapid product cycles.

- National bundles (e.g., ACOG PB 222 for hypertensive disorders) drive unit protocols
- Hospitals purchase EHR modules (Epic Stork), AI CTG (PeriWatch) to stay bundle-compliant.

Two Cross Cutting Forces That Accelerate or Restrain All Three Engines

1. **Consumer & Equity Voice**
2. **Evidence and Research Hubs**

How U.S. Federal Grants and Private Accelerators Sustain a Constant Pipeline of Maternal-Digital-Health Innovation

Enabler	How it Works
ACOG-led AIM Safety Bundles—a professional-body seal that makes hospitals buy digital tools	• The American College of Obstetricians and Gynecologists (ACOG) convenes >60 specialty societies in the Alliance for Innovation on Maternal Health (AIM). • Each AIM "bundle" (e.g., severe hypertension, obstetric hemorrhage) lists mandatory data elements and recommends digital enablers—remote BP monitors, electronic MEWS scores, EHR macros. • State Perinatal Quality Collaboratives publish league tables against the bundles; malpractice carriers give premium credits for top-quartile scores. • Hospitals therefore invest in BadgerNet-style obstetric EHR modules (PeriBirth , Cerner Stork), CTG-AI (PeriWatch Vigilance) and RPM kits (BabyScripts, Nuvo).
Purpose-built maternal-health accelerators and SBIR funding—a pipeline that keeps fresh solutions coming	• The U.S. federal innovation stack deliberately targets maternal health. NIH created the "Implementing a Maternal Health and Pregnancy Outcomes Vision for Everyone (IMPROVE)" SBIR/STTR set-aside, awarding up to US $2 million per start-up for AI fetal monitoring, RPM algorithms, or equity-focused apps. • Parallel private accelerators—Matter's OB-Tech Cohort, MassChallenge HealthTech, Techstars Future of Longevity—pair early-stage firms with health systems (e.g., Penn Medicine, Kaiser) for real-world sandboxes and de-risked pilots. • Over 70 percent of graduates raise follow-on capital within 18 months

Country Spotlight – United States of America (USA)

How a market-driven health system used federal incentives, open-API mandates, and payer pressure to attain near-universal EHR adoption[122-162]

Translating USA Wins into an Indian Playbook: What FOGSI & Private-Sector Maternity Networks Can Do Next

The United States has leveraged a mix of incentives, market mechanisms, and professional leadership to advance digitization in maternal and reproductive health, particularly across its decentralized healthcare landscape.

Four distinct accelerators emerge:

1. **Incentive-Linked Adoption Programs:** Through the HITECH Act and Meaningful Use program, federal funding has driven widespread uptake of electronic health records, linking financial incentives to measurable digital maturity milestones.
2. **Professional Association–Led Standardization:** Bodies like ACOG and AMA have played an active role in shaping digital adoption—issuing clinical guidelines, promoting registries, and fostering interoperability efforts tailored to OB-GYN and maternal care practices.
3. **Platform-Based Innovation Models:** The U.S. has seen the rise of integrated care platforms (e.g., OBGYN-specific EMRs and maternal health apps) supported by venture capital and payor partnerships, creating scalable pathways for innovation and provider buy-in.
4. **Public–Private Data Collaboratives:** Initiatives such as the NIH's MOMI database and CDC's Levels of Care Assessment Tool (LOCATe) demonstrate how government, academia, and health systems collaborate on shared data infrastructure and maternal health surveillance.

Catalytic Lessons from USA: Key Considerations for India's Next-Phase Digital-Maternity Push

1 Embed OB-GYN "innovation fellowships" inside start-up accelerators to convert frontline pain- points into investable products.

Leading U.S. health systems (Cedars-Sinai, Mayo Clinic, Mass General Brigham) keep a small cadre of practising clinicians on 20 % "innovation time." These physician-in-residence roles give start-ups immediate workflow insight, IRB-ready study designs and credibility with payers; in return, clinicians gain protected research time and equity upside. Remote- monitoring pioneer BabyScripts and AI early-warning tool PeriGen both emerged from such clinician-led validation tracks.

Opportunity: FOGSI-branded Digital Maternal- Health Fellows scheme could second young consultants to Indian fem-tech hubs (C-CAMP, BIRAC, the ABDM Sandbox).

2 Use curated app/OB-GYN specific modules marketplaces inside mainstream EMRs—rather than stand- alone portals.

U.S. electronic-record giants run gated "app stores" (Epic App Orchard, athenahealth Marketplace) where third-party plug-ins must prove FHIR interoperability, HIPAA security, and clinical-evidence grades before listing

Opportunity: FOGSI can Partner with leading domestic EMR vendors (Practo Insta, Napier, MocDoc) to create a FOGSI Verified modules that are right fit fir OB-GYN and are clinically validated by FOGSI

Country Spotlight – Singapore

How a tightly-governed city-state reached near-universal digital records in maternity care [163-191]

Singapore Health System "At-A-Glance"

Demographics

~ 5.92 Million

Annual Livebirths (2022) - 30,420

MMR - 6 / 100 000 (2023)

~1.2 Million

Women in reproductive-age band (15-49)

Health System Overview - Singapore

Number of health facilities

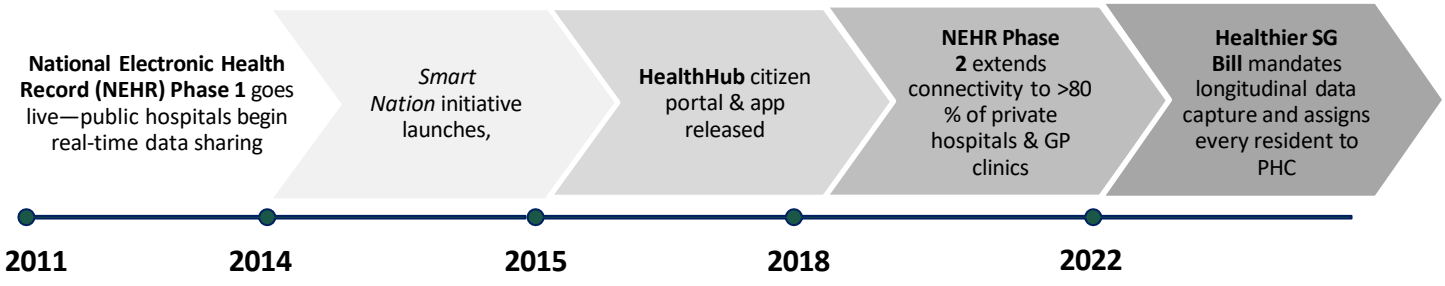
8 public maternity hubs and ten private hospitals anchor a dense spoke network of 23 government polyclinics and roughly 1 800 GP-OB practices

- ***Public acute hospitals*** → *8 (maternity at KKH, NUH, SGH)*
- ***Private acute hospitals*** → *10 (e.g., Thomson, Parkway, Raffles)*
- ***Polyclinics (public PHC)*** → *23*
- ***Private GP & OB-GYN clinics*** → *1 800*

Provider Mix

Whereas approximately 80 % OPDs are done by private GPs

Digital-health evolution in the Singapore's maternity pathway – milestones and "why it worked"



MOH's single-owner governance, a national "NEHR spine" using HL7-FHIR, and early investments in citizen-facing portals meant new maternity apps only had to plug into one standards stack—not build their own rails.

Country Spotlight – Singapore

How a tightly-governed city-state reached near-universal digital records in maternity care [163-191]

Singapore | Digital-Maternity Tool Landscape Across the Care Continuum

	Patient Facing Tools	Provider Facing Tools	Facility Level Platforms
Continuum of Care	Everything ultimately lands in the **NEHR/HealthHub dyad**: laboratory data, discharge meds, newborn screening results, even vaccination QR codes for preschool enrolment. Parents can grant read-only access to polyclinic GPs or private paediatricians with a single tap, eliminating the paper "Baby Health Book" still common in many systems.		
Post-natal and newborn care	**HealthHub Child Immunisation Wallet** *rolls out automatically at birth; parents receive push reminders for BCG, Hep B and the 5-in-1 vaccine, with uptake now > 95 % by six months*	**KKH's Tele-Lactation module**—*embedded in Health Buddy—offers video consults with IBCL-certified nurses; early service analytics show exclusive breastfeeding at six weeks has risen from 41 % to 55 % among app users*	
Labour and Birth	No dedicated patient app. During labour women are already in facilities; value shifts to bedside decision-support.	*KKH and NUH have installed real-time CTG analytics modules inside their Philips IntelliSpace obstetric monitors; algorithms highlight loss-of-variability and late decelerations, prompting earlier senior review*	*The same labour-ward data feed pushes CTG and MEWS scores to a command-centre tile in the SmartCMS hospital operations platform, allowing night supervisors to watch multiple suites on one dashboard.*
	SmartBP@Home – *a Bluetooth sphygmomanometer paired to Health Buddy; colour-coded alerts route to triage nurses at KK Women's & Children's Hospital (KKH). Women measure twice daily from 20 weeks until six weeks postpartum; compliance > 85 %.*	**PEWS-SG (Preeclampsia Early-Warning Score for Singapore) –** *an algorithm running inside the obstetric EMR pulls vitals + labs every 30 min; an amber or red score pages the on-call MFM.*	**Tele-MFM Hub-and-Spoke Network –** *NUH maternal-fetal specialists run twice-weekly tele-boards with 7 regional hospitals; high-risk scans and CTGs are streamed in DICOM/FHIR, avoiding patient transfer unless surgery is indicated.*
	Health Buddy (SingHealth's super-app) - *allows mothers self-register for hospital visits, view ultrasound images and receive queue-status push alerts—cutting waiting-room time by 45 minutes on average at KK Women's and Children's Hospital (KKH).*	**GDM Care Remote-Monitoring Platform.** *All KKH women now undergo gestational-diabetes screening; those who screen positive are given a Bluetooth glucometer. Readings flow to a nurse-navigator dashboard that flags excursions and triggers diet or insulin tele-consults. Early results show a 22 % drop in large-for-gestational-age births compared with historical controls.*	
	HealthHub Parent Hub—*a free, bilingual (English/Mandarin) microsite and app channel inside the national HealthHub portal—packages fertility readiness quizzes, vaccination prompts and lifestyle nudges. Content is curated by the Health Promotion Board; every page is coded to national clinical guidelines.*	No provider or system layer yet—goal here is to prime women before they ever meet a midwife.	

Country Spotlight – Singapore

How a tightly-governed city-state reached near-universal digital records in maternity care [163-191]

Ecosystem Architecture and Stack

Vertical Domain	Indicative horizontal flow
National Policy & Finance	**MOH issues a subsidy change** → *it lands in the billing tables of public-cluster EMRs → the same codeauto-updates in private-hospital finance modules → GP / OB clinics pull the new rate through GPConnect → HealthHub wallet shows the exact co-payment to every parent.*
Data flow within ecosystem	**Lab tech at KKH hits "send"** → *HL7-FHIR bundle writes to the National EHR (NEHR) in <1 sec → Raffles Hospital obstetrician opens the same record during referral triage → rural GP views the discharge summary via "NEHR-Lite" → mother sees it in HealthHub, authenticated by her SingPass ID.*
Integration of clinical protocol in digital system	**SmartCMS flags a red e-MEWS score at NUH** → *alert and CTG strip pipe to the private-hospital on-call MFM → her management note re-enters NEHR → GP widget now shows "high-risk, weekly BP checks" → home SmartBP@Home app uploads readings that close the loop.*
Facility level operations and command	**Labour-ward occupancy hits 90 % at SGH** → *feed lights amber on the MOH command dash → downstream private hospitals see the signal and open overflow beds → ambulance dispatch redirects the next emergency based on the same live tile → home-visiting midwife receives revised destination on her tablet.*
Facility to patient loop	**Ultrasound image posts to HealthHub timeline** → *private lactation consultant adds care-plan note that parents view instantly → GP renews iron prescription; the e-Rx appears in HealthHub and at the community pharmacy scanner → post- natal push alerts remind parents of the six-week check.*

Key Enablers for Success	Supply Side	Demand Side
	1. One rulebook, one pay-code – MOH issues the clinical directive **and** embeds the matching MediSave/MediShield tariff, so every provider is funded from day 1.	**A. HealthHub + SingPass super-app** – one login in four languages surfaces labs, queue numbers, newborn vaccines and subsidy balances; activation > 90 %.
	2. Mandatory FHIR feed into the NEHR spine – public clusters, private hospitals, and 1 800 GP/OB clinics all write to a single real-time record.	**B. Real-time subsidy wallet** – parents see their exact out-of-pocket cost before they book, nudging use of digital scheduling and e-payments.
	3. Digital-Health Competency Framework – HELMS tiers (L1 nurses, L2 OB-GYNS, L3 MFMs) certify staff in dashboard, tele-review and FHIR workflows; 94 % of maternity nurses now Level-1.	**C. Digital-Health Ambassadors** – HPB places coaches on maternity wards to help parents activate apps and e-consent; > 75 % adoption of patient-facing tools by six weeks postpartum.
	4. Fast-track innovation lane – HSA SaMD Priority Review (≤ 180 days) + GovTech sandbox + HealthHub Provider-API portal cut vendor onboarding to < 8 weeks.	**D. Trusted digital care journey** – mothers know that every provider sees the same record and every BP/glucose reading auto-alerts nurses, boosting confidence in remote monitoring and tele-lactation.

