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INNOVATIVE IMPLEMENTATION AND IMPACT OF NextGen e-HOSPITAL SYSTEM IN AYUSH HEALTH CARE FACILITY SECTOR – A CASE STUDY OF TRANSFORMATION AND PROGRESS IN DEPARTMENT OF INDIAN SYSTEMS OF MEDICINE (ISM)- KERALA

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Abstract

Digitalization is vital for enhancing efficacy and outcomes in the healthcare sector. Identifying this, the Department of Indian Systems of Medicine, an important public health service provider for Ayurveda, Yoga & Naturopathy, Unani and Siddha, has embarked on a digital platform. This commenced with the enactment of the e-Hospital system and its succeeding upgrade to the NextGen e-Hospital. The evolution has pointedly heightened service excellence by reducing congestion of registration counters and minimizing patient waiting times. Integrating with the Ayushman Bharat Digital Mission (ABDM) for seamless scanning and sharing of unique ID cards and with the Digital Health Incentive Scheme (DHIS), the NextGen e-Hospital acts as a comprehensive solution connecting patients, doctors and facilities. At present, 240 institutions are operating this system, while the remaining institutions have either completed the National Informatics Centre (NIC) approval process or are in the process of requesting onboarding. The department is poised to integrate forthcoming features of both the ABDM and the NextGen e-Hospital application and thereby strengthening the digital initiatives of the nation as well as the state.

Keywords: Indian Systems of Medicine, Digitalization, NextGen e-Hospital, ABDM, ABHA, DHIS.

INTRODUCTION

The department of Indian systems of medicine (ISM) under Kerala AYUSH –is the foremost source of traditional scientific medicine care for the common man of the state and it currently operates with 817 dispensaries, 131 hospitals, 67 subcentres, 18 tribal dispensaries and 257 National Health Mission (NHM) institutions. These health care facilities deliver their services in almost every local self-government division encompassing even the most remote corners of state and thus covering a significant fraction of the populace.

Lining up for long queues for registering and consultations have constantly been a key apprehension for both government authorities and department officials. These interruptions not only reduce patient satisfaction but also influence the overall efficacy of the healthcare service in government ISM institutions. Identifying the crucial issues, the department of ISM joining with the digital India initiative implemented the e-hospital system (a National Informatics Centre- NIC developed cloud-based Hospital Management Information System- HMIS) in the health care facilities.

At present 87 hospitals and 153 dispensaries are offering this facility to the public by means of the SaaS (Software as a Service) model for registration and to streamline institutional workflows. NextGen e-Hospital is the only HMIS in the government sector having Ayushman Bharat Digital Mission (ABDM)compliance, in Kerala. ABHA [Ayushman Bharat Health Account] integrated Outpatient Department (OPD) registration and self-registration through Scan & Share were the two major accomplishments attained through ABDM amenability. Kerala's active approach to digital healthcare within its ISM sector has led to nationwide appreciation, with three of its institutions being designated as model institutions for ABDM implementation, namely District Ayurveda Hospital (DAH)Varkala, Government Ayurveda Hospital (GAH) Ayoor and Government Unani Dispensary (GUD) Mogral. Overall, refining the patient processing and improving service delivery, the beginning of e-Hospital within ISM facilities signifies a transformative milestone, plotting an innovative path for the system's journey and development.

Background

Digital transformation of public health care system is one of the main focuses of Government of Kerala (GOK) and the initiatives are proactive from the year 2020 with an aim to improve quality of healthcare delivery.

The digital revolution of these healthcare sectors is basically constructed upon the e-health services of the Directorate of Health Services, the AYUSH Homoeopathy Information Management System (AHiMS) for Homoeopathy and the NextGen e-Hospital software for ISM.Lining up with the state's e-governance commitment and the Ministry of Electronics and Information Technology's Digital India initiative, the Directorate of Indian Systems of Medicine executed E-Office for efficient file processing in offices and e-Hospital for healthcare facilities.

It is a one-stop solution which helps in connecting patients, hospitals and doctors on a single digital platform. NextGen e-Hospital represents a significant technological advancement over the old version e-Hospital system and is presently in extensive usage. It aligns with national standards under the ABDM.

