

Implementing and utilizing Health Information Management System in Hadiya Zone, South Nations Nationalities and People Region, Ethiopia

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Abstract

Health Information systems are increasingly important for measuring and improving the quality and coverage of health services. Reliable and timely health information is vital for operational and strategic decision making that save lives and enhances health. In Ethiopia information quality and use remain weak, particularly at district health offices and primary health care facilities to facilitate decision making. Therefore, this analysis will signal the current status of Health Management Information System (HMIS) in area of observation. In Hadiya zone there are 311 health posts, 61 health centers and 4 hospitals in 13 rural districts and 4 town administrations. In Hadiya zone 83% of health facilities fully implementing HMIS and 17% of them especially at health post level need further assistance for full implementation.

Keywords: Health management information system, Electronic Health record, health extension Package, Community health Information system.

Introduction

Health Information System (HIS) is defined as the system that integrates data collection, processing, reporting and use of the information necessary for improving health service effectiveness and efficiency through better management at all levels of health services (WHO, 2008). Health Management Information System (HMIS) is an information system specially designed to assist in the management and planning of health programmes, as opposed to delivery of care (Bulletin, 2005).

Globally there is increasing interest in the measurement of data quality and information use to capture key information about the challenges and limitations of health service provisions and program implementation. This reliance on data quality and information use necessitates quality assurance mechanisms that promote reliable data collection, storage & management.

Today's health care system in developing countries has undergone many structural changes over the years in response to prevailing health problems and in recognition of weakness in the existing health delivery system. Decentralization and delegation of budgetary controls have shifted much of this growing burden to the periphery, requiring districts to

provide local health statistics as a basis for decision-making.

A well-functioning HIS is an integrated effort to collect, process, report and use health information and knowledge to influence policy and decision-making, program action, individual and public health outcomes and research. All functions of the health system rely on the availability of timely, accurate and dependable information for decision-making.

In Ethiopia despite improvement on initiative of Health Management and Information System and reform changes; data/information quality and use remain weak, particularly at district health offices and primary health care facilities, which have primary responsibility for operational management and decision making. Currently, in Ethiopia, the emphasis of health system development aimed at district level. The primary health care system is supposed to be self-contained segment of the national health system and it comprises a well-defined population within a clearly delineated administrative and geographical area.

Health Management Information System (HMIS) is the systematic collection, aggregation, analysis, presentation and utilization of health and health related data for evidence-based decisions for health workers,

managers, policy makers and others. Community Health Information System (CHIS) is a part of HMIS & is a family-centered health information system designed for health extension workers (HEW) to manage and monitor their work in educating households and delivering an integrated package of promotive, preventive & basic curative health services to families.

Federal Ministry of Health (FMOH) of Ethiopia designed Family Folder as a comprehensive data collection tool for documenting family-centered HEP services provided by HEWs. The CHIS is a component of the reformed Health Management Information System (HMIS) designed by the FMOH according to the principles of standardization, integration and simplification to provide information for decision making.

Quality of data is a key factor in generating reliable health information that enables monitoring progress and making decisions for continuous improvement. The need for organized, accessible, timely and accurate data for health decision making has become a growing concern at national and international levels. In response to this, the FMOH has undertaken an extensive reform and redesign of the national HMIS. The reform has taken major steps to respond to the deficiency of routine health data that limited the quality of care, planning and management systems, as well as decision-making by managers at all levels in the health care system.

Despite the intensive efforts to improve the efficiency of information systems in the past few years, the utilization of health data for decision making is still a big challenge. Therefore, the purpose of this study was to identify the determinants of HMIS data utilization in decision making and thereby examine how health data and information are generated at health facilities in Hadiya zone, Southern Nation nationalities and people region, Ethiopia.

Objective: To assess the utilization and implementation of health management information systems and associated factors at health centers in Hadiya zone, South Nations Nationalities and people Region, Ethiopia.

Methodology

The analyses were carried out through reviewing existing documents and studies on health management information system (HMIS), its pilot, benefits, contribution to the overall health service quality improvement based on the evidence extracted from the HIS in decision making. Various studies and guidelines were reviewed to analyze the status of HMIS implementation and utilization in the health facilities for evidence-based decision making at the district, regional and national level. Based on the facts and observation made further conclusion and recommendation will be made.