Country Spotlight – Singapore

How a tightly-governed city-state reached near-universal digital records in maternity care [163-191]

Translating Singapore's Wins into an Indian Playbook: What FOGSI & Private-Sector Maternity Networks Can Do Next

Singapore has achieved high digital maturity in maternal and reproductive health through centralized governance, integrated health infrastructure, and continuous innovation aligned with national priorities.

Five key enablers stand out:

1. **Strong Policy Stewardship and Integration:** The Ministry of Health leads a unified digital strategy with clear roadmaps, aligned incentives, and regulatory frameworks that integrate digital health across PHC, hospitals, and national screening programs
2. **Digital-First Service Models:** Maternity care pathways are increasingly delivered via digital touchpoints—teleconsults, mobile apps, and automated reminders—embedded within SingHealth and NUHS systems, improving access, adherence, and experience.
3. **Structured Workforce Training Framework:** Digital competencies are embedded in pre-service education and in-service training for nurses, midwives, and allied health staff, supported by HealthTech competency frameworks rolled out through national health clusters.
4. **Clinical Digital Champions Network:** Each regional health system fosters leadership in digital transformation through appointed clinical champions—particularly in nursing and maternal care – who drive frontline adoption and provide peer mentorship.
5. **Iterative Innovation through Regulatory Sandboxes:** Through initiatives like the MOH HealthTech Office and IMDA's regulatory sandboxes, Singapore fosters agile development and safe piloting of AI-enabled tools and remote monitoring for maternal health.

Catalytic Lessons from Singapore: Key Considerations for India's Next-Phase Digital-Maternity Push

1 Treat workforce up-skilling as the cheapest scale accelerator.

HELMS digital-competency tiers—Level 1 (nurse dashboard basics) through Level 3 (MFM algorithm oversight)—are logged in annual appraisals and linked to promotion bands. The result: 94 % of KKH maternity nurses completed Level 1 by 2024, so new tools launch with a trained user base on day one. FOGSI could create a "Digital Maternity Clinician" micro-credential, badge it through the National Medical Commission's CME system, and tie it to NABH obstetric accreditation, jump-starting workforce readiness for remote BP, glucose, and e-consent.

HELMS Digital-Competency Framework sets three tiers:

- **Level 1:** Nurse dashboard basics (MEWS, RPM alert acknowledgement)
- **Level 2:** Practicing OB-GYNs (tele- consult etiquette, structured e- consent, FHIR data entry)
- **Level 3:** Maternal–fetal specialists (algorithm oversight, tele-MFM board leadership).

Opportunity: FOGSI-branded Continuing Digital Medical Education (CDME) program can be designed and endorsed, structured as an annual certificate course (20–24 hours)

Country Spotlight – Vietnam

How an LMIC cut wasteful referrals and digitized 65 % of births in six years on just US $155 per-capita health spend[191-222]

Vietnam Health System "At-A-Glance"

Demographics

~ 100 Million

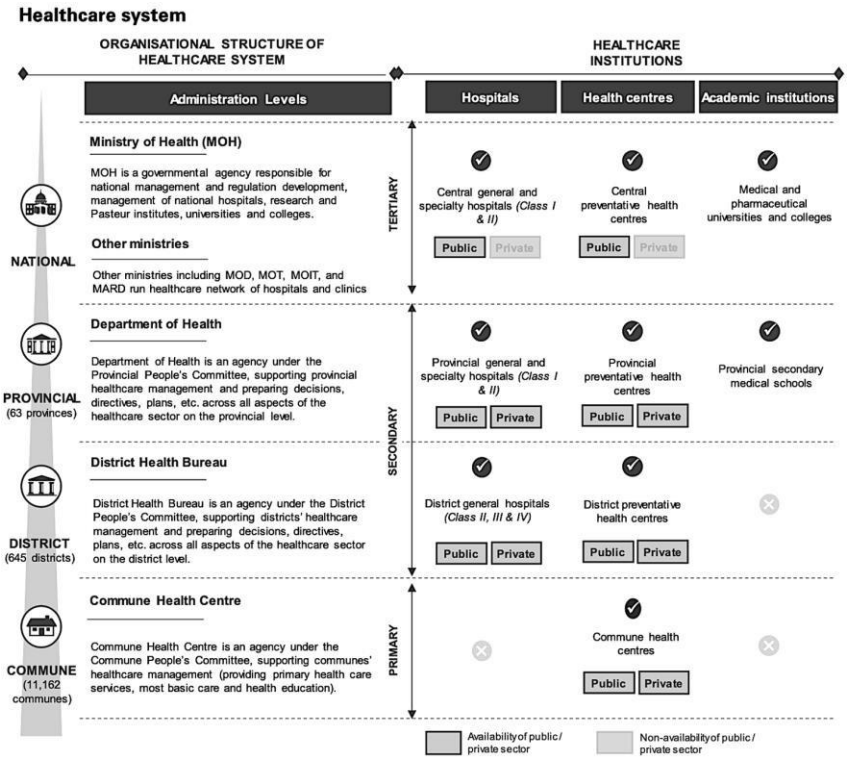
Annual Livebirths – 1.44 million

MMR - 46 / 100 000 (2023)

~25 Million

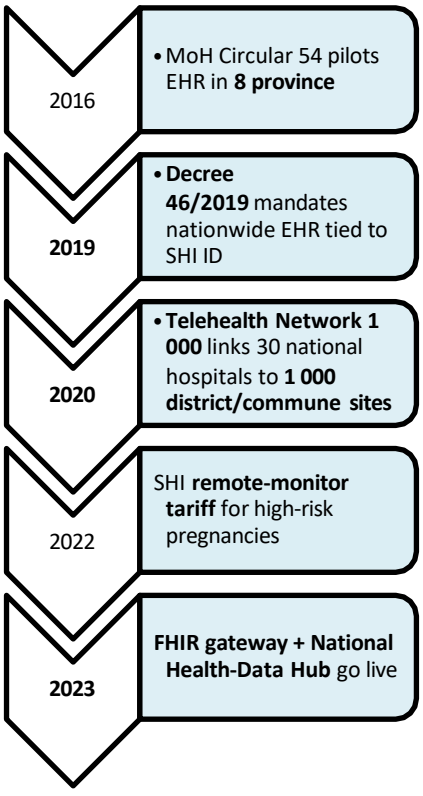
Women in reproductive-age band (15-49)

Health System Overview - Vietnam



Source: The Ministry of Health, World Health Organization

Digital-health evolution in the Vietnam's maternity pathway – milestones and "why it worked"



Vietnam shows how an LMIC can fuse a strong public primary-care backbone with a fast- moving private tech sector to scale digital maternity tools nationwide, proving that disciplined PHC governance plus targeted market incentives can bridge the last mile far more quickly than funding alone.

Country Spotlight – Vietnam

How an LMIC cut wasteful referrals and digitized 65 % of births in six years on just US $155 per-capita health spend[191-222]

Vietnam | Digital-Maternity Tool Landscape Across the Care Continuum

	Patient Facing Tools	Provider Facing Tools	Facility Level Platforms
Continuum of Care	**"Sống Khoẻ Từ Hôm Nay" chatbot** *on Zalo answers contraception questions in Vietnamese and links users to the nearest commune health station. An MoH pilot recorded a 27 % rise in modern-method uptake among rural women in two provinces.*	**NA—counsellors still rely on paper FP registers.**	Demographic and Health Survey API (GSO) feeds commune outreach planning dashboards
Post-natal and newborn care	**mMOM** *SMS programme (MoH–UNICEF) sends gestation-timed texts on danger-signs and iron-folate use; RCT users attended 1.4 more ANC visits on average.^133 Măm Sữa app offers low-bandwidth recipe videos and anaemia self-checklists; > 600 k downloads.*	**e-Maternal & Child Health Handbook** *tablet app lets midwives enter weight, BP and tetanus shots during village outreach; syncs when 3G is available.*	The **National HMIS** *(OpenIMIS stack) receives real-time ANC data from 63 provinces; dashboards flag communes below the 4-visit target.*
Labour and Birth	**Momby AI chat-agent (Viettel Health)** *triages symptoms and schedules tele-OBGYN calls; 72 % of flagged users complete follow-up.*	**GDM e-Diary** *(Hue U. of Medicine) pairs Bluetooth glucometers with clinician portal; pilot cut unnecessary clinic visits by 38 %.*	*Provincial referral hubs run a* **Risk-Score dashboard** *(DHIS2 plugin) that auto-lists women ≥ 90th-percentile for BP or glucose so district teams can arrange transport.*
	No dedicated patient app. During labour women are already in facilities; value shifts to bedside decision-support.	**e-Partograph** *tablets at 18 district hospitals auto-plot cervical-dilation & fetal-heart data; alerts senior staff if progress stalls. Caesarean rates fell 9 % within 12 months.*	**Labour-room video audit platform** *(PATH Safe-Delivery project) uploads anonymised clips for weekly skills debriefs; forms part of MoH quality-improvement bundle*
	eRedbook-VN mobile wallet *stores birth-weight, BCG date and growth charts; 1.1 million parents enrolled. Digital Breast-feeding Coach in Momby sends day-by-day latching tips; exclusive feeding at 3 months rose from 24 % to 40 % in 2023 cohort.*	**CHC Immunisation App** *scans child QR code, schedules next shot and syncs to the NIIS; cuts duplicate paper work by 70*	**National Immunisation Information System (NIIS)** *now covers 100 % of communes; auto-texts caregivers 3 days before due vaccines and weekly lists of defaulters to village health workers.*
	Integrated Child & Maternal Data Lake merges HMIS, NIIS and civil-registry IDs for province KPI reviews.		

Country Spotlight – Vietnam

How an LMIC cut wasteful referrals and digitized 65 % of births in six years on just US $155 per-capita health spend[191-222]

Ecosystem Architecture and Stack

Governance & Financing		
MoH (rules)	**Vietnam Social Security** single payer (92% insured)	**People's Committees** channel SHI funds to districts
National Digital Spine		
National EHR keyed to SHI-ID	**FHIR Gateway** (2023)	**Health Data Lake** on VNPT cloud
Innovation Ecosystem & Marketplace		
State telcos (Viettel, VNPT) zero-rate mMOM & Momby data	**Private chains** (Vinmec, Hoan My) pilot AI-CTG, e-Partograph	**Incubators** (NATEC, BambuUP) + donors (UNICEF, JICA, PATH) fund last-mile tools
Service Delivery Pyramid		
30 national hubs → 63 provincial OB centres → 713 district hospitals → 11 400 commune health stations (+ 24 000 village midwives)		
Community & Citizen Layer		
mMOM SMS (1.2 M users)	**Momby AI chatbot** (650 k mothers)	**eRedbook-VN** vaccine wallet (1.1 M children)

Partner-Driven "Acceleration Assets" that Propelled Vietnam's Digital MNCH Scale-Up

Why Vietnam bet on "Toolkit + Partner + Incentive" accelerators

Case 1: UNICEF × MoH "Digital Toolkit for MNCH"

What it is - *A ready-to-deploy content pack—mMOM gestation-dated SMS libraries (four minority languages), VietHealth IVR menus for low-literacy mothers, and printable growth- chart SBCC posters—cleared once by the Ministry of Health and offered free to every province.*

Why it worked - *Provincial teams skipped costly content development; telcos merely pointed SMS short-codes at the pre-approved text. Roll- out time per province fell from six months (local scripting + ethics) to six weeks.*

Case 2: Viettel Digital Health "Momby AI + Zero-Rated Data

What it is - *A telco-run app that uses AI chat to triage danger signs, book tele-OB slots and push breastfeeding micro-lessons. Viettel and VNPT zero-rate up to 10 MB per month for every registered pregnant woman, removing data-cost friction.*

Why it worked - *The telco's marketing muscle (on-SIM push messages, free airtime for sign-ups) drove rapid uptake, while a single FHIR endpoint let Momby stream chats and appointments into the National EHR from day one.*

Country Spotlight – Vietnam

How an LMIC cut wasteful referrals and digitized 65 % of births in six years on just US $155 per-capita health spend[191-222]

Translating Vietnam's Wins into an Indian Playbook: What FOGSI & Private-Sector Maternity Networks Can Do Next

Vietnam is advancing digital transformation in maternal and reproductive health through strong government stewardship, national platform investments, and a growing ecosystem of local innovators and private providers.

