



Narrative Review

Transforming Healthcare Digitally: The Ayushman Bharat Digital Mission in a Tertiary Care Perspective

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Abstract

In today's technologically advanced world, the healthcare industry is undergoing significant transformations, leading to new opportunities for improved patient care and streamlined record-keeping. The Ayushman Bharat Digital Mission (ABDM) is a pioneering initiative by the Government of India aimed at revolutionizing healthcare access and administration through digital technologies. Officially launched in, 2021, following initial pilot projects in six Union Territories, ABDM aims to establish a comprehensive digital health ecosystem that ensures efficient, accessible, and affordable healthcare for all citizens. This mission aligns with the National Health Policy of 2017 and the National Digital Health Blueprint, which provide the strategic framework for building a unified digital health infrastructure in India. The core components of ABDM include the Unique Health Identification (UHID), Digital Health Records (DHRs), Healthcare Professionals Registry (HPR), and Health Facility Registry (HFR). These elements are designed to enhance the quality of healthcare delivery and facilitate better patient care. However, the implementation of ABDM faces several challenges, including limited public awareness, privacy and data security concerns, internet connectivity issues, and resistance from healthcare providers. To overcome these barriers, a multifaceted approach is needed, encompassing public education campaigns, infrastructure enhancements, robust data protection strategies, and incentives for stakeholder engagement. Despite these challenges, ABDM represents a significant step towards building a unified, secure, and efficient digital health system in India, ultimately contributing to the achievement of Universal Health Coverage and improved health outcomes for all citizens.

Keywords: Accessibility, Ayushman Bharat Digital Mission, Barriers, Challenges, Inclusion, Privacy, Health Identification, Digital Health Records, Health Professional Identification, Health Facility Identification, Unified Digital Health Infrastructure, National Health Authority.

A. Introduction

The World Health Organization (WHO) defines digital health as the “field of knowledge and practice associated with the development and use of digital technologies to improve health”ⁱ. In the modern world, where technology permeates every aspect of our existence, the healthcare industry is undergoing a dramatic change. This change is creating new opportunities for record-keeping and patient care. India launched the Ayushman Bharat Digital Mission (ABDM) in 2021 to strengthen the digital health ecosystem by developing and integrating health data records and registriesⁱⁱ.

Since inception of ABDM, several states have made notable progress in digital health implementation. Gujarat leads with over 70% of its population having ABHA IDs as of April 2025, reflecting widespread adoption across public and private healthcare sectors. Odisha has successfully distributed over 1 crore integrated digital health cards—combining ABHA, PMJAY, and the Gopabandhu Biju Swasthya Kalyan Yojana in 2025, enhancing access to both central and state health schemes. Uttar Pradesh has emerged as a top performer in ABHA ID creation and digital health record linking and has also piloted the U-WIN platform for digital immunization tracking. Andhra Pradesh has achieved strong integration of

Health Facility and Health Professional Registries, particularly within government hospitals. Tamil Nadu adopted ABDM building blocks early, integrating them into medical colleges and district hospitals, while Maharashtra has brought major private hospitals and urban health centres onto the ABDM platform, with active participation in the Digital Health Incentive Scheme (DHIS). These state-level efforts collectively demonstrate the growing nationwide momentum of ABDM's digital health transformation.

B. Background:

On October 25, 2021, the Indian government formally began the Ayushman Bharat Digital Mission (ABDM). In 2020, six Union Territories hosted the first trial project. The government set aside INR 1600 Crore in March 2022 to carry out the initiative. The National Health Policy (NHP) of 2017, which emphasised the necessity for ongoing healthcare and sought to guarantee health and well-being for all age groups, is where the ABDM had its start. The National Digital Health Blueprint (NDHB), which outlines the goals, tenets, and data standards for a unified digital health infrastructure in India, was created in response to this strategy. The NDHB's guiding principles are followed in the construction of the ABDM. Ayushman Bharat Digital Mission (ABDM) implementation is now being spearheaded by the National Health Authority (NHA), collaborating with state governments, the Ministry of Health and Family Welfare, the commercial sector, and civil society organisations.