Importance of strong HMIS

In the simplest terms, a health information system (HIS) is a system that captures, stores, transmits, or otherwise manages health data or activities. These systems are used to collect, process, use, and report health information. In turn, information from a health information system can be used to drive policy- and decision-making, research, and ultimately health outcomes. Here's what you need to know about the key components of a HIS, the various types, and benefits of HIS.

Key Components of a Health Information System

Health information systems consist of six key components, including:

- Resources – the legislative, regulatory, and planning frameworks required for system functionality. This includes personnel, financing, logistics support, information and communications technology (ICT), and mechanisms for coordinating both within and between the six components.
- Indicators – a complete set of indicators and relevant targets, including inputs, outputs, and outcomes, determinants of health, and health status indicators.
- Data sources – including both population-based and institution-based data sources.
- Data management – collection and storage, QA, processing and flow, and compilation and analysis.
- Information products – data which has been analyzed and presented as actionable information.

- Dissemination and use – the process of making data available to decision-makers and facilitating the use of that information.

Types of health information system

Health Information Systems is a broad category that encompasses several specific types of systems. Here's a look at some of the most common HIS types.

Strategic or operational systems

Strategic or operational systems are typically used for information classification. Provisions are made for information systems based on the type of information they're handling. A pyramid classification system allows organizations to assess the spread of digitization. Because operational systems are generally developed before executive information systems or management information systems, this is easily achieved. The ability to evaluate dependencies can help to identify system deficiencies, as well. For example, a properly configured information system should pull data from a clinical system rather than require nurses and clinicians to collect and document data manually.

Clinical and administrative systems for managing patient information on an administrative level

Clinical systems are dependent on administrative data. The foundation of an integrated HIS is a master index developed around the most basic patient information with links to different clinical systems, and the clinical system contains the electronic patient record (EPR), diagnostic data, outcomes, and processing.

Electronic health record and patient health record

Open EHR aims to enable semantic interoperability for health information systems between various EHR systems in a non-proprietary format to prevent vendor lock-in. Knowledge concepts are stored outside the EHR as archetypes, which support the recording of clinical information. Archetype building blocks include instructions, evaluations, observations, and actions, and information built using these building blocks is stored in the EHR.

Subject- and task-based systems

Subject-based systems are related to patients or healthcare professionals in any type of healthcare organization. Task-based systems, on the other hand, are associated with particular tasks such as admission or discharge. Subject-based systems are often preferred, as they reduce data duplication. In a task-based system, the same subject could be related to various tasks, with basic information such as the patient's ID being duplicated across each task. In a subject-based system, this basic information is entered only once and flows with the subject through various tasks. For example, an EHR is a subject-based system.

Financial and clinical health information systems

These systems provide easy access to patient financial information, such as costs and payers, and they also aid in monitoring patient usage of different departments or services. Financial systems typically include invoicing capabilities as well as tools for following up on non-payments.

Decision Support Systems: Decision support systems convert data to clinically relevant information and present it in actionable form to clinicians, aiding in adherence to regulatory guidelines and best practices. These systems can give results for several data manipulations to mimic cognitive processing. For example, a decision support system may provide a list of medications for a particular condition appropriate for the patient's demographics, such as the patient's age and weight, as well as any comorbidities. Decision support systems can also facilitate next steps in the workflow, such as submitting a prescription to the pharmacy and scheduling a follow-up appointment for the patient.