Five key enablers stand out:

1. **Government-Led Digital Health Architecture:** The Ministry of Health's Digital Health Strategy to 2025 and Vision to 2030 provides a unified roadmap, prioritizing maternal and child health services within broader health IT goals.
2. **Targeted Capacity-Building Initiatives:** Programs led by MOH, supported by USAID and UNFPA, have trained thousands of health workers—particularly in rural areas—on using digital registers, mobile tools, and EMR-integrated ANC tracking.
3. **Emerging Networks of Digital Champions:** Provincial Departments of Health and institutions such as Hanoi Medical University have begun designating digital focal points for facility-level implementation and peer mentoring, especially for reproductive and child health services.
4. **Public–Partner Innovation Pilots:** Vietnam has piloted mobile apps like SCDMS (SmartCare Digital Management System) and SMS-based maternal reminder systems in collaboration with WHO, UNICEF, and private digital innovators—building scalable, low-cost digital pathways.
5. **Improved Private Sector Engagement through Reporting Mandates and Partnerships:** Recent MOH directives have encouraged private hospitals and clinics to adopt standardized digital maternal reporting formats (aligned with V20 and eCDS-MCH systems), with growing participation in national dashboards. Additionally, public–private collaboration pilots (e.g., with Viettel and Pharmacity) have supported digital record adoption in urban maternity clinics[6].

Catalytic Lessons from Vietnam: Key Considerations for India's Next-Phase Digital-Maternity Push

1 Telecom majors + insure-techs became the last-mile accelerators, not just hospitals.

Vietnam's three biggest network operators (VNPT, Viettel, FPT) each run cloud-hosted tele-OB/GYN platforms that now connect 160-200 district and provincial hospitals apiece, while insurers co-fund app roll-outs to cut claims handling costs. This sidestepped the public-sector staffing bottleneck that usually slows tele-consult expansion.

Opportunity: Broker tri-partite pilots where telcos provide the bandwidth, private insurers underwrite remote BP/glucose kits, and FOGSI validates clinical workflows.

Vietnam shows that when government sets a non- negotiable digital finish line, industry surges forward— leveraging telco infrastructure and insurer economics—to meet maternal-health needs faster than the public system alone ever could.

Country Spotlight – Thailand

How a UHC trail-blazer wired rural clinics, linked village health volunteers, and brought pregnancy care data onto one national platform in under a decade[223-263]

Thailand Health System "At-A-Glance"

Demographics

~ 71.1 Million

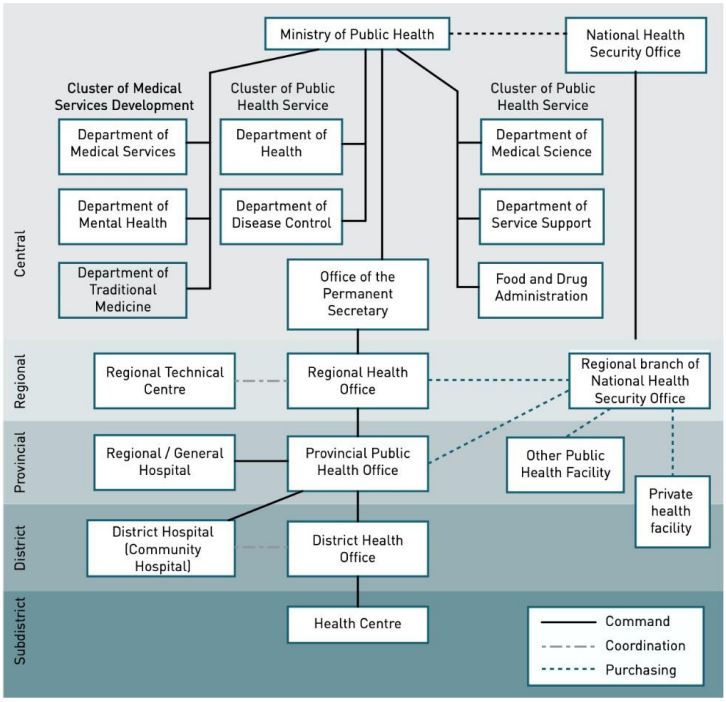
Annual Livebirths – ~530,000

MMR - 34 / 100 000 (2023)

~18.3 Million

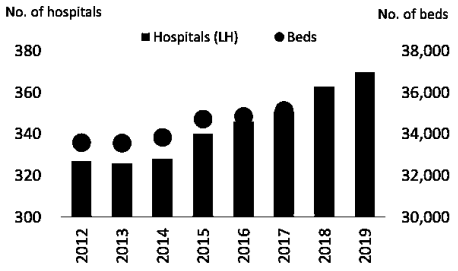
Women in reproductive-age band (15-49)

Health System Overview - Thailand



Source: WHO (2015).

The private health sector in Thailand is predominantly urban and outpatient-focused, comprising over 25,000 clinics and 382 hospitals—most of which are small and concentrated in Bangkok—driven by medical tourism, investor interest, and limited integration with public schemes like UCS due to low capitation incentives.



Source: Poonsuk Ninkitsaranont (2020)

Digital-health evolution in the Vietnam's maternity pathway – milestones and "why it worked"

- **2013** — *Smart Hospital pilot* launches in three tertiary centres
- **2016** — **KhunLook** parent app released by MoPH & Mahidol University.,
- **2017** — **National eHealth Strategy 2017-2026** endorsed by Cabinet. citizen portal & app released
- **2019** — **Personal Data Protection Act (PDPA)** signed.
- **2021** — **Telemedicine Service-Standards Notification** issued; pandemic catalyses uptake.

Country Spotlight – Thailand

How a UHC trail-blazer wired rural clinics, linked village health volunteers, and brought pregnancy care data onto one national platform in under a decade[223-263]

Thailand | Digital-Maternity Tool Landscape Across the Care Continuum

	Patient Facing Tools	Provider Facing Tools	Facility Level Platforms
Continuum of Care	**Single NHSO ID** – Mor Prom login links mother-and-child records for life; integrates with KhunLook and hospital portals.	**Thailand's Standards & Interoperability Lab (SIL-TH)** *develops HL7-FHIR guides, while the SNOMED-CT Release Centre (opened 2022) supplies free licences so every vendor can code diagnoses the same way.*	*Both standards bodies feed into a single* **MoPH Digital-Health Platform**, *ensuring Mor Prom, NHSO analytics and hospital EHRs obey the same privacy (PDPA) and cyber-security rules.*
Post-natal and newborn care	**KhunLook** – *replaces paper MCH handbook; parents track growth, immunisations, milestones. RCT (n = 358) showed 89 % parent preference and higher accuracy measuring HC & development.*	*Tele-medicine follow-up platforms route breastfeeding problems or mood-disorder screens to nurses, and a medication-home-delivery service ships drugs ordered in those calls.*	**The National Health Security Office (NHSO)** *big-data system pools all claims, letting planners see where Universal-Coverage money is and is not reaching mothers and children.*
Labour and Birth	No dedicated patient app. During labour women are already in facilities; value shifts to bedside decision-support.	**Digital MEWS & e-Partograph** – *18 district hospitals auto-plot cervical-dilation; alert when labour stalls; Caesarean rate ↓ 9 % in 12 months.*	**Safe-Delivery video-audit platform** – *anonymised clips uploaded for weekly skills debrief; part of MoPH QI bundle.*
	No dedicated app – high-risk women are transitioned to Mor Prom's remote-monitoring tile for BP / glucose once flagged.	**GDm-Health Thai pilot** – *Bluetooth glucose meters pair with clinician portal; Siriraj study cut unnecessary clinic revisits 38 %.*	***Risk-score dashboard (DHIS2 plug-in)*** – provincial hubs auto-lists women ≥90th-percentile BP or FBG so district teams arrange ambulance transport; referral delays for severe PET fell 28 %.
	Mor Prom super-app – *pivoted from COVID scheduling to ANC: women can self-book the first visit, store labs and get tetanus due-date nudges. 23 m active IDs as of Feb 2024; MoPH now bundling gestational-diabetes and BP modules.*	**e-Maternal & Child Handbook (tablet)** – *midwives enter weight, BP and tetanus shots during outreach; syncs when 3 G appears. Piloted in three North-East provinces; ANC ≥4 coverage up 9 pp.*	**National HMIS on OpenIMIS**– *real-time ANC upload from 63 provinces; colour-codes sub-districts below the 4-visit target for rapid supervision.*
	TheAsianparent-TH – *Thailand instance of S.E. Asia's largest parenting community app. Push-notifications on ovulation, micronutrients and clinic promos; links straight into Good Doctor tele-consults. >30 million regional MAU; Thai cohort drives ~40 % of GDTT women's-health calls.*	FP still paper "pink card" in most Tambon Health Posts	**MoPH Demographic-API** *pulls CPR & ASFR direct from civil registry into district planning dashboards.*

Country Spotlight – Thailand

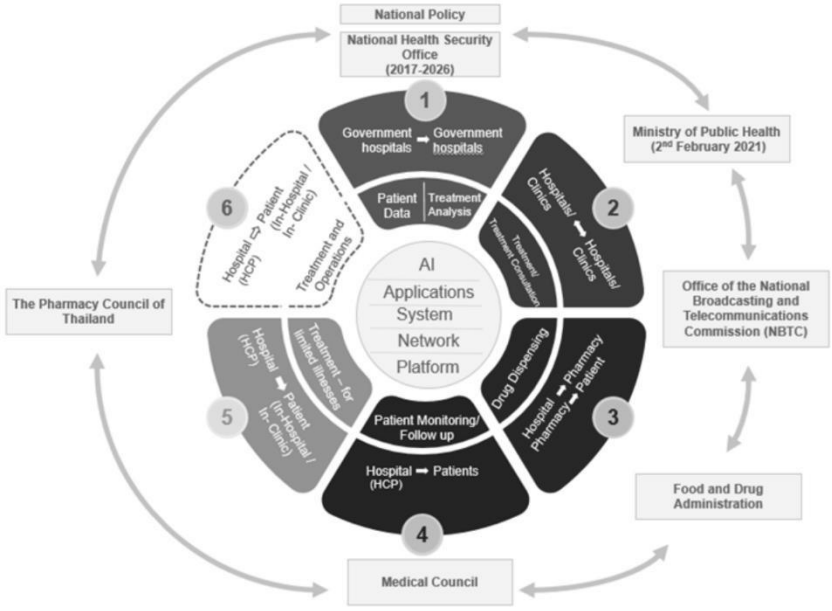
How a UHC trail-blazer wired rural clinics, linked village health volunteers, and brought pregnancy care data onto one national platform in under a decade[223-263]

Ecosystem Architecture and Stack

Thailand's advances in digital maternity care reflect not just technological adoption, but a deliberate ecosystem-wide orchestration led by regulators, payers, and innovators.

A unified entry point through the government-backed Mor Prom platform, standardized compliance pathways for telehealth and digital pharmacy services, and mandatory interoperability protocols for both public and private actors have together created an enabling environment.

This system-level alignment allows new digital solutions to achieve rapid, nationwide scale once they meet a common set of standards—streamlining innovation without



In Thailand, evidence-backed maternity content delivered through mega-audience consumer platforms has super-charged nationwide uptake of digital maternal-health tools.

	Case 1: KhunLook App + MoPH Open Link	Case 2: TheAsianParent-TH × Good Doctor Tele - Maternity
What is it?	**KhunLook** is the phone version of the paper Mother-and-Child Handbook. A 2023 study with 358 parents found that **89 % preferred the app**, plotted their baby's growth more accurately and spotted danger signs sooner. Seeing those results, the Ministry of Public Health added a simple **FHIR link inside Mor Prom**, so nurses can pull KhunLook data straight into hospital records.	Thailand's largest parenting app, **TheAsianParent-TH** (about 3 million Thai users), now shows one-tap banners that book **Good Doctor** tele-OBGYN calls. After the video visit, electronic prescriptions go to a **LINE tele-pharmacy bot** and medicines are couriered to the home. Call notes are sent back to hospital systems using the new national telemedicine data format.
Why it worked	**Strong proof first.** Publishing a local trial convinced doctors and payers the app was safe and useful. **No double-typing.** Because data flow straight into Mor Prom, nurses are not asked to fill two systems, so hospitals agreed to adopt the app.	**Ready-made audience**. TheAsianParent already reaches almost half of Thai women online; Good Doctor offered free first calls, so uptake was quick and cheap. **Built-in rules.** The LINE bot follows the Pharmacy Council's tele- pharmacy checklist, satisfying regulators and insurers, which lets private clinics join without legal worries.

