Factors Inhibiting the Implementation of Electronic Medical Records in the Inpatient Department of Hospital X in Bandung

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Abstract: The development of the internet in the healthcare sector, particularly in the implementation of electronic medical records (EMR), aims to enhance the effectiveness of inpatient services at Hospital X in Bandung. The study employed a qualitative descriptive method, with data collected through field observations, literature reviews, and interviews with the head of the medical records department and six medical record staff members. The research findings indicate that the implementation of EMR at the hospital has been progressing well. However, some challenges were identified, such as the inefficiency of three registration staff members due to frequent computer or network (LAN) issues. Additionally, the transition to EMR has taken longer because the staff are still adjusting to the new system. As a solution, the study recommends regular maintenance of the infrastructure supporting EMR and continuous socialization and training programs for staff. These suggestions are expected to improve the effectiveness of EMR utilization at the hospital.

Keyword: Electronic Medical Records, Effectiveness, Inhibitors, Inpatient Care

INTRODUCTION

The application of information technology (IT) in healthcare is becoming a global trend as it provides significant benefits compared to the use of paper in the storage and retrieval of patient information. One of the increasingly popular health information subsystems in Indonesia is Electronic Medical Records. According to the Regulation of the Minister of Health of the Republic of Indonesia Number 24 of 2022 on Medical Records, advances in digital technology contribute to the digitization of health services, so that medical records are stored electronically in compliance with the principles of data security and confidentiality and information.

According to Herlambang (2016) Hospital is a health service system that broadly provides services for the community in the form of health services including medical services, and treatment services where the treatment is carried out through emergency, outpatient, and inpatient units. Health facilities implement electronic medical records (RME) to improve service quality, increase patient satisfaction, ensure more accurate documentation, reduce the risk of clinical errors, and speed up access to patient information. In addition, health workers

can utilize RME to record patient data and plan follow-up treatment, thus contributing to the achievement of optimal public health status (Widayanti et al., 2023).

Health information management must be done with increasingly innovative and efficient methods. In developing countries and some industrial sectors, the use of paper medical records is being reduced and replaced by electronic systems. The main goal is to speed up doctors' decision-making when diagnosing and treating patients. With electronic medical records, patients can feel more comfortable. For example, they no longer need to worry about storing and carrying their medical registration cards every time they visit a healthcare facility. Alternatively, the patient database can be easily accessed by simply mentioning their name or other identifiers (Lakhmudien et al., 2023).

The transformation of health services towards digital or electronic aims to simplify the tasks of medical personnel, optimize operational systems, support the achievement of patient health outcomes, reduce the potential for errors, and improve the overall quality of health services (Naurah et al., 2024). As explained by Sabarguna (2008), the basic features of RME are privacy / confidentiality (data security), integrity (error correction), authentification (access rights to information), availability (data availability), access control (how to regulate access to information), non-repudiation (transaction / information change).

A number of health care facilities still face obstacles in implementing electronic medical records. Obstacles are obstacles in the form of obstacles or a situation that is not desirable or preferred, can interfere with a person's psychological and psychological development, can cause difficulties both for yourself and others and need to be eliminated (Arifa, 2020). Effectiveness can be measured by the following indicators: volume of work, accuracy, timely information, cost (Amsyah, 2005).

Based on observations, the implementation of RME still has obstacles such as three officers being less effective at work, computer facilities or Local Area Network (LAN) which often errors, when making the transition to RME requires a long time because they are not used to it. This analysis aims to identify other factors that become obstacles in the implementation of electronic medical records.

Literature Review

The shift towards electronic medical records (RME) has raised concerns about who has access to patient information. While RME offers many advantages, security and privacy issues remain a concern for many parties involved. Addressing these risks is one of the crucial aspects of designing an RME, in order to build a suitable infrastructure for sharing health information. Issues related to data security, confidentiality, and privacy of patient information require special attention, as violations of these aspects can cause serious negative impacts on health outcomes. The growth in the amount of healthcare data managed and stored digitally is a hallmark of digital transformation. However, the complexity and dynamic nature of large healthcare datasets present challenges in terms of data processing, storage and analysis at scale (Husna & Ningsih, 2024).