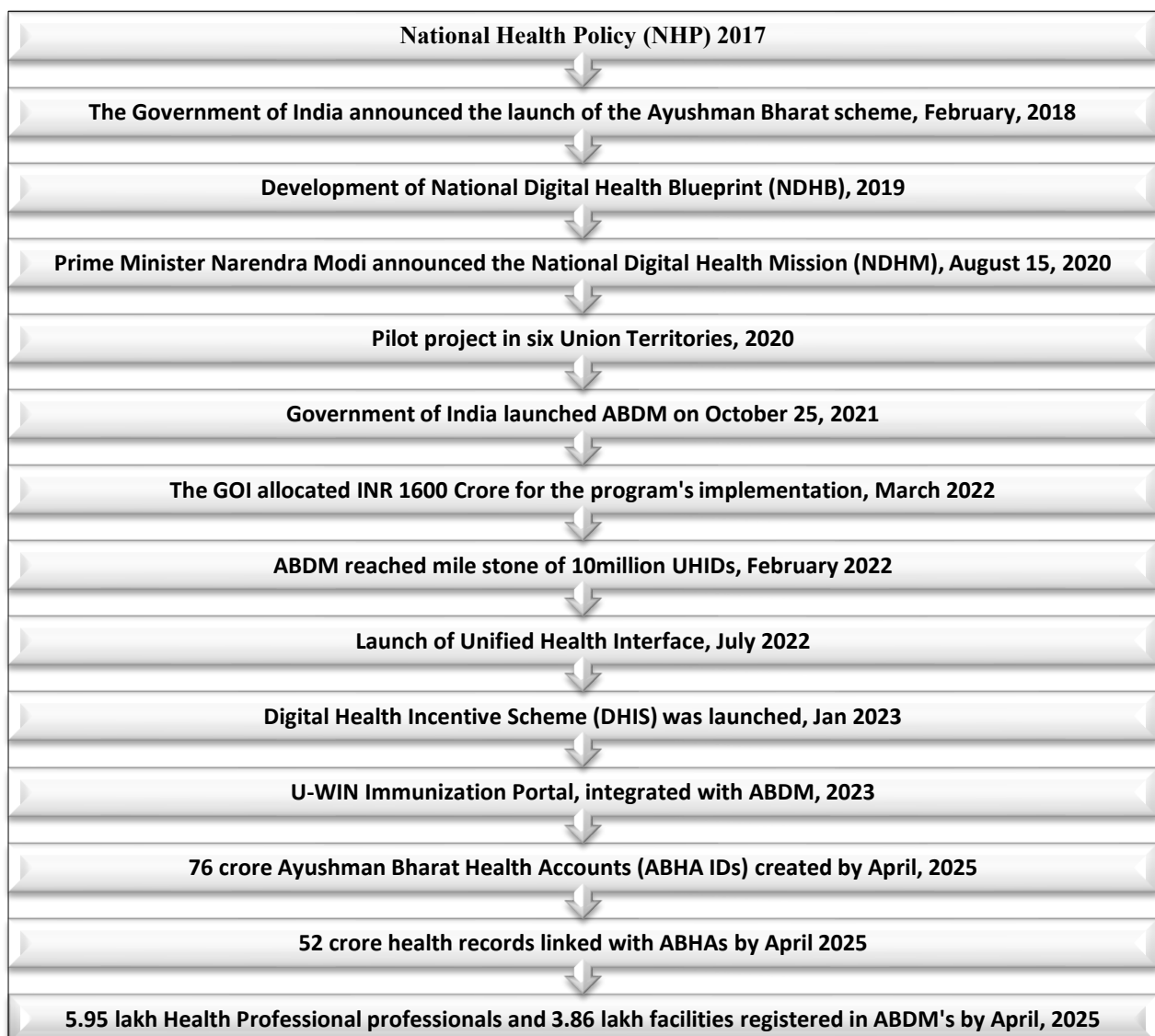


Fig 1: Significant milestones of Ayushman Bharat Digital Mission

C. Major components of ABDM:

The four major pillars of ABDM include the Unique Health Identification (UHID), Digital Health Records (DHRs), Healthcare Professionals Registry (HPR), and Health Facility Registry (HFR).

1. Unique Health ID – UH ID:

Unique Health Identification (UHID) is a novel concept at the core of the Ayushman Bharat Digital Mission (ABDM). The ABHA address or ABHA number are other names for this special ID. The procedure of creating your Health ID is simple. Through approved healthcare facilities or online portals, citizens can register for their UHID by providing basic information that will be used to create their unique identity. Unique Health IDs are becoming more popular worldwide as more countries adopt their own versions to improve healthcare services; they are not exclusive to any one area or nation. HIPAA requires distinct individual IDs in the US in order to enhance patient matching, lower medical error rates, and streamline healthcare transactions. In a similar vein, the NHS in the UK has used unique patient identifiers to enhance care coordination and lessen administrative demands on medical staff. In order to improve communication between healthcare professionals and guarantee proper data access in the "My Health Record" system, Australia uses the Individual Healthcare Identifier (IHI). NHI IC card and eID integration in Taiwan emphasises data security and accuracy while streamlining online government service access and billing by combining several digital IDs, including health IDsⁱⁱⁱ.

The main advantage is UHID acts as a digital health passport by assigning each person a unique 12-digit alphanumeric code or ABHA address, usually in the form of `yourname@abdm`.