Country Spotlight – Thailand

How a UHC trail-blazer wired rural clinics, linked village health volunteers, and brought pregnancy care data onto one national platform in under a decade[223-263]

Translating Thailand's Wins into an Indian Playbook: What FOGSI & Private-Sector Maternity Networks Can Do Next

Thailand has rapidly scaled digital maternal health solutions through a deliberate combination of regulatory design, consumer platform partnerships, and early-stage evidence generation that built trust across public and private sectors.

Three key enablers stand out:

1. **Evidence-Led Adoption Through Local Trials:** Thailand's Ministry of Public Health prioritized real-world evidence to support digital maternal tools before national scaling. A 2023 study of 358 parents using the KhunLook mobile app (the digital version of the national Mother-and-Child Handbook) found that 89% preferred it over the paper version—citing more accurate growth tracking and earlier recognition of danger signs. Based on these results, MOPH integrated KhunLook into Mor Prom via an HL7 FHIR link, allowing direct sync with hospital systems and eliminating double data entry for nurses.
2. **Trusted Consumer Platforms as Adoption Catalysts:** Thailand's largest parenting platform, TheAsianParent–TH, which reaches ~3 million users, enabled one-tap access to Good Doctor tele-OBGYN consults. Post-visit, e- prescriptions are routed via a LINE-based pharmacy bot, with medicines delivered to the home. These features are embedded within platforms already trusted by Thai women, reducing friction and marketing costs for digital maternity providers.
3. **Financing and Claims Incentives for Private Providers:** The National Health Security Office (NHSO) mandates that private hospitals seeking Universal Coverage Scheme (UCS) reimbursements submit claims digitally via approved systems. This direct linkage between revenue and digital compliance has accelerated EMR adoption, especially for maternal care modules, across both corporate hospital chains and smaller OB-GYN clinics

Catalytic Lessons from Thailand: Key Considerations for India's Next- Phase Digital-Maternity Push

Use Government Endorsement and Data-Zero Rating as Market Levers - Not Standalone Trust Badges

Thailand's approach avoids building new certification layers for digital maternal tools. Instead, any maternal-health app that is either developed or formally endorsed by the Ministry of Public Health (MoPH)—as outlined in its national eHealth Strategy—is automatically eligible for zero-rating by telecom providers. This regulatory shortcut enabled KhunLook (a MoPH–UNICEF co-developed parenting app) to scale to 1.8 million users, primarily because data costs were removed at the source. The model worked without introducing a new digital health accreditation or trust badge.

Opportunity: Rather than designing new app certification schemes, FOGSI and MoHFW can jointly identify a small, high- impact portfolio of maternal digital tools—such as ANC-tracking apps, PNC reminder platforms, or vernacular danger-sign SMS services—and formally endorse them via the ABDM Sandbox.

TRAI and DoT can then be engaged to zero-rate these tools through public and private telcos. This approach would (1) confer immediate legitimacy, (2) eliminate rural users' data-cost barriers, and (3) simplify clinician buy-in by tying trust to MoHFW endorsement—not third- party validation.

Country Spotlight – Indonesia

How JKN-fueled universal coverage, village-midwife networks, and interoperable registries digitized maternal care in under a decade[264-313]

Indonesia Health System "At-A-Glance"

Demographics

~ 273 Million

Annual Livebirths – ~4.5 Million+

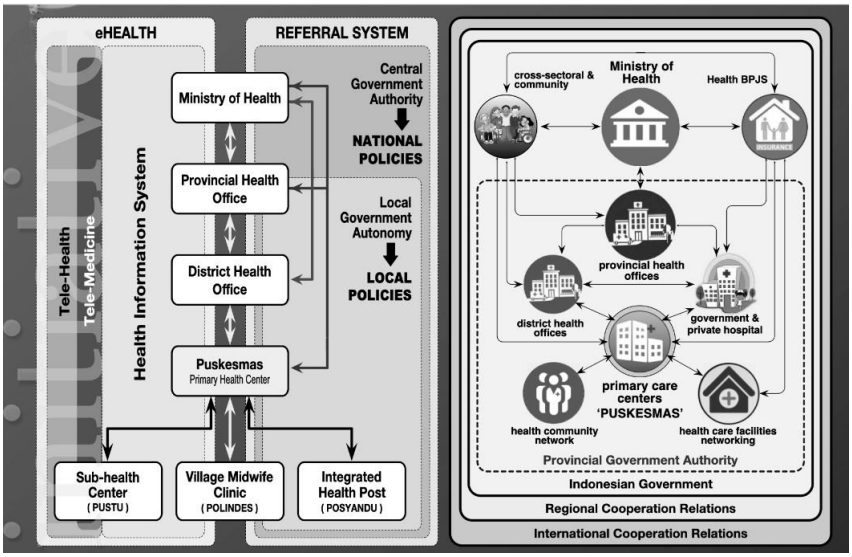
MMR - 140 / 100 000 (2023)

~60 Million

Women in reproductive-age band (15-49)

Health System Overview - Indonesia

The private health sector in Thailand is predominantly urban and outpatient-focused, comprising over 25,000 clinics and 382 hospitals—most of which are small and c Indonesia, an archipelagic nation of 281 million people, has made substantial strides toward universal health coverage yet continues to grapple with one of Southeast Asia's highest maternal mortality ratios. Its mixed public–private delivery model—anchored by over 9,700 government-run community health centres (puskesmas) and a burgeoning network of private hospitals—operates under the Jaminan Kesehatan Nasional (JKN), which by 2020 covered 83 percent of the population.



Digital-health evolution in Indonesia's maternity pathway – milestones and "why it worked"

- **2014** – JKN universal-coverage scheme launched for all Indonesians
- **2018** – Ministry of Health e-Health Strategic Plan formalized, mandating registries
- **2019** – SP-KB interoperable maternal registry piloted across 10 provinces
- **2021** – mPOSyandu mobile app deployed to 20 000+ village-midwife posts
- **2023** – "Sistem Informasi Ibu & Anak" (maternal–child info system) rolled out nationally

Country Spotlight – Indonesia

How JKN-fueled universal coverage, village-midwife networks, and interoperable registries digitized maternal care in under a decade[264-313]

Indonesia | Digital-Maternity Tool Landscape Across the Care Continuum

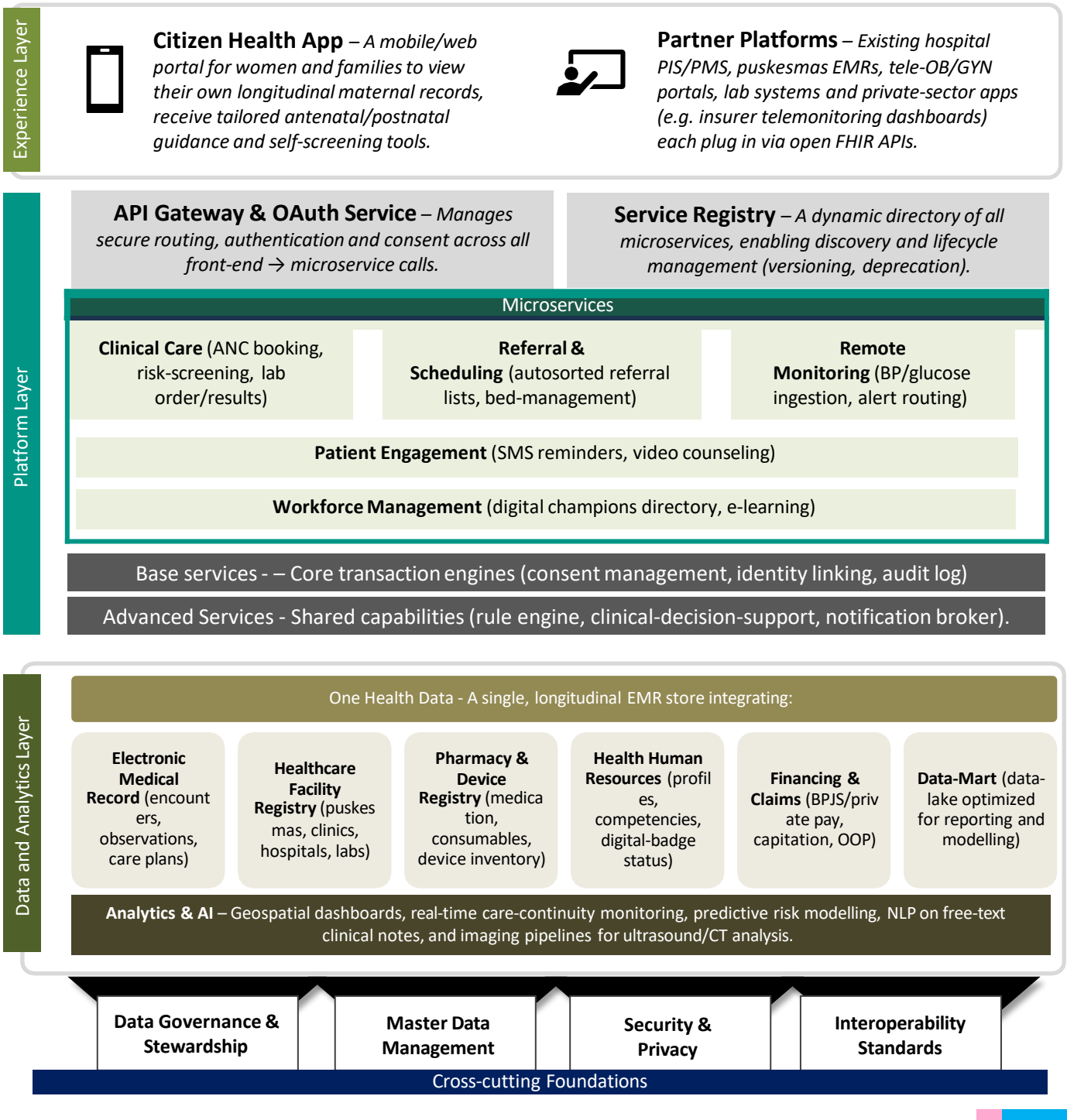
	Patient Facing Tools	Provider Facing Tools	Facility Level Platforms
Continuum of Care	**SatuSehat Mobile** – *Patient portal letting women view their full maternal / child health record (ANC, birth, immunizations) on their phone. 1.2 million active users as of Q1 2025.*	**FHIR APIs (SatuSehat)** – *Any certified app (eKIA, ePartus, ePosyandu) can query the longitudinal maternal-child record via open FHIR-based APIs, ensuring seamless data flow.*	**National Health Data Exchange (SatuSehat)** – *Underlying spine that links all modules (eKIA, ePartus, Posyandu, immunization) into one longitudinal EMR for every mother–child dyad*
Post-natal and newborn care	**SiariEMAS** – *SMS-based follow-up for immunization and growth-monitoring reminders. > 2 million messages sent/month; improved on-time immunization by 18 %*	**ePosyandu Mobile** – *Mobile module for Posyandu (village health posts) that syncs newborn weight, breastfeeding status, and developmental screens directly into eKIA*	**Child Health Information System** – *Integrated into SatuSehat; consolidates ePosyandu and immunization data for continuous mother–child tracking up to age 2.*
Labour and Birth	No dedicated patient app. During labour women are already in facilities; value shifts to bedside decision-support.	**ePartus** – *Tablet-based intrapartum system guiding nurses through WHO Safe Childbirth checklist, CTG capture, and referral triggers. Adopted by 45 % of district hospitals*	**National Birth Registry (SISRUTE)** – *All deliveries logged via ePartus or EMR-Puskesmas into the Ministry's real-time Birth Registry, enabling nationwide vital-stats reporting within 24 hrs*
	SMS Reminder for High-Risk – *Automated SMS flows triggered by eKIA flags (e.g. anaemia, hypertension), prompting self-monitoring and referral. Reaches 120 000 high-risk women/year.*	**Risk Stratification Dashboard** – *Web-based portal in provincial offices showing real-time counts of high-risk pregnancies by category (GDM, pre-eclampsia), enabling targeted outreach*	**Perinatal E-Partograph** – *Digital labour charts embedded in Puskesmas EMRs, mandating digital partograph completion for all births; data synced daily to central servers for quality-audit*
	ASIK (Aplikasi SiKIA) – *Chatbot app for appointment reminders, test-result notifications, and dietary tips. Piloted in 10 provinces; 60 % of users report better appointment adherence.*	**eKIA (Electronic KIA)** – *Android app replacing paper KIA ("mother–child book"), enabling midwives to record ANC visits at point of care and pull up past history even offline*	**EMR-Puskesmas** – *Government-subsidized EMR rolled out in > 3 000 community clinics, integrating eKIA records into the district health information system (DHIS2)*
	e-PUSKADA – *A mobile portal from BKKBN offering contraceptive counselling, short quizzes on nutrition & lifestyle, and clinic locators. > 1 million downloads since 2020; drives early engagement before registration.*	**mBKKBN Dashboard** – *Web portal where cadres review population-level fertility trends and identify women due for preconception counselling*	**SatuSehat Registry** – *National Health Data Exchange assigns every woman a unique ID, linking her family-planning record to future maternal & child health encounters.*

Country Spotlight – Indonesia

How JKN-fueled universal coverage, village-midwife networks, and interoperable registries digitized maternal care in under a decade[264-313]

Ecosystem Architecture and Stack

To achieve a fully integrated, scalable digital-maternity ecosystem in Indonesia, the IHS (Indonesia Health Services) platform and its surrounding components can be understood in three horizontal layers—



Country Spotlight – Indonesia

How JKN-fueled universal coverage, village-midwife networks, and interoperable registries digitized maternal care in under a decade[264-313]

Translating Indonesia's Wins into an Indian Playbook: What FOGSI & Private-Sector Maternity Networks Can Do Next

Indonesia has made significant strides in scaling digital maternal health by embedding tools into national platforms, aligning private providers with public financing, and leveraging regulatory clarity to drive adoption. Rather than building standalone apps, the Ministry of Health integrated maternal modules into trusted super-apps and linked private EMRs to BPJS reimbursement systems, accelerating uptake across both public and private sectors. This systems-level approach has enabled widespread use of ANC/PNC digital records, improved referral coordination, and enhanced real-time maternal risk tracking nationwide.