Figure 1: ABDM connectivity and integration across digital platforms in healthcare

This initiative aims to:

- The digitization of internal workflows and processes in hospitals such as patient registration, appointment scheduling and billing.
- Enhanced health care delivery: efficient accurate record-keeping, prescription generating and medicine delivery.
- Augment working efficiency: eliminate manual paperwork and reducing resource overload
- Data collection: collection and analysis of healthcare data for better planning, policy designs and research activities

Key Features and Processes

Major components of NextGen Hospital application are;

- Patient Registration (OPD & Casualty): This module simplifies the registration of new and revisiting patients. Upon entering the patient demographics, a Unique Health Identification Number (UHID) is generated for each individual, with registration through the ABHA window being the preferred method.

- Scan & Share: Patients can self-register by scanning the hospital's Quick Response (QR) code within 60 minutes before their physical visit, by operating through the QR code-based self-registration system.

- In-Patient Department (IPD): The IPD module facilitates inpatient admission, discharge, transfer, treatment and medicine issues.

- Billing: Improves accuracy and transparency of accounts through electronic bill generation.

- Lab Information System: The module streamlines laboratory procedures, such as sample collection, report generation etc.

- Clinic: The Clinic module, available through physician login, allows doctors to record clinical data of patients and enables online prescription generation.

- Dietary: The Dietary module helps to manage dietary services provided to patients in facilities.

- Radiology Information System: This module is for managing radiology services, procedures, as well as generating diagnostic reports within the radiology department.

- Laundry: Dealing with laundry services in hospitals such as cleaning and distribution of washable items.

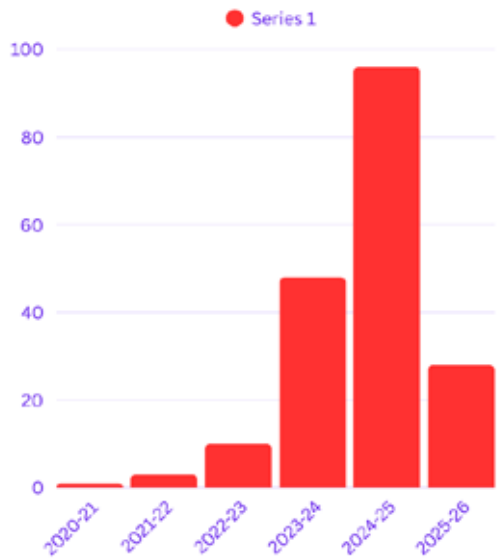
- Store & Inventory: Through this module, the pharmacist works on pharmacy administration, medicine store and dispensing.

- OT Management: functions and workflows of the operation theatres in hospitals

Figure 2: NextGen e-Hospital window with modules

FINDINGS AND OUTCOMES OF e-HOSPITAL IMPLEMENTATION

Figure 3: Vertical bar chart of NextGen e-Hospital implementation status in ISM facilities



- Accessibility: Facilitate easy access to healthcare services via smartphone-enabled solutions.
- Efficiency: Minimise waiting times and streamline registration processes

- Accuracy and transparency – unique hospital ID, electronic billing, meticulous patient demographics and comprehensive electronic case record forms maintain data accuracy.

- Coordination of internal departments: Network coordination and data sharing create a seamless workflow in hospitals, between departments such as Outpatient (OP), clinics, pharmacy, lab and billing and thereby reducing delays, minimizing errors and improving overall quality of service delivery.

- Real-time registration – this ensures data accuracy, avoid duplication and helps in quicker access to patient information

- Free of cost & Frequent updating-NextGen e-Hospital application is being offered as an "as-is" product to government hospitals across the country through the SaaS (Software as a Service) model.

- Minimal cost on implementation and latest advancements in software make it secure and efficient.

- Scaling up with ABDM, Scan & Share and Digital Health Incentive Scheme (DHIS)

Kerala initiated the rollout of the ABDM on October 2, 2022. The Department ISM has efficaciously applied all three core components of ABDM and has upgraded to the NextGen e-Hospital version, guaranteeing full compliance with ABDM standards, counting the addition of Scan & Share functionality and eligibility for the Digital Health Incentive Scheme (DHIS).By providing financial incentives to healthcare facilities for employing ABDM-enabled software and accomplishing a minimum of 100 digital transactions per month, the scheme aims to promote the adoption of digital tools which can be used to improve service quality, patient satisfaction and facility development. A significant number of healthcare institutions are qualified for the DHIS claim and firstly, a select few started receving funds through it.