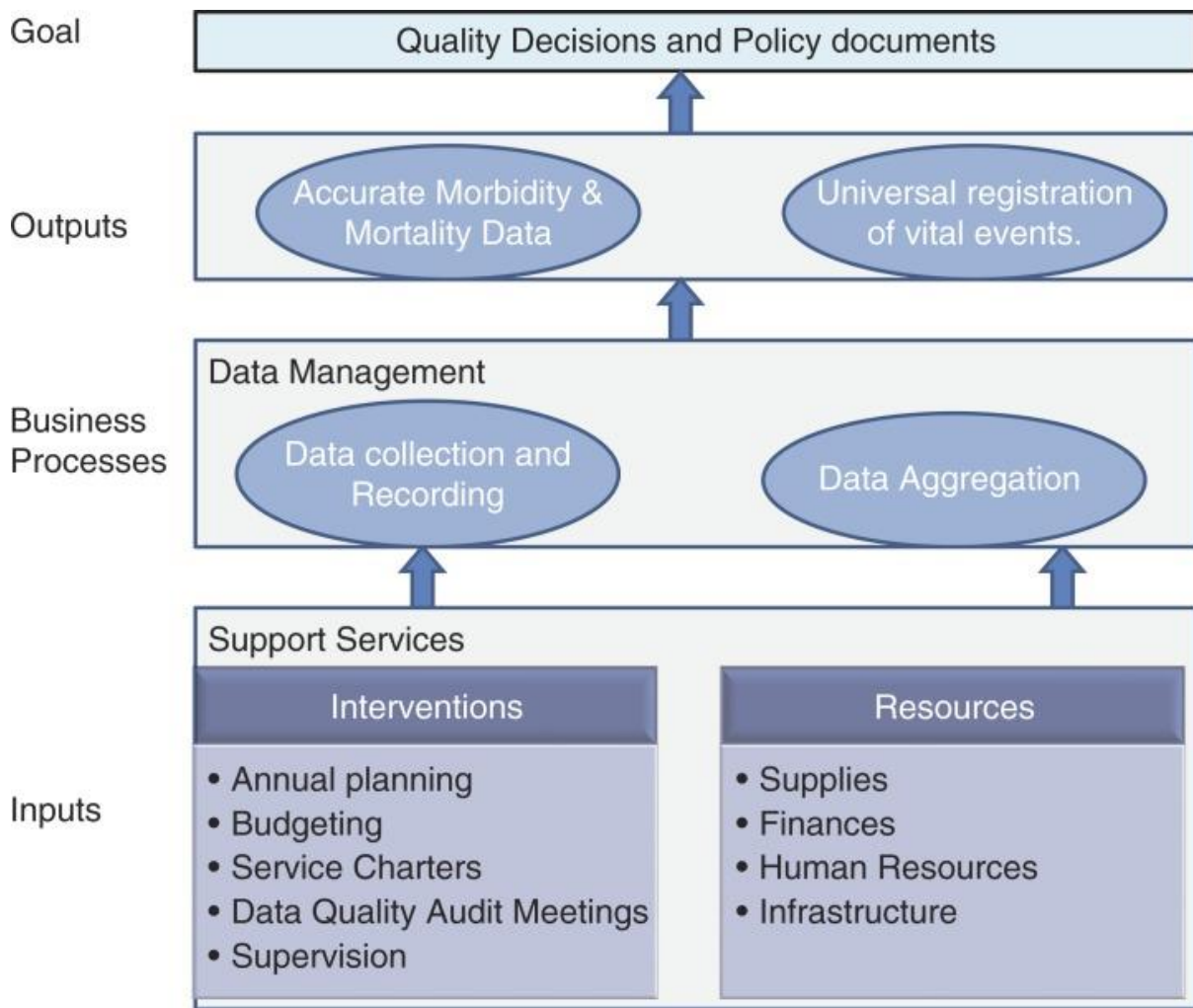
Benefits of health information systems

The healthcare industry relies on a massive amount of data to make decisions about patient care, facilitate the delivery of care, and handle the many complex administrative tasks that go on behind the scenes. Health information systems are valuable tools that aid clinicians and administrative personnel in ensuring a seamless patient experience from end-to-end. Other benefits include:

- Data analytics: HIS help to gather and analyze data to manage population health and reduce healthcare costs.
- Supports collaborative care: HIS facilitates the sharing of Public Health Information between providers and organizations, making it possible for patients to receive coordinated care from multiple providers while improving care delivery and patient outcomes.
- Cost control: By sharing information, HIS can eliminate duplicate testing and

- procedures, reduce time demands on staff (such as for sending paper copies of patient records), and reduce costly human errors.
- Population health management: Aggregating patient data can help to identify patterns and trends, predict or prevent outbreaks, identify at-risk populations, and more.
- Clinical decision support: Integrating a patient’s individual data and medical history with broader population data and research improves both diagnostics and treatment.

HMIS framework



Discussions

Health Management Information Systems (HMIS) are one of the six building blocks essential for health system strengthening. HMIS is a data collection system specifically designed to support planning, management, and decision making in health facilities and organizations.

MEASURE Evaluation worked in Ethiopia to implement a HMIS in the Southern Nations, Nationalities, and Peoples' Region (SNNPR) and Oromia. The following training materials were used to support implementation of the HMIS including data quality assurance and information use procedures, the electronic HMIS system for managing data processing, reporting, analysis and use; and the community health information

system (CHIS), which organizes information on individuals and families—information related to vaccines, family planning, maternal and child health, HIV treatment and support, and other services—and makes it available all in one place, such as a family folder.