Five Key Enablers of Indonesia's Digital Maternal Health Scale-Up

1 Integration with BPJS Financing Rails

Enabled private OB-GYNs and hospitals to adopt digital EMRs by linking them directly to national insurance claims via SATUSEHAT APIs, making digital compliance financially rewarding.

2 Platform Embedding via Super-Apps

Maternal health tools were not launched in isolation but bundled into widely-used platforms like Sehat IndonesiaKu and PeduliLindungi, dramatically reducing adoption friction for both patients and providers.

3 Regulatory Sandbox & Interoperability Standards

The Ministry of Health introduced a structured sandbox process for digital tool validation, coupled with FHIR-based standards and checklists that ensured private EMR vendors could integrate securely and predictably.

4 Startup Engagement through Innovation Competitions and Hackathons

National hackathons and startup incubation programs focused on maternal and neonatal health (e.g., through BIDW and Biofarma partnerships) helped surface viable MVPs, fast-tracked licensing, and enabled matchmaking with capital providers and health systems.

5 Public Data Infrastructure and Open APIs (e.g., SATUSEHAT)

The launch of SATUSEHAT as a unified health data platform with open APIs enabled seamless interoperability across tools, providers, and insurance systems—offering a digital backbone for maternal health innovation at scale.

Case example

Biotech Hackathons & Startup Hub

Indonesia's Biobank Indonesia Data Warehouse (BIDW) contained dispersed pre-clinical, clinical, and genomic datasets. Small biotech firms struggled to navigate licensing and leverage real-world data.

As part of the "Health Biotechnology Research Integration" initiative, the Ministry implemented a three-tiered program:

- **Collaborative Sandbox**: Themed working groups uniting regulators, academics, and industry.
- **Startup Hackathon**: National competitions to identify promising biotech minimum viable products (MVPs).
- **Startup & Capital-Providers Hub**: Ongoing matchmaking events connecting finalists with venture capital and corporate partners

Country Spotlight – Indonesia

How JKN-fueled universal coverage, village-midwife networks, and interoperable registries digitized maternal care in under a decade[264-313]

Catalytic Lessons from Thailand: Key Considerations for India's Next- Phase Digital-Maternity Push

Curate a Demand-Led Innovation Ecosystem to Surface and Scale Maternal Digital Tools

Indonesia has effectively curated a maternal digital innovation ecosystem by actively sourcing solutions through targeted challenges and structuring pathways from proof-of-concept to implementation. A notable example is the "Prenatal Apps" initiative—a winner of the G20 2022 Indonesia hackathon in Bali—which developed a risk-prediction and teleconsult platform tailored for local maternal care needs. This tool, created by clinicians-in-the-field, went on to access incubation support and data integration opportunities. While broader evidence on sandbox and implementation support remains emerging, this illustrates an identifiable trend toward bottom-up sourcing with pragmatic enablers.

Opportunity: India can take a similar approach by positioning FOGSI and MoHFW as ecosystem stewards—curating MNCH-focused innovation pipelines that address context-specific bottlenecks. This would involve structured co-design processes with frontline providers, challenge calls targeted at delivery system gaps, and an integration track for successful tools via ABDM or state health missions. Such a model would ensure that digital maternal health tools are both demand-driven and system-integrated.

Establish a Structured Co-Design Model with EMR Vendors to Accelerate Interoperable Maternal Health Solutions

Indonesia's SATUSEHAT architecture deliberately positioned private EMR vendors as strategic collaborators in the development and scale-up of maternal health digital solutions. Rather than issuing top-down mandates, the Ministry of Health created a structured onboarding pathway—featuring open APIs, FHIR-compliance toolkits, sandbox testing environments, and joint design workshops. Maternal health modules—including structured ANC visit forms, labor and birth summaries, and newborn immunization tracking—were co-developed with vendors to ensure both clinical relevance and system interoperability. This vendor-inclusive model offered several system-level benefits: it accelerated adoption among private maternity facilities, reduced integration friction across platforms, and ensured that digital workflows aligned with both national data standards and frontline care realities.

Opportunity: As India advances its maternal digital health infrastructure under ABDM, a similar vendor co-design model could be institutionalized through a dedicated **Maternal Health Vendor Consortium.** Anchored by FOGSI and ABDM, this consortium would convene EMR providers, public health experts, and frontline OB-GYNs to co-develop modular, FHIR-compliant digital tools tailored to India's diverse maternity care settings.

Global Systems Reveal That Sustainable Digital Health Adoption Requires More Than Government Mandate and Technology

Technology adoption in healthcare rarely succeeds through policy mandate alone. Systems that achieve durable, system-wide digital transformation—particularly in maternal and reproductive health—consistently exhibit a layered infrastructure of enablers that extend well beyond platform availability or regulatory intent.

Our global benchmarking reveals that while national strategies and digital health blueprints provide direction, the real accelerators of adoption lie in how the health system supports the provider—with tools that are trusted, workflows that are aligned, and institutional scaffolds that reduce friction. In settings with a fragmented delivery mix, such as India, these enablers become even more consequential.

Across countries with varied income levels and institutional models, seven supply-side levers emerge repeatedly as determinants of adoption velocity and sustainability. These levers form a composite adoption stack, and their presence has shown to be a best predictor of whether digital health gains traction within clinical settings.

		Country level analogues
Scale requires an authoritative mechanism to validate tools clinically, not just technically	Countries built formal validation systems—such as national app libraries, regulatory sandboxes, or specialty-led review boards—to filter for clinical robustness before scale.	**Thailand's MoPH endorsed Khunlook App**
Interoperable, bundled service packages outperformed standalone tools in every setting	Solutions that scaled were designed as full-stack bundles: antenatal templates, lab referrals, consent workflows, and e-prescriptions—pre-integrated and compliant with national rails.	**Indonesia's SATUSEHAT program**
Peer-led operating models enabled diffusion and troubleshooting at scale	Digital programs moved beyond early adopters only when supported by structured peer infrastructure—such as trained clinician-mentors .	**UK's NHS Digital Midwives**
System-wide training platforms must be embedded into professional learning systems	Training was treated as infrastructure—not an afterthought. Scaled systems created modular, cadre-specific training platforms linked to CME, re-licensure, or in-service protocols.	**Singapore's MOH Office for Healthcare Transformation**
Live demonstration environments derisked innovation and enabled iterative scaling	Countries institutionalized clinical validation—as a standard practice before scaling innovations or focusing on adoption.	**Vietnam's pilot of Safe delivery app**
Innovation onboarding was structured through intermediaries—not left to market forces	Successful ecosystems-built backbone institutions or mechanisms to curate, vet, and integrate private innovators into national systems.	**The NHS Innovation Accelerator**
Final-mile implementation support was institutionalized as a delivery function	Even the best-designed tools needed facilitation. High-performing systems deployed last-mile support through regional technical teams.	**Indonesia's provincial digital support units**

Clinical Leadership Must Anchor India's Digital Health Transition

Countries are advancing from different starting points—but success hinges on institutional leadership.

Across the seven benchmark countries, digital health maturity varies significantly, ranging from Phase 3 to Phase 5 on the WHO Global Digital Health Maturity (GDHM) framework53. High- income countries such as the United Kingdom and United States have reached Phase 5, marked by widespread adoption of electronic health records (EHRs), interoperable national data exchanges, and formalized governance mechanisms. Mid-income nations such as Thailand, Vietnam, and Indonesia are progressing through Phases 3–4, having consolidated disparate pilots into coherent digital strategies with growing infrastructure and standards. India, currently assessed at Phase 4, has made notable strides but remains constrained by sub-national fragmentation and uneven implementation.

Clinical systems leadership is not optional - it is foundational

Digital transformation cannot be hardcoded into national systems from the top down. Adoption and performance depend on institutional actors who translate policy frameworks into clinical relevance, field-test tools, and foster trust in usability. The UK's NHS, for instance, did not scale digital maternity tools by funding software alone. It invested in clinical digital leadership via the NHS Digital Academy, created zone-specific deployment plans, and formally embedded "Digital Midwife" roles to ensure frontline continuity. Similarly, the US aligned OB-GYN-specific guidelines with national funding streams through ACOG and the AIM initiative, tying clinical authority to scale-up momentum. India currently lacks a comparable tier of domain-specific, non-governmental clinical stewards to act as validators, implementers, and demand-side accelerators.

Digital ecosystems thrive when built around system performance and end-user realities.

The UK's National Health Service (NHS) invested not only in digital tools but also in capacity-building (e.g., NHS Digital Academy), goal-setting, and patient co-design.53 Singapore, similarly, emphasizes user-centered design through platforms like HealthHub, which enable both clinicians and patients to engage meaningfully with maternal health services.55 These systems show how digital adoption accelerates when technologies are seamlessly integrated into clinical pathways. In India, FOGSI and peer associations have the opportunity to define technical specifications, training models, and certification standards that align technology with provider needs.

The path forward requires institutions that can bridge design, deployment, and demand

If India is to accelerate digital maturity across its private maternity ecosystem, the transition must be driven not by tool-centric mandates but by institutional actors capable of solving for provider incentives, capacity gaps, and care integration. FOGSI has the credibility, geographic spread, and clinical expertise to lead this transition. But to do so effectively, it must shift from a membership body to a platform institution—one that builds toolkits, trains clinicians, curates innovations, validates outcomes, and convenes coalitions.

Section D

FINDINGS FROM DIGITAL READINESS ASSESSMENT

Supply-Side Constraints and Demand-Side Frictions in Maternal Digital Health

Landscape Overview and Respondent Profile

This assessment surveyed 579 OB-GYN practitioners across 25 Indian states and conducted 21 in-depth interviews to generate the most comprehensive national snapshot to date of digital readiness in India's private maternal health sector—while laying the foundation for a first-of-its-kind demand-side segmentation of clinician behaviors.

Overview

Profile of Respondents

The digital readiness assessment engaged a total of 579 OB-GYN practitioners from 25 states and union territories across India, providing a robust and representative view of the country's maternal healthcare workforce. To complement the breadth of the survey, 21 in-depth interviews (IDIs) were conducted with a purposefully selected group of clinicians to gather rich, contextual insights into their daily workflows, perceptions, and experiences with digital health tools.

Demographics

The respondents were predominantly senior clinicians, with 82% having more than 15 years of clinical experience. This suggests that most had well- established practices and long-standing familiarity with traditional workflows. In terms of age, 65% were aged 50 years or above, and majority of the participants being Female (75%) reflecting that the insights was shaped by a set of highly seasoned cohort of practitioners.

Geographic Distribution

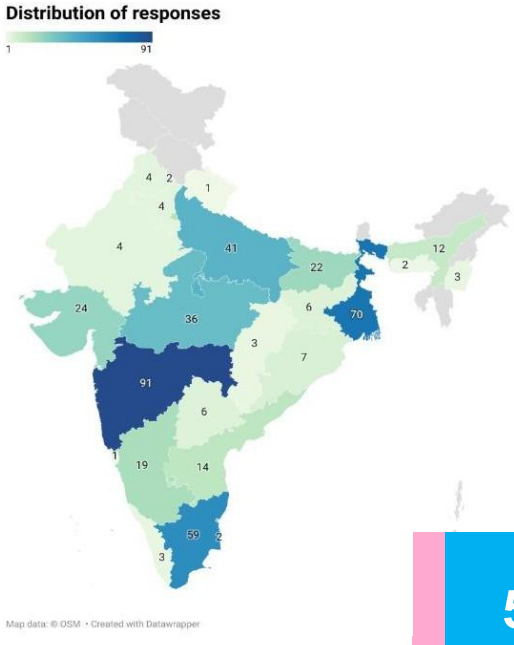
Participants represented all regions of India, ensuring a comprehensive national spread. States with the highest participation included:

- **Maharashtra** – 91 respondents
- **West Bengal** – 70 respondents
- **Tamil Nadu** – 59 respondents
- **Uttar Pradesh** – 41 respondents
- **Karnataka** – 19 respondents

Other states such as Gujarat, Delhi, Bihar, and Odisha also contributed substantially.