According to research conducted by Franki & Sari (2022), there are several factors that influence system implementation. The human aspect includes two main factors, namely the use of the system by registration officers, nurses, and doctors, and the level of user satisfaction that has not been met because the system is still incomplete. The organizational aspect shows that the organizational structure does not yet have an official decision from the leadership, and the work environment still needs clarity in the division of main tasks and functions. Meanwhile, in the technology aspect, influencing factors include the quality of systems and information, and services that still experience problems, such as unstable internet connections.

The results of another study conducted by Putri et al. (2023) which states that economic factors are a barrier in the process of implementing RME, given the need for

considerable costs to implement electronic medical records. In addition, the high operational and maintenance costs are an obstacle in themselves, so not all health centers have the same financial capacity. In a study conducted by Rosalinda et al. (2021), revealed that one of the challenges in the implementation of Electronic Medical Records (RME) is that the standard operating procedures (SOPs) required for the implementation of RME are still in the process of being developed by management.

There are four main factors that usually become barriers for hospitals in implementing electronic-based medical records, namely: laws and regulations, infrastructure, costs, and human resources (HR) (Septiana, 2021). To optimize the implementation of electronic medical records, there are several important factors that need to be considered, namely: thorough planning, involvement of committed team members, and support from facility management, funders, and computer system developers (Hartati & Aini, 2023).

Juliantari's research (2023) showed that Ari Canti Hospital experienced several obstacles in the implementation of Electronic Medical Records (RME) in outpatient services, such as accidental downtime, network disruptions, and system errors due to use outside the technical guidelines. Although RME can reduce cost issues with paperless management and minimize space requirements, optimization of its implementation can be done by using the HOT-Fit method to evaluate the implementation process.

According to research by Risnawati and Purwaningsih (2024), the implementation of electronic medical records at the Karang Asam Health Center, Samarinda, faced several obstacles. The obstacles included low staff readiness, the absence of information technology personnel, and the lack of medical record staff with RMIK educational backgrounds. There were problems such as slow internet connections, computer equipment that did not meet specifications, as well as disruptions to the server and special SOPs related to the use of electronic medical records were not yet available. In addition, budget constraints hindered the optimization of the implementation of the electronic medical record system at the facility.

According to the findings of Rusdi et al. (2024), the implementation of electronic medical records still faces various obstacles. In terms of human resources, the lack of socialization and training caused some officers to have difficulty operating the system. On the machine aspect, limited computer equipment and recurring technical problems slowed down operations. The implementation method is also not yet optimal because SOPs and policies are not yet strong. In addition, many medical record files are still stored in paper form. Environmental factors were also influential, with most patients still filling in data manually and system access not yet clearly restricted to certain users.

METHOD

This research adopts a qualitative approach, which is in accordance with the philosophy of postpositivism, to study natural object conditions where the researcher acts as an instrument. The data collection methods used include triangulation, with a focus on understanding meaning, uniqueness, construction of phenomena, and determination of patterns (Sugiyono, 2017). The population in this study consisted of all medical record officers at Hospital X, Bandung City, in March 2024, and sampling was carried out using simple random sampling techniques, so that each member of the population had the same opportunity to be selected (Notoatmodjo, 2010).

The sample consisted of 6 medical recorders, based on a field-tested sampling approach. Data collection techniques included observation, interviews, and literature study. Observation in this study was participatory, where the researcher was directly involved in the X Hospital Medical Records Work Unit. Interviews were conducted as a two-way interaction process between the interviewer and the respondent (Eryando, 2017), while literature studies were conducted through the review of books and literature related to the topic under study (Nazir, 2013).

RESULT AND DISCUSSION

In January 2024, Hospital X in Bandung initiated the transition from manual to electronic medical records, particularly in outpatient and inpatient services. This move is expected to improve the effectiveness and efficiency of patient care processes.

The privacy and confidentiality of information in Electronic Medical Records (EMR) at Hospital X in Bandung are not fully guaranteed. The initial page of the EMR displays three main fields: Old/New option, Employee ID (NIP), and Password. Registered staff can select the "Old" option and enter the required data. However, the presence of the "Remember Me" feature allows the NIP and password to be automatically saved, which