

# Health Management Information System (HMIS) from an Indian Perspective- A Review

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**Abstract:** Health management information systems (HMIS) are crucial for managing health data across various tiers, including public health initiatives, prenatal care, vaccination, illness management, and administrative matters. However, India's Primary Health Centers in rural regions struggle with insufficient population health surveillance and a lack of drugs, vaccinations, and equipment. Information Technology (IT) can enhance the healthcare system by facilitating data collection, storage, analysis, and distribution for professionals. The Indian government is working to establish district-level electronic health information databases and integrate existing systems to improve rural healthcare for vulnerable populations. However, data discrepancies have been detected between HMIS and manual paper-based program reports, necessitating system updates and identifying data items in manual reports. The investigation identified deficiencies in the operation of HMIS and an absence of a data quality culture. HMIS managers must consistently evaluate the strengths and limitations of data sources, implement modifications grounded on scientific methodologies, and utilize information and communication technology to enhance data collection, management, and policy formulation.

**Keywords:** Health management information systems, Health, Public health, Patient services

## 1. INTRODUCTION

A health management information system (HMIS) is essential for the administration of health data across national, state, and institutional tiers. It largely addresses public health initiatives, prenatal care, vaccination, illness management, and administrative matters. India's Primary Health Centers in rural regions are failing to meet expectations due to insufficient population health surveillance, as well as a lack of drugs, vaccinations, and equipment. Effective data management is difficult in manual systems. Information Technology (IT) enhances the healthcare system by facilitating data collection, storage, analysis, and distribution for professionals. Enhancing information systems in healthcare is crucial, with information technology serving a pivotal function in improving conventional systems.<sup>1,2</sup>

## 2. OBJECTIVES

- i) To review the recent findings on the Health Management Information Systems (HMIS) based on secondary data available in the various web portals.
- ii) To analyze the various information on HMIS and present the future scopes.

### 3. METHODS

The present study was based on an extensive literature search through the selected keywords using the open-access academic databases like Google Scholar, Directory of Open Access Journals (DOAJ), Semantic Scholar, WordCat, EBSCO, and PubMed. The keywords used, such as ‘Health Management Information Systems’, ‘HIMS in India’, ‘Data collection’, ‘Hospital management’, etc, using Boolean keywords AND, OR, NOT.

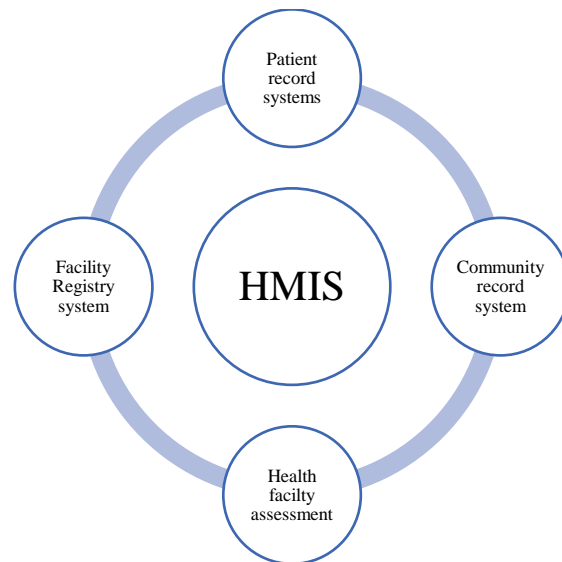


Fig. 1 HMIS -Four major types of record systems

Figure 1 discusses four major types of record systems that are often considered and integrated with Health Management Information Systems. HMIS is employed in the system and hierarchy of all medical institutions and all types of hospitals.

### 4. DISCUSSIONS

Health management information systems (HMIS) gather, retain, and assess health-related data from healthcare institutions to administrative tiers, delivering analytical reports and visualizations for informed decision-making. They comprise electronic medical records, software for aggregate reporting, and name-based systems. An electronic HMIS in India, developed in partnership with the German Agency for Technical Cooperation, enhanced managerial decision-making but encountered difficulties in software maintenance and user skepticism. HMIS underpins essential health operations such as improving care, administering health facilities, and orchestrating health initiatives.

The Indian government is endeavoring to establish district-level electronic health information databases and to integrate existing systems, such as the Health Management Information System (HMIS), to enhance rural healthcare for vulnerable populations. Data discrepancies have been detected between the HMIS and manual paper-based program reports, necessitating system updates and identifying data items in the manual reports. The system encounters technological obstacles, including restricted access to raw data and inadequate resources for state, district, or block-level program managers to obtain and analyze data.<sup>3,4</sup>

The investigation identified deficiencies in the operation of the Health Information Management System (HMIS) and an absence of a data quality culture. No policies, guidelines, or training existed for reporting processes across health systems, and personnel need practical training in data analysis. HMIS data is restricted to individuals utilizing health institutions or community-based services, resulting in incomplete and biased information. Population denominators are derived by extrapolating from the latest census, which diminishes in reliability as time progresses.

HMIS managers must consistently evaluate the strengths and limitations of data sources, implementing modifications grounded upon scientific methodologies. The Data Quality Review (DQR) Toolkit provides an extensive evaluation of HMIS data quality, emphasizing key indicators such as maternal health, vaccination, HIV, tuberculosis, and malaria. Healthcare institutions and community health practitioners are utilizing information and communication technology to enhance data collection, management, and policy formulation. Electronic data management facilitates summary analysis and visualizations, pinpointing disadvantaged areas or groups for corrective actions. The four Ts analytical methodologies and data dashboards can effectively demonstrate progress and pinpoint challenges for health projects.<sup>5,6</sup>

A National Health Data Dictionary (NHDD) is a standard language for health policymakers, managers, and care providers to communicate and exchange health information. A data warehouse is a centralized storage system that integrates data from various sources, requiring skills from health analysts, statisticians, computer technicians, and data scientists.<sup>7</sup> However, facility-based data collection and transfer are often paper-based, and the architecture should evolve. Health Information System (HMIS) data is often used in annual reports, but not effectively to improve health system performance due to technical issues, organizational barriers, and a lack of training for health professionals. The Routine Health Information Network (RHINO) promotes effective data collection and use.<sup>7</sup> Data quality is important because it comes from reliable sources which are accredited by national cum international regulation bodies. Accreditation is a value-added certification achieved through rigorous auditing by internationally registered bodies. It involves evaluating quality standards implemented by all departments or management, with skilled auditors performing the process. The process is reviewed based on total quality standards, including education, infrastructure, safety, security, and senior management roles.<sup>8</sup>

## 5. CONCLUSIONS

Health information systems (HMIS) enhance healthcare by centralizing patient records, promoting better coordination, facilitating real-time health data updates, aiding in resource allocation, addressing administrative burdens, offering decision support tools, and facilitating interconnectedness between specialists and departments. They also facilitate strategic planning and resource allocation. The HMIS Portal uses a web-based interface to track physical performance and provide periodic reports on health services and available facilities at various levels.

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