In terms of city classification:

- **36%** of respondents were based in Tier 2 cities
- **35%** in Tier 3 or smaller towns
- **29%** in Tier 1 metropolitan areas



This section presents a foundational overview of the practitioners who participated in India's first large-scale digital readiness assessment focused on maternal health. Combining data from a nationwide quantitative survey and in-depth interviews, it provides a comprehensive picture of how OB-GYN providers across the country engage with digital tools—and what contextual factors shape their behaviors.

Practice Environments and the Operational Realities of Digital Adoption

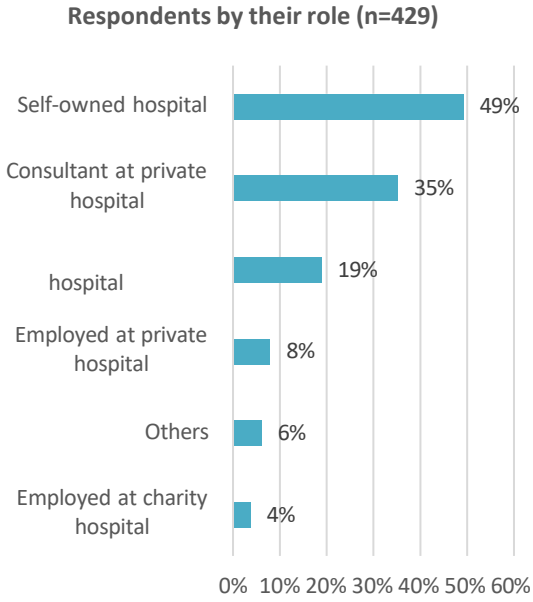
India's maternal care providers operate across a highly fragmented delivery ecosystem— ranging from large corporate hospitals to standalone single-room clinics. These differences in practice settings translate into sharp variations in infrastructure, workflow design, staff support, and digital maturity. This section explores how these contextual factors influence readiness to adopt digital tools, and how dual roles as clinician and administrator further shape decision-making.

Three Distinct Practice Settings, Three Distinct Readiness Pathways

The survey revealed a near-even split between institution-based and independently practicing OB-GYNs:

- **64%** of respondents practiced primarily in **hospital settings**, including public tertiary centers, private multi-specialty hospitals, and teaching institutions.
- **26%** operated in **standalone clinics or nursing homes**, typically with lean teams or solo setups.
- **10%** worked across **both hospital and clinic environments**, navigating multiple systems and regulatory contexts.

This distribution allows for comparative insight across two core axes: **degree of institutional support** and **level of digital autonomy**.



Structured hospital environments offered greater access to integrated systems (e.g., HIS, LIS, EMRs), but individual providers often had limited say in tool selection or configuration. They faced issues with adaptation on already available tools.

Independent clinics, by contrast, provided decision-making autonomy—but frequently lacked IT infrastructure, trained staff, or vendor access. They faced challenges in identifying right-fit 'contextualized' tools for their specific need and workflow.

The Operational Reality: Clinicians as Both Providers and Managers

Across both settings, most OB-GYNs reported engagement in a full spectrum of services—including outpatient care, high-risk pregnancy management, labor and delivery, surgical interventions, and postpartum follow-up. Importantly, many also assumed managerial responsibilities such as supervising junior staff, overseeing procurement, managing accounts, and interfacing with labs or pharmacies.

"I don't just see patients—I also manage the clinic, monitor stock, coordinate with labs. Digital tools would help, but only if my staff is trained too."
— Clinic owner, Tier 2 city

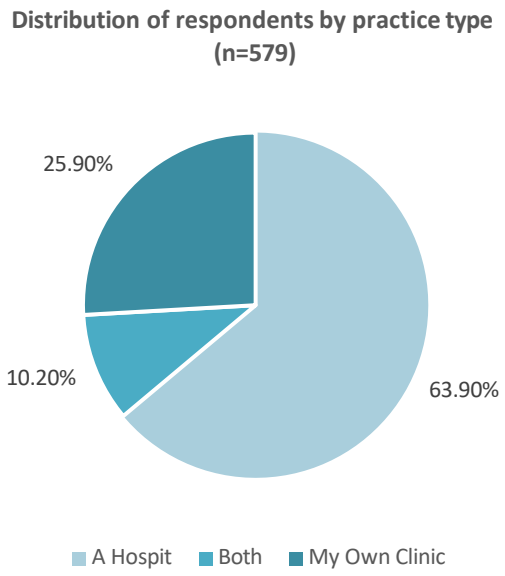
Practice Environments and the Operational Realities of Digital Adoption

Exposure to Digital Systems is Setting-Dependent—and Uneven

Hospital-based clinicians often operated within existing digital ecosystems—many of which mandated EMR or HIS use as part of compliance or billing protocols. Yet these same clinicians, when working in their private setups, frequently reverted to paper-based systems.

This divergence within the same clinician highlights a critical nuance: exposure to digital tools does not automatically translate into personal adoption, especially where institutional scaffolding is absent.

> *"In the hospital, EMR is mandatory, so we've adapted. But in my private clinic, I'm still using registers. There's no one to maintain a system there."*
> *— Clinic owner, Tier 2 city*



Implications for Strategy: Contextual Fit Matters More Than Generic Tool Availability

The divergence in system exposure, workflow dynamics, and support structures across practice types reveals a deeper truth: **adoption is not merely a function of awareness or willingness, but of alignment between digital solutions and day-to-day operational reality**. For national or state-level digital health initiatives to achieve meaningful penetration across India's maternal care landscape, three strategic insights emerge:

Practice context is a reliable predictor of behavioral readiness
As the next section will show, digital adoption patterns are not random—they correlate strongly with practice environment and role structure. Understanding where a clinician works and what operational responsibilities they hold can offer strong cues for where they sit on the behavioral readiness spectrum (e.g., contemplator, implementer, optimizer).

Tools must be tailored to setting, not just specialty
A solution that works in a tertiary hospital will likely fail in a solo OB-GYN clinic unless it is adapted for minimal staffing, intermittent connectivity, and simplified interfaces. Platform architecture must account for both complexity at the top-end and frugality at the base.

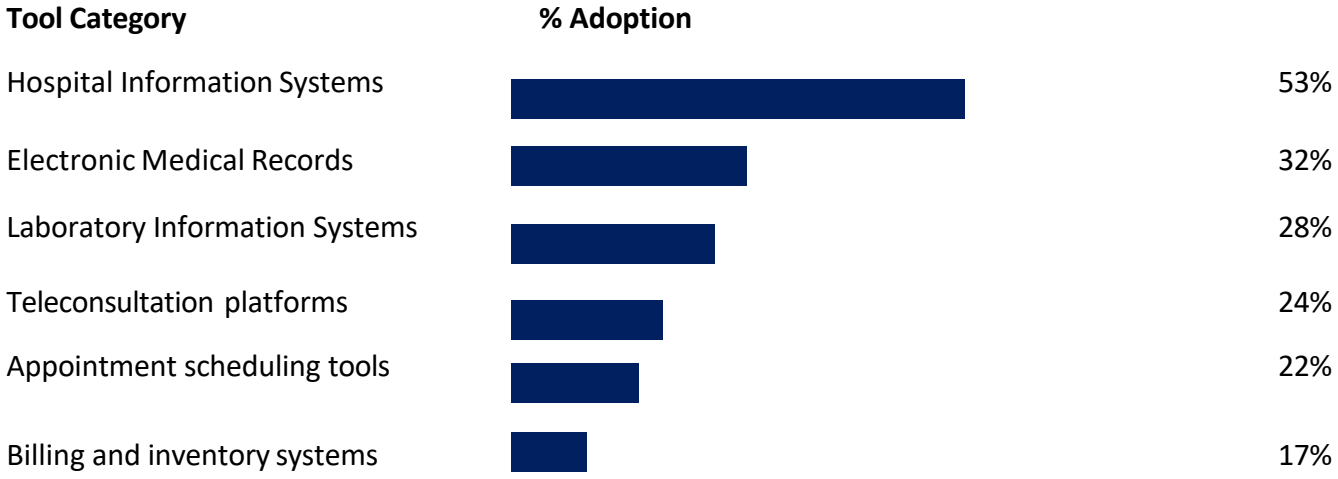
Support systems must be differentiated and demand-aware
Institutional clinicians may benefit from technical onboarding, while independent providers may need bundled staff training or plug-and-play solutions. Similarly, dual-setting practitioners (hospital + clinic) may require interoperability features that allow cross-context functionality. A uniform implementation plan across provider types will almost certainly underperform.

Taken together, these implications underscore the need for **segmented, behaviorally informed strategies** for scaling digital maternal health tools—strategies that reflect not just the technological possibilities, but the lived practice environments of India's OB-GYN workforce.

Digital Tool Adoption Patterns and Usage Behavior

Digital health adoption is not a binary outcome—it is a mosaic of behaviors shaped by environment, role, infrastructure, and perceived value. While 69% of surveyed OB- GYNs reported using at least one digital health tool, this topline number masks significant variation in the depth, purpose, and pattern of use across the maternal care ecosystem.

Most Commonly Used Tools—and Their Use Cases



Snapshot: Top Digital Tools in OPD and IPD Settings

The digital tools adopted by OB-GYNs vary considerably between outpatient (OPD) and inpatient (IPD) settings—reflecting distinct operational demands, platform access, and integration levels.

OPD Settings
Fragmented and Practitioner-Driven

- **Common tools** include: Online appointment platforms (e.g., *Practo*, *Just Dial*, *WhatsApp*), EMRs (*Healthplix*, *Practo*), fetal monitoring apps (*Fetosense*, *BPL*), and informal teleconsultation via *WhatsApp*.
- Tools are often adopted **independently** by individual clinicians based on usability and convenience—especially in small clinics and nursing homes.

OPD is where clinician choice shapes adoption—and where targeted nudges (e.g., digital toolkits, vendor bundles) can yield rapid gains.

IPD Setting
Structured and System-Mediated

- Hospitals more frequently implement **integrated HIS and LIS systems**, such as *Trakcare*, *Medivision*, and *Keystone*.
- EMRs are often embedded within broader hospital software suites rather than standalone systems.
- Respondents were frequently unaware of backend tool names—indicating **low visibility and influence** over procurement in IPD settings.

IPD adoption depends on hospital-level protocols and procurement—suggesting the need for upstream engagement with hospital administrators and digital integrators.

Digital Tool Adoption Patterns and Usage Behavior

Top Tools used in OPD

Top Digital Tool	Specific Tool Mentions
Online Appointment Scheduling	**Practo, Healthplix, Just Dial, WhatsApp,** and various mobile/phone-based systems were frequently mentioned. Other mentioned tools include **Medics, Kivi**, and hospital-specific websites.
Hospital Information System (HIS)	Commonly mentioned tools include **Medics** and **Healthplix.** Several respondents referred to generic "HIS" or "HIMS" software, while others named specific products like **Kivi, Visual Infosoft, Erasoft,** and **Edroit.**
Fetal Monitoring Apps or Portable Devices	The most common tools cited were **"CTG" (Cardiotocography)** and **"Doppler"** devices. Specific brands or platforms mentioned include **Fetosense, BPL,** and **Fetomax**.
Teleconsultation Platform	**WhatsApp** was the most frequently mentioned platform for teleconsultation, followed by **Practo** and **Zoom**. Other platforms cited include **Healthplix, Apollo 24/7**, and **Docon**.
Electronic Medical Records (EMR)	**Healthplix** and **Practo** were the most named EMR providers. Many doctors reported using custom-built, in-house, or personally developed software. Other mentioned platforms include Medics, Kivi, and Erasoft.
Patient Apps/Portals	**Practo** and **WhatsApp** were the most cited platforms for patient engagement. Other tools mentioned include **Kivi, Justdial, Healthplix**, and **Remedo**.
E-prescribing	**Healthplix** and **Practo** were the most frequently mentioned tools for digital prescriptions. **Docon, Kivi,** and **Medics** were also cited by respondents.