Health management information systems help globally to develop the culture of evidence-based policy making to identify issues; inform the design and choice of policy; forecast the future; monitor policy implementation; and evaluation policy impact.

This review had tried to assess the utilization of health management information system at health centers level. In addition, the review had also tried to see the associations between utilization of HMIS and the basic socio-demographic variables such as level of education, salary, age, and year of services and some other important key factors which may affect the utilization of information at each level.

In various studies reviewed, based on the criteria set in the operational definition the utilization rate of HMIS was found at Ghana 10%, Uganda 20%, North Gondar Ethiopia 22.5% and the study conducted in Jimma Ethiopia (Abajebell, 2011; Adargie, 2007; Campbell, 1996; Peter, 2005; Wiley, 2008). The survey study conducted by Essential Services of Health for Ethiopia in Amhara regional state reported that utilization of information at district and health facilities level was partial and uneven (ESHE II, 2004). The increment in this study was due to frequent supportive supervision, provision of training and follow-up down to the health centers.

In our study those who had key indicators with charts; tables were more likely to be utilized health management information systems as compared to those who had no key indicators with charts, tables. This finding was supported study done in Jimma zone shows that units having charts on the prevalence of malaria is more likely to utilize health management information system (Abajebell, 2011). This might be due to the presentation of data becomes important; depending on the nature of the data and decisions to be taken, a table, graph or map may be most revealing of the situation (FMOH, 2007). Information display is helpful for clients, health professionals and managers to understand and keep in mind their status in their day to day activities (FMOH, 2013).

In our study, those who were filled the data format completely were more likely to be utilized health management information systems as compared to those who were not filled data format completely. Other literatures showed that where the incompleteness of Health Management Information System (HMIS) contributes to the failure to use data as the basis for informed decision making in planning and management at all level of health sectors (George, 2005; ESHE, 1995). To persuade health professionals to fill data at primary source of recording and reporting administrative levels need to clearly show the relevance of each column and space to be filled in light of their contribution to assist diagnosis, treatment, and counseling, continuum of care, program improvement and resource allocation. The possible justification for this might be the reason that complete information can be a base for making decision based on the available data as well as the department considers all the data as relevant to be used.

Those who had claimed consistency of data with register book, tally sheet and reporting formats were more likely to be utilized health management information systems than those who had claimed inconsistency of the reports. Data that is compiled in register and reporting forms should be accurate and reflect no inconsistency between what is in the registers and what is in the reporting forms at facility level. The cause of data discrepancy might be due to attributable to incompleteness of data, missing source documents, not understanding the definition of cases or data elements, data entry errors or data may not fall within the reporting period (FMOH, 2013).

Even though this study has identified many factors that associated with utilization of health management information systems in health centers it was not free of biases due to many data were stored manually that was increased missing data.

Information collected by the HMIS is vital for improving decision making by providing evidence as an input for managers at various level. But the data collected at the lower level rarely analyzed and used for the decision making and monitoring the activities. This is partly due to lack of capacity to do it or failure of system to encourage the lower level managers to do

evidence-based planning to improve quality of services.

Result

Based on the review and analyses in Hadiya zone among 4 hospitals, 61 health centers and 311 health posts in 13 rural districts and 4 town administrations, 83% of the health facilities fully implementing HMIS and 17% of the health facilities still need assistance for full implementation of the HMIS.

Challenges of health information systems

Health information systems must be both user-friendly – otherwise, staff simply won't use them – and cost-effective to run. They should also be able to use and interpret health data. However, achieving these goals has been challenging in the past, leading the industry to aim for interoperability – which is crucial for maximizing the benefits of HIS. Interoperability improves both the quality and use of health information, but traditional integration techniques are costly and time-consuming to implement.

Common challenges of the HMIS in Hadiya zone included:

- limited funding and inadequate human resources;
- irregular supply of data tools;
- lateral data collection by partners;
- lack of data analysis at the level of the data collection; and
- Lack of data use in decision making.

Conclusion

Health center units/departments had key indicators, completeness of data and consistency of data were predictors of utilization of health management information system. Therefore, in-service training and updating of staff involved in Health Management Information System (HMIS) at district, strengthening health information system inputs, timely and concrete feedbacks with establishment of functional Health Management Information System (HMIS).

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