2. Digital Health Record – DHRs:

The cornerstone of ABDM is Digital Health Records (DHRs), which are digital records of a person's complete medical history. The inclusion of diagnoses, treatments, prescriptions, test results, and other data in these databases enables more comprehensive and efficient healthcare delivery.

Digital health Records enables individuals to link their ABHA (Ayushman Bharat Health Account) number with their digital health records. This seamless integration simplifies access to healthcare by eliminating the need for patients to carry physical documents such as OPD slips, diagnostic reports, and past medical records.

3. Health care professional registry – HPR ID:

It is an extensive database of certified and validated medical professionals from many medical systems, including modern medicine, dentistry, Ayurveda, Unani, Siddha, homoeopathy, and nursing that provides care all throughout India. By providing them with a distinct Healthcare Professional ID (HPR ID), the Ayushman Bharat Digital Mission assists medical professionals by integrating them into India's digital health ecosystem. In three easy steps, the Healthcare Providers Registry can be created.

The Healthcare Professionals Registry (HPR) enhances discoverability and online visibility of healthcare professionals, thereby increasing their potential and reach. The provision of a Unique Healthcare Professional ID serves as a reliable and verifiable digital identity, enabling seamless communication and collaboration with stakeholders across the healthcare ecosystem. Furthermore, accredited medical practitioners can access patients' digital health records securely and offer remote consultations, improving the accessibility and efficiency of healthcare services through telemedicine.



Fig 2: Four Major Components of Ayushman Bharat Digital Mission

4. Health Facility Registry – HF ID:

All health facilities in the nation, including both contemporary and conventional medical practices, are included in the Health Facility Registry, a nationwide database. It comprises both public and private organisations such as clinics, imaging centres, diagnostic labs, hospitals, and pharmacies. Each health facility is given a distinct and trustworthy Facility ID by this registry, making it easier for them to be identified throughout the ABDM ecosystem. The Digital Health Incentive Scheme (DHIS) under ABDM encourages healthcare facilities and digital solution companies to adopt and promote digital health services. It offers financial incentives for linking health records with ABHA and using ABDM-enabled platforms.

The Health Facility Registry (HFR), which assigns a unique Health Facility ID (HF ID), offers several key advantages under the Ayushman Bharat Digital Mission. It ensures easy searchability and nationwide listing of health facilities, making it simpler for patients to locate and access healthcare services. The digital platform streamlines processes such as facility registration, license renewal, and empanelment with insurance companies and third-party administrators (TPAs). Additionally, it enhances the availability of digital health records, supports telemedicine services, and facilitates integration with Health Management Information Systems (HMIS), thereby promoting a more efficient and connected healthcare ecosystem.

D. Methodology

The ABDM process begins when a patient arrives at the hospital for a consultation. To get started, the patient can download any ABDM enabled apps, such as ABHA, Driefcase, eka.care, Aarogya Setu or Paytm, to generate their ABHA ID. Once the ID is generated, it must be linked with the hospital by Scan & Share.

After consulting with the relevant specialty doctor, all digital health records, including prescriptions and lab reports, will automatically be linked to the patient's ABHA ID. This enables the patient to access their health records anytime and anywhere. It is not only confined to the OPD records but also applicable for IPD records subjective to if the hospital is completely digitalised.

Moreover, the robust ABDM ecosystem allows healthcare workers from other institutions across the country to view these records, provided they receive OTP authentication from the patient. This facilitates continuity of care without the need to carry bulky files to different healthcare facilities.

E. Challenges/ Barriers

While Implementing the Ayushman Bharat Digital Mission we faced several challenges, including resistance from public and healthcare professionals, lack of awareness among citizens, and coordination challenges between different stakeholders. The primary challenge is that Ayushman Bharat Digital Mission is a national endeavour, whereas health is a state subject in India^{iv}.