Top Tools used in IPD

Top Digital Tool	Specific Tool Mentions
Hospital Information System (HIS)	The most common responses were generic terms like "HMIS" (Hospital Management Information System), "HIS", or "Computer software". Specific vendor names mentioned include **Trakcare, Healthplix, Medics, Practo, Keystone,** and **Medivision**.
Laboratory Management & Reporting Systems	Many doctors reported that this was handled by the lab, was outsourced, or they were unaware of the specific software name. Specific platforms mentioned include **Akhil Software, Medics**, and custom-built solutions. WhatsApp and email were also cited for report delivery.
Electronic Medical Records (EMR)	Several respondents mentioned using features within a larger HMIS or HIS. **Trakcare, Healthplix, Practo**, and **DOCON** were among the named software. Many also reported using custom, in-house, or personally developed software for EMR.
Nurse Specific Software / HR Systems	Most responses indicated this was part of a larger HMIS or that they were not aware of the specific name. Some mentioned biometrics for attendance or generic "HRMS" systems.
Radiology PACS / E-Imaging Solutions	Many respondents simply stated "PACS". Specific vendors or software mentioned include **Medsynapse, Sonocare,** and **Wipro**. Others noted that the radiologist handles this and they were unaware of the specific tool.
Teleconsultation	WhatsApp was a frequently cited platform, along with Practo. Specific telemedicine platforms mentioned include **Swasthya Ingit, Remedo**, and **Apollo.** Generic tools like mobile phones, Zoom, and Microsoft Teams were also used.
E-prescribing	This function was often part of a larger HMIS or EMR system. **Healthplix, Practo,** and **Docon** were the most frequently named specific tools for this purpose.

Factors Influencing How and When OB-GYNs Use Digital Tools

While digital health tools span familiar categories—HIS, EMR, LIS, teleconsultation— the drivers of adoption are far from uniform. This analysis reveals that usage is shaped less by tool type and more by the intersection of context, capability, and clinician control. Functional use cases, infrastructure realities, and authority structures collectively determine where tools thrive or falter.

Tool Use Is Modular by Necessity—Not Lack of Awareness

Despite growing awareness of digital health tools among OB-GYNs, adoption rarely reflects an integrated, end-to-end system. Instead, clinicians employ a **selective and function-specific mix of digital tools**, chosen less by design and more by what their setting, staff capacity, and infrastructure can support. This reveals a key insight: **digital tool uptake is modular not because of resistance, but because of operational necessity**.

Key Observations	Strategic Takeaways
1 HIS Systems Signal Compliance and Institutional Digitization—but Stop at the Hospital Gate HIS platforms like Trakcare, Medics, and Healthplix are widely used—but almost exclusively within institutional settings where compliance mandates exist. Clinicians rely on HIS for administrative integration (admission-discharge records, lab workflows, insurance processing), but few continue this level of integration in their personal practice environments. The implication is that adoption is driven by top-down system mandates, not intrinsic clinician demand. *"Everything from admission to discharge is on HIS. I have no choice—but it helps with documentation and follow-up." - Consultant, private hospital, Tier 1 city*	*Digital tools that succeed in hospitals often falter in clinics because each clinician operates within a distinct micro-context—defined by staff capacity, patient flow, bandwidth, and administrative load. One-size-fits-all solutions rarely work; unless tools are modular, adaptable, and bundled with tailored support, their adoption beyond institutional settings will remain fragmented.*
2 EMRs Are the Most Portable Digital Asset—But Their Use Is Still Episodic EMRs emerged as the only cross-setting digital tool, valued across IVF centers, private practices, and OPD consultations. Their utility in tracking antenatal progress and managing chronic or high-risk cases makes them indispensable for continuity of care. Yet usage is often limited to a specific function (e.g., antenatal tracking), and rarely integrated into broader administrative flows like billing or follow-up reminders. *"Our clinic uses EMR mainly for antenatal patients. I can track complications across pregnancies—it's very helpful." – OB-GYN, private practice, Tier 2 city*	
3 Teleconsultation Is the Most Widely Adopted—but Also the Most Fragmented With over 80% of OB-GYNs using WhatsApp or similar informal tools, teleconsultation is the most normalized form of digital care—but also the least standardized. Structured platforms (e.g., DocOnline, Practo) were rarely mentioned. Instead, doctors defaulted to phone-based consults, video chats, and scanned document sharing, driven by patient demand and clinician convenience. *"I follow up with patients on WhatsApp after delivery. They share BP logs or sugar charts. It's practical."* – Clinic-based OB-GYN, Tier 3 town	*Informal tools like WhatsApp succeed not because they are ideal, but because they are invisible— requiring no passwords, no training, and no system admin. In a fragmented delivery landscape, OB- GYNs value immediacy and continuity.*

Context Shapes Behavior: How Practice Setting, Experience, and Geography Drive Digital Adoption

Digital health adoption among OB-GYNs is not simply a matter of access or tool availability— it is deeply shaped by where doctors practice (hospital vs. clinic), how long they've been in the system, and where they are located. Together, these contextual factors determine how tools are used, sustained, and valued.

Key Observations

1 Institutional Settings Enable Adoption—but Not Everywhere Equally

- Hospital-based OB-GYNs had the highest rates of digital engagement—**75.7%** reported using at least one tool, driven largely by institutional mandates, built-in infrastructure, and peer expectations.
- In contrast, private clinics—especially in Tier 2/3 locations—often lacked basic digital support, with only **46.6%**reporting any tool usage.
- The outlier group was dual-setting providers (both hospital and clinic), with **84.7%** digital adoption, suggesting that exposure to hospital workflows enabled confidence and spillover into personal practice.

2 Geography Predicts Exposure, Not Enthusiasm

- Digital tool uptake was highest in Tier 1 cities, where OB-GYNs benefited from faster connectivity, tech-literate support staff, and active vendor ecosystems.
- Tier 2 cities showed moderate adoption, with patchy use of standalone tools like WhatsApp and Healthplix.
- Tier 3 towns and rural areas consistently faced the most structural barriers—ranging from unstable mobile networks to lack of IT familiarity.

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3 Seniority Reveals a Nuanced Adoption Curve

- Seniority alone did not predict resistance. In fact, many senior practitioners (>15 years of experience) were among the first to adopt EMRs or structured systems—especially if they oversaw high-volume practices or held administrative responsibilities.
- However, for those steeped in long-standing clinical routines, the introduction of digital tools felt like a disruption—less about competence, more about comfort and clinical flow.
- Younger OB-GYNs, while more open to digital experimentation, often lacked the institutional power to drive adoption.

Strategic Takeaways

Institutional Setting Determines the Nature of Support Required

Adoption is not merely higher in hospitals because of scale—it is enabled by pre-existing systems, peer accountability, and mandated workflows. In contrast, clinic-based providers need **hands-on support in identifying, integrating, and sustaining the right tools**.

► *For hospitals*, the challenge is often about **optimizing utilization** of installed platforms (EMRs, LIS, HIS), improving interoperability, and streamlining clinical workflows.

► *For clinics*, the ask is different: **decision-support in tool selection**, cost-sharing models, digital literacy enablement, and low-friction onboarding.

The Digital Divide in Maternal Care is Infrastructure–Confidence–Support, Not Just Urban–Rural

Even digitally inclined OB-GYNs in Tier 3 cities struggle—not because of unwillingness, but because **tools fail at the last mile**.

This divide is compounded by confidence gaps among support staff and a lack of trusted training channels.

Bridging this divide will require hybrid solutions—offline-ready tools, local peer champions, and embedded micro-training.

Workflow Compatibility, Not Age, Is the True Predictor of Digital Behavior

► Younger doctors are typically comfortable with digital workflows, having grown up with mobile-first platforms and electronic tools. For them, the critical enablers are value-added functionalities that augment their existing digital comfort.

► Senior practitioners, by contrast, require tools that respect and align with established clinical routines. Adoption hinges on workflow fidelity—whether the software mirrors their current processes without adding burden or disrupting rapport with patients.

What's Really Holding Back Digital Health Adoption in OB-GYN Practice

Despite growing interest in digital health, OB-GYN practitioners across India face a layered mix of operational, behavioral, and contextual barriers—making digital integration uneven, fragile, and often short-lived.

Based on insights from 579 national survey respondents and 19 in-depth interviews, the following six pain points emerged as most frequently cited—and most consequential:

1. Staffing Gaps Undermine Adoption at the Frontline

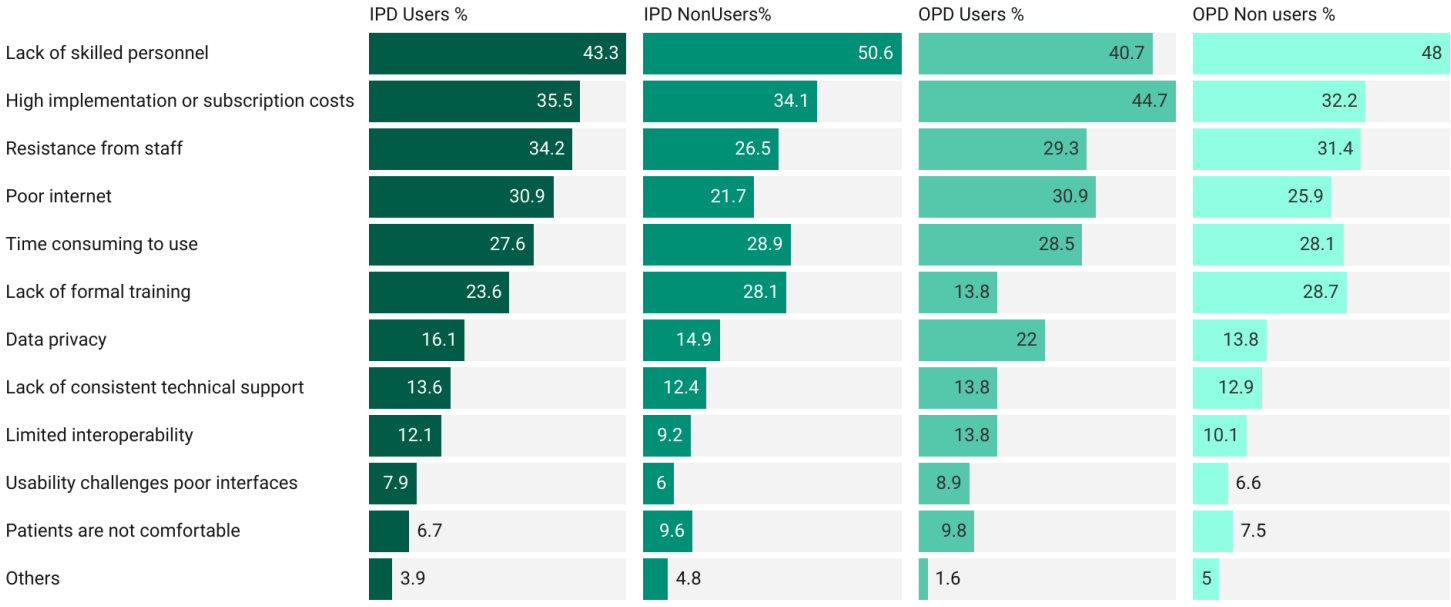
The single most commonly cited barrier across both inpatient (IPD) and outpatient (OPD) contexts was the **lack of skilled personnel** to operate or support digital systems.

- **43.3%** of IPD users and **40.7%** of OPD users flagged this as a key issue.
- Among non-users, concern was even higher—**50.6%** (IPD) and **48.0%** (OPD), indicating perceived barriers even before exposure.

Clinicians—particularly in standalone clinics or Tier 2 and Tier 3 towns—often juggle multiple roles, with little support from trained administrative staff, IT technicians, or data entry operators. This results in either underuse or outright rejection of digital tools, even when available.

> *"I do everything—consultation, ultrasound, counselling. There's no one to manage the software, and I can't type between patients."*
>
> *— Clinic-based OB-GYN, Tier 2 city*

Top Challenges encountered among Users and Nonusers



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2. Cost Burdens Remain Prohibitive, Especially in OPD Settings

Implementation and subscription costs emerged as the **second-most cited barrier** overall, disproportionately affecting smaller facilities.

- **44.7%** of OPD users and **35.5%** of IPD users reported high costs as a constraint.
- Among OPD non-users, **32.2%** flagged cost concerns even without adopting tools.

For nursing homes and smaller clinics operating on thin margins, upfront expenses (typically ₹1–2 lakh per tool) and unclear ROI often delay or discourage digital transition.

"We operate on tight margins. Unless a tool saves money or brings patients, it's hard to justify the spend."
— Nursing homeowner, Tier 3 town

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3. Resistance from Staff and Peers—Workflow, Not Willingness

Resistance to change was cited by **34.2% of IPD users** and **29.3% of OPD users**. Notably, this concern was **even higher among non-users** in OPD settings (31.4%).