Table 1: DHIs Claim Status of Major ISM Facilities So Far

Sl No	Name of Facility	Incentive Claimed to NHA [Rs.]
1	Govt Ayurveda Hospital, Ayoor	114660
2	District Ayurveda Hospital, Varkala	239340
3	Govt Unani Dispensary, Mogral	252800
4	District Ayurveda Hospital, Palakkad	338820
5	District Ayurveda Hospital, Malappuram	161280
6	Govt Ayurveda Hospital, Ottappalam	235920
7	District Ayurveda Hospital, Kasaragod	42980
8	Taluk Ayurveda Hospital, Payyoli	26080
9	Govt Ayurveda Dispensary, Kadungal-loor	29600
10	Govt Ayurveda Dispensary, Malayattoor	14260
11	Govt Ayurveda Dispensary, Thrikkak-kara	28600
12	District Ayurveda Hospital, Kottayam	10580
13	Govt Ayurveda Hospital, Chelakkara	32420
14	Govt Ayurveda Hospital, Edakkara	76940

Challenges and overcoming the Barriers

- Deficiency of satisfactory elementary amenities and poor connectivity – desktops, laptops, printers, internet

  Tackling methods - Department projected phased implementation with existing resources permitting initial acquaintance and workflow modifications before a full-scale rollout. Base hardware requirements and Wi-Fi connectivity were placed as the prime procurement opportunities in various ongoing projects within the institution to make the process faster. In dynamically running e-Hospitals, instant emergency hardware gaps were being addressed by the department's existing pool.

- Inadequate Awareness – a potential hindrance to digital adoption (public and staff):

  Tackling methods: Dedicated state and district level nodal officers were precisely nominated and were tasked with actively initiating and promoting the application's use. To improve the digital literacy on e-hospital jobs; widespread capacity building training programs (online and offline) were conducted aiming all nodal officers as well as medical and paramedical staff across the state's ISM institutions. Application procedure user manuals were created through the cooperative efforts of the state nodal officer and the Information Technology (IT) wing to offer readily available guidance for staff. The Hospital Management Committee funded the appointment of ground technical staff at registration counters. To minimise overcrowding, steadfast Scan & Share counters were employed in busy facilities, supported by adequate contract staff. Hands-on training to the ground staff and data entry operators were conducted. Central-level ABDM training was provided to State master trainers from the ISM Department.

- Shortage of Information, Education and Communication (IEC) Activities:

  Tackling methods: Knowing the role of stakeholder engagement, comprehensive IEC activities were executed for all involved parties. IEC materials were strategically demonstrated within healthcare institutions to capture the attention of patients and offer them with relevant information about the e-Hospital facilities and ABHA. Public awareness campaigns through Government Initiatives in conjunction with various government exhibitions and camp programs are also in progress.

- Ensuring data security, privacy and accuracy:

  Tackling methods: Physical entry of patient data at the registration counters are prone to mistakes. Therefore, ABHA integrated registration process is preferred over the counters which prevents inaccuracies by directly tracking information from the Aadhaar database and also empowers persons with the ability to grant or reject consent and maintain full control over their shared health data.

Beyond facilitating ABHA creation, the department achieved complete registration for both the Healthcare Professionals Registry (HPR) and the Health Facility Registry (HFR) within the stipulated time frame; marking a crucial step towards a comprehensive digital health ecosystem.

CONCLUSION

Evolving from a past of elementary infrastructure, limited staff and consultations, Indian Systems of Medicine (ISM) facilities are experiencing a profound and inclusive progression by means of noteworthy improvements in organisation expansion, augmented employment models, boosted service delivery mechanisms, amplified public health involvement, robust data collection methods and a rising emphasis on research. These joint efforts are increasingly founding ISM facilities as a vital and active force at the heart of the states' health sector.

Joining the digital revolution, the deployment of the next-generation e-Hospital system represents a significant cornerstone of this progress. This advancement has pointedly reduced overcrowding and grievances at OPD registration counters by confirming the precise capture of patient demographic details and health records.

Moreover, by preserving security and privacy protocols with consent-based control over patient information, the ABDM-compliant NextGen e-Hospital is expected to decrease patient waiting times extensively from 40-50 minutes to as low as 5 minutes. The application effectively addresses all digital requirements prerequisite of both the community it serves and the hospital's operational needs. Boarding on a constant path of digitalization; aligning with the vision of the Government of Kerala, the Department of Indian Systems of Medicine (ISM) is committed to adopting all forthcoming technologies and features of the NextGen e-Hospital and ABDM (Ayushman Bharat Digital Mission) programs led by the National Health Authority. ■

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