1. **Limited Public Awareness:** Many people are unaware that Unique Health IDs even exist. Patients don't know about Unique Health ID, Digital health records and record Linkage. Lack of information causes miss out on the benefits of accessing their medical records or participating in the ABDM. In a study conducted at Bengaluru 8% of participants knew about the ABDM, although their knowledge and practice related to other Government digital services, like National Teleconsultation services (eSanjeevani), Arogya Setu and DigiLocker, were high.^v
2. **Lack of interest by public:** The public's lack of interest in registering for the Ayushman Bharat Digital Mission (ABDM) is a significant challenge. Many patients feel the process is time-consuming and requires extra effort. Some have even reported that the registration procedure is cumbersome, which discourages them from participating.
3. **Accessibility:** Delivering health services digitally primarily helps those with access to and familiarity with technology, such as computers, smartphones, and the internet. This has a disadvantage for senior citizens, women, rural populations, and those who are illiterate, making it harder for these vulnerable groups to adopt digital healthcare solutions.
4. **Internet connectivity / Network issues:** Patients with smartphones are facing difficulties in obtaining a stable internet connection and receiving the One Time Password (OTP) needed for ABHA registration. In some cases, certain telecom services are completely inaccessible in OPD registration areas, further complicating the process. Lack of network coverage and IT Infrastructure capture barriers associated with the availability of internet connectivity and smartphones to implement digital transformation in healthcare organizations. A systematic review found that limited internet access hampers digital health services in India^{vi}.
5. **Multiple UHIDs:** Due to the use of phone numbers to create UHIDs, multiple IDs were created for single patients with different phone numbers. Patients found it confusing to manage multiple UHIDs. With multiple UHIDs, their medical records were scattered across different IDs, making it difficult for healthcare providers to access a complete medical history. This fragmentation hindered effective diagnosis and treatment.
6. **Privacy concerns:** Privacy and trust are essential in the digital age, especially when handling personal data. The recent ransomware attack on All-India Institute of Medical Sciences (AIIMS), Delhi has brought questions of

safety, privacy, and dignity to light^{vii}. The digitization of healthcare records raised significant concerns by the patients about the security and privacy of patient data.

7. **Patient Confusion Over Health Schemes:** In India, health is managed at the state level. In Andhra Pradesh, the state government has a health scheme called Arogya Shri, recently renamed NTR Arogya Seva. Patients are confused between these two schemes and struggle to understand the goals and objectives of different health programs run by the state and central governments. When states continue using their existing systems instead of adopting the Ayushman Bharat Digital Mission (ABDM), it can lead to fragmentation and inconsistencies across the national healthcare landscape. This could hinder the seamless integration of healthcare data and impede the mission's goal of creating a unified digital health ecosystem
8. **Adequate skilled manpower:** Even with smartphones and network access, many elderly people struggle with downloading the app and registering their details. First-time registration patients often face difficulties setting up their profile passwords. As a result, additional manpower is needed to assist and guide these patients through the process.
9. **Healthcare Provider's Inclusion:** Some healthcare providers are not fully grasping or prioritizing the use of ABDM, resulting in missed opportunities for patient care. Additionally, some health professionals are reluctant to register for an HPR ID.
10. **Under-registration of a healthcare facility:** Even though after repeated reminders and incentives not all health care facilities have registered themselves under HF ID. Indirectly it is causing failure to share the health records and continuity of care. Without the ability to share and access comprehensive medical histories, patients receiving fragmented care, leading to potential misdiagnoses, duplicate testing, and compromised treatment outcomes.

F. Strategies to Overcome Barriers and Challenges

- ✓ Government and health facilities should educate the public on the benefits of using the Unique Health ID (UHID) through health education materials and mass awareness campaigns.
- ✓ Improve digital access by addressing internet/network issues, especially in remote and rural areas, with the provision of digital devices and connectivity.
- ✓ Invest in robust and reliable technical infrastructure to support the smooth implementation of ABDM across all levels of healthcare.
- ✓ Promote a cultural shift within the healthcare system to encourage the adoption of digital health technologies alongside technological advancements.
- ✓ Build trust in digital health services by involving all stakeholders—patients, providers, and practitioners—in understanding and utilizing the system effectively.
- ✓ Implement strong cybersecurity measures to protect sensitive health information through firewalls and data security systems.
- ✓ Develop a skilled workforce by investing in training and capacity-building programs to manage and sustain digital health systems.
- ✓ Ensure integration and interoperability of health data across platforms to enable seamless continuity of care.
- ✓ Encourage all states to adopt ABDM uniformly by providing incentives to align with the national digital health mission.
- ✓ Engage private health facilities—hospitals, clinics, diagnostic labs, and pharmacies—in actively integrating with ABDM to build a unified digital health ecosystem.

G. Conclusion

ABDM is a flagship digital health initiative that aims to develop the technological backbone for an integrated digital infrastructure in the Indian health system. The vision of ABDM is to create a unified online platform for India that will provide easy access to treatment records and enable faster and effective treatment. The successful implementation of the ABDM depends on overcoming major challenges such as poor awareness and concerns about data security. Addressing these issues will require focused educational campaigns, increased accessibility, and joint efforts by the government, healthcare providers, and technological partners.^{viii} To build the unified digital platform, ABDM seeks to offer a wide range of data, information, and infrastructure services, based on open, interoperable, standards – based digital systems while ensuring the security, confidentiality, and privacy of health-related personal information. Building an efficient, safe, and accessible digital health system has been a global challenge. India is no exception. The hope is that Indian policymakers can learn from other countries' experiences and build a successful digital health system that can take India closer to achieving Universal Health Coverage.

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