This was particularly prominent in **larger institutions**, where consultants and long-tenured nursing staff are deeply accustomed to paper-based workflows. It is not reluctance per se, but the friction of retraining and altering clinical flow.

"Our seniors don't want to shift from paper—they say it disrupts the rhythm of consultation."
— Consultant public hospital, Tier 1

4.Time Consumption and Workflow Mismatch Drive Drop-Off

Digital tools were seen as **time-consuming** by **27–29% of respondents** across settings—especially in **high-volume OPD clinics**, where doctors manage over 30 patients a day with limited support.

Many clinicians expressed that digital tools increased documentation burden instead of reducing it—particularly where platforms were not optimized for maternal workflows (e.g., templated antenatal forms or quick patient recall).

"In a high-volume OPD, I barely get five minutes per patient. If the tool slows me down, I stop using it."
— Senior OB-GYN, Tier 1 city

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5. Interface Design Gaps Undermine Usability for OB-GYN Contexts

While less frequently cited, **8–9% of digital users** reported that the platforms they used felt unintuitive, rigid, or poorly aligned with the clinical realities of OB-GYN practice.

This challenge was **amplified in interviews**, where clinicians noted that **generic EMRs**—often repurposed from general internal medicine—lacked essential modules like antenatal histories, delivery summaries, or maternal risk tracking. Even tech-forward doctors reported discontinuation after initial trials due to workflow mismatch, dropdown-heavy interfaces, or limited ability to customize fields relevant to perinatal care.

"There's no space for antenatal history or delivery notes. It's like the tool was built for internal medicine."
— OB-GYN, standalone maternity clinic

6. Inconsistent Technical Support Breaks Continuity

Approximately **13–14% of users** across IPD and OPD settings cited the **lack of local technical support** as a key challenge—especially in smaller towns where vendor networks are thin or centralized in metro cities.

When bugs, login failures, or sync issues occurred, there was often **no structured escalation or response protocol**, leading to delayed fixes and abandonment of tools. This undermines trust and creates a reliance on offline backups (registers, paper charts), even after partial digitization.

"When something goes wrong, it takes days to get help. We just stop using it until someone shows up."
— OB-GYN, Tier 2 city

Strategic Takeaways

A	**Workflow Misfit Is the Principal Barrier, Not Attitude**	Workflow-resonant tools—not feature- rich tools—will define stickiness.
B	**Institutional Support, Not Infrastructure, Is the Leverage Point**	Peer handholding, tool selection guidance, training networks, and trust in vendors needs to be pre-built into solutions.
C	**Tool Design Often Neglects Specialty- Specific Workflows**	Specialty-specific feature design (e.g., ANC visit flows, fetal monitoring, delivery notes) must become non-negotiable.
D	**Trust Deficits and Low Tool Familiarity Stall Uptake**	The ecosystem urgently needs market-shaping signals—that can reduce decision ambiguity for small scale facilities.

Segmenting the Demand Landscape for Digital Adoption Among India's OB-GYNs

Understanding Digital Readiness Through a Behavior-Led Lens

Advancing digital adoption among private- sector clinicians necessitates moving beyond generalized assumptions toward a nuanced segmentation approach—one that accounts for the heterogeneity of practitioner behaviors, institutional contexts, and readiness trajectories.

Traditional discourse on digital health adoption often assumes that private sector clinicians constitute a uniform user group—one that will adopt digital tools if cost, access, and awareness are addressed. However, findings from this study challenge that assumption.

Across both the quantitative survey and qualitative interviews, the barriers to digital adoption emerged not solely as infrastructural deficits or affordability concerns, but as behavioral, experiential, and ecosystem-related frictions that vary markedly across clinicians. Despite relatively high stated interest in digital health (over 70% of survey respondents reported being open to adoption), actual uptake remains below 30%. This signals a persistent readiness-execution gap, one shaped less by intent and more by operational misalignment, contextual irrelevance, and trust deficits. Clinicians operate under different constraints, carry divergent expectations of what digitalization entails, and vary in their exposure to peer-led demonstrations of success. As such, a more differentiated lens is required—one that recognizes the heterogeneity of practitioner profiles and the stage-wise nature of digital behavior change.

To decode this diversity, we applied the Transtheoretical Model (TTM) of behavior change—originally developed by Prochaska and DiClemente—as a behavioral segmentation framework. While developed in the context of individual habit formation, TTM's stage-based structure provides a useful scaffold for understanding the digital adoption journey among OB-GYN practitioners By triangulating this model with field insights, five practitioner segments emerged—each defined by a distinct mindset–capability configuration and requiring differentiated forms of support.

Understanding the Transtheoretical Model of Behavior Change (TTM)

The **Transtheoretical Model (TTM)**—developed by Prochaska and DiClemente (1983)—is a widely recognized psychological framework for understanding how individuals progress through behavior change. Rather than viewing change as a binary act (adopted vs. not adopted), TTM outlines a **stage-wise journey** characterized by evolving motivation, confidence, and readiness to act.

The model delineates six core stages:

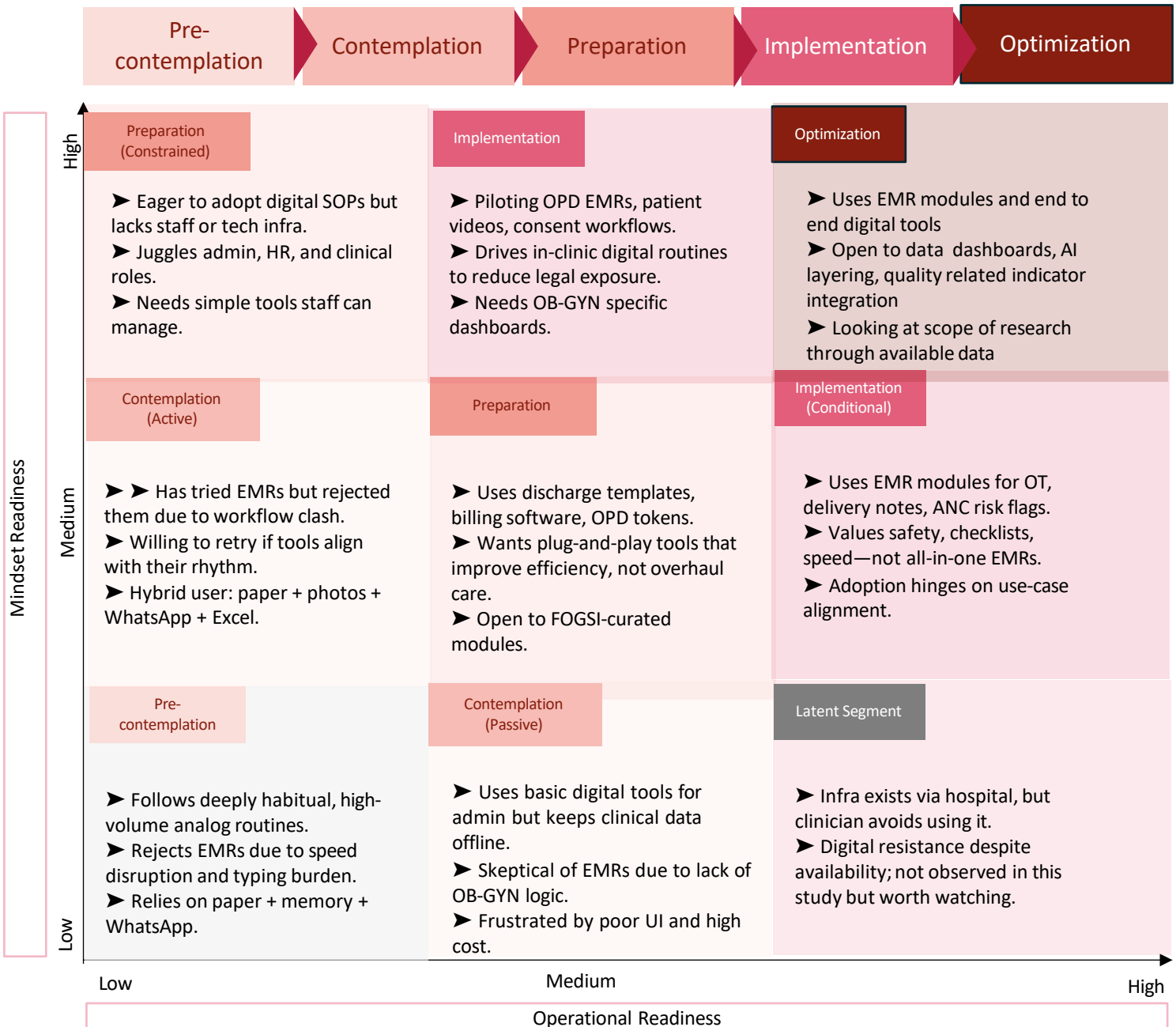
1. **Precontemplation** – The individual is not yet considering change and may be unaware of the problem.
2. **Contemplation** – The individual acknowledges a potential benefit but remains ambivalent about change.
3. **Preparation** – The individual intends to take action soon and may begin planning or seeking resources.
4. **Action** – The individual has recently adopted the behavior and is actively implementing change.
5. **Maintenance** – The individual continues the new behavior consistently over time, with reduced risk of relapse.
6. **Relapse/Recycle** – In some variants, the model accounts for backsliding, acknowledging that behavior change is rarely linear.

Segmenting the Demand Landscape for Digital Adoption Among India's OB-GYNs

Through a synthesis of survey data and in-depth interviews, a two-dimensional rubric emerged as a useful construct to interpret the diversity of clinician adoption behaviors. While traditional frameworks often emphasize either infrastructural gaps or behavioral intent in isolation, our findings revealed that digital adoption is best understood through the intersection of two readiness dimensions:

- **Mindset Readiness,** capturing the clinician's attitudinal openness toward digital tools, including prior experimentation, perceived value, trust in technology, and willingness to integrate new routines into clinical flow.
- **Operational Readiness,** referring to the infrastructural, staffing, and process enablers that determine a clinician's ability to act on that intent—ranging from availability of hardware and EMR platforms to staff support and workflow flexibility.

***Each clinician could be situated within this matrix based on triangulated evidence from their stated preferences, historical behavior, and contextual constraints.**



Adapted from: Prochaska, J.O. & DiClemente, C.C. (1983). *Stages and processes of self-change of smoking: Toward an integrative model of change.* Journal of Consulting and Clinical Psychology, 51(3), 390–395.

Translating Readiness into Action: Stage-Aligned Support Functions Requested By Providers

As OB-GYN clinicians traverse different stages of digital readiness, their barriers—and their asks—diverge. Mapping support functions to behavior change stages offers a strategic pathway for FOGSI's role as enabler

While infrastructure gaps and tool availability are often cited as root causes of digital inertia, this study reveals a more nuanced demand: clinicians are not uniformly "non-digital"—they are **diversely placed along a behavior change continuum**, each with distinct enablers required for movement.

The table below consolidates findings from survey and IDIs across this continuum, offering a structured view of **what clinicians face, what they need, and what do they expect from FOGSI.**

Common Barriers	Requested Support Functions from FOGSI
• Deeply habitual clinical routines that are high-volume, analog, and paper-dependent. • Skepticism about value of EMRs due to speed disruption and typing burden. • Perceived misfit of digital tools with OB-GYN practice flow.	**Peer Learning, Demonstration Sites, and Relatable Case Examples** *"We need case studies or videos showing how OB-GYN clinics are using tools well. It helps build confidence when you see someone like you succeed."*
• Prior negative experiences with EMRs—workflow misalignment, typing overload. • Hybrid usage of paper, WhatsApp, and Excel persists. • Apprehension due to poor UI, lack of OB-GYN-specific logic, and cost concerns.	**Curated marketplace of verified tool** *"There are 20 different EMRs. I don't have time to test all of them. If FOGSI filters it, we trust it."*
• Partial adoption limited to discharge notes, OPD tokens, billing. • Lacks plug-and-play tools that reduce manual effort. • Teams untrained in digital workflows; burden falls on clinician alone.	**Training and capacity building for clinicians and assistants** *"Even one assistant trained properly would change things in my clinic."*
• Adoption fragmented across modules (e.g., OT notes, ANC risk). • Clinicians prioritize workflow fit, safety, and speed—don't want bulky all-in-one platforms. • Price barriers remain for full rollout across the facility.	**Group-based pricing and vendor negotiation** *"We can't afford corporate prices. Group rates would change that."*
• Needs go beyond tools—desire for AI layering, dashboards, and research applications. • Lacks structured pathway to contribute data for collective insights. • Limited platforms to showcase learnings or mentor peers.	**OB-GYN-specific tool design standards and practice-aligned digital protocols** *"Most EMRs are built for general medicine. We need a format that understands our work."*

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