


Chapter 13

Essential Characteristics of Health Information Systems

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ABSTRACT

In the evolving healthcare landscape, the adoption of Health Information System (HIS) is crucial due to the surge in chronic diseases globally. This chapter examines the key components of clinical HIS, emphasizing their role in enhancing healthcare delivery and patient care. Despite the potential benefits, the implementation of HIS faces challenges such as high costs, integration complexities, and data security concerns. However, the advantages of improved patient care, enhanced efficiency, and data-driven decisions highlight the indispensability of HIS in modern healthcare. Furthermore, this chapter presents a bibliometric analysis to assess the current research landscape on HIS. The analysis reveals trends, gaps, and the impact of HIS on healthcare delivery and patient outcomes. By providing a comprehensive overview of the components, benefits, challenges, and research landscape of clinical HIS, this chapter emphasizes the crucial role of these systems in transforming healthcare and improving patient care.

1. INTRODUCTION

Health Information System (HIS) is linked to the information made by hospital-based or community-based data sources to help make decisions in healthcare including areas like medicine, pharmacy, nursing,

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dentistry, and others (Health Metrics Network, 2009). Routine health facility data are collected at different levels of hospitals, primary healthcare services, and other facilities as soon as healthcare service is available to people. These data are used and changed at the health facility. Data collections, reports, and data histories are also sent at regular times to different stages of the health system, with more gathering, checking, and use at each level, like county, city, state, and country level (WHO, 2021).

Healthcare is the main issue for all countries, governments, and people. Every community needs reliable and good healthcare services that are a part of everyday life. Because of new ways to diagnose and treat diseases, and the presence of different healthcare teams, each with its own features, needs, and ways of working, healthcare is very complex (Kruse & Benea, 2018). So, using HIS is needed to keep healthcare organizations working well over time. Many HIS applications have been made to change paper-based systems into computer systems in the last few decades. Many health facilities around the world have started using HIS to share health information (Tian et al., 2019).

HIS helps to better control care, better coordination of information, accuracy, timeliness, and integrity of information, and the ability to look into information. These systems also lower the costs linked to medical mistakes and improve the right delivery of information, lasting care, and easy access to information for everyone in any place. This affects how patients and healthcare professionals talk to each other (Winter et al., 2018). The people who use HIS include not just doctors, nurses, technicians, and patients, but also private and government healthcare insurance, researchers, organizations for checking quality, public health organizations, and companies that make medical and pharmaceutical tools (Herout et al., 2019).

Information technologies in healthcare are a growing field where medical applications and technological solutions work together. These systems are the best tools for comparing, linking, and understanding patient data in the process of moving from information to knowledge. The main goal of a HIS is to speed up the recording of patient information and make the best decisions for diagnosis and treatment. HIS is the set of technologies used to get, process, analyze, and store patient data. Digital records of patients, also called Electronic Health Records (EHR), can also be shared among patients, healthcare professionals, and others through HIS over secure networks for better healthcare use and quality of care.

The global EHR market is expected to go up by 44% from 29.4 billion in 2021 to 42.2 billion in 2028 (IBM, 2022). However, most healthcare data is now stored in different systems, making it hard for healthcare providers to share information or even use it themselves. That means healthcare providers, researchers, and payers may only see a small part of the picture. To fill the gap, healthcare organizations need to create an ecosystem where devices, applications, and systems can work together and share healthcare information when needed. The last pandemic showed how important working together can be (IBM, 2022).

Healthcare is not just limited to the procedures done within facilities, but also includes all patient-oriented approaches that cover disease prevention, diagnosis, treatment, and therapy services outside hospitals and medical offices. HIS has been used to combine health-related data about people, devices, organizations, processes, and information systems within the healthcare setting. With HIS, it is possible to find knowledge from the large amounts of data collected before, during, and after clinical care. HIS can also provide many benefits by increasing the quality of medical services, reducing human errors, even making the workload of healthcare personnel lighter, and finally lowering data management and costs through e-health services like ePrescribing, telemedicine, and infoveillance, etc. (WHO, n.d.). To illustrate the complexity of HIS, Figure 1 is presented an example of an information flow chart, simulating how intricate a health information system can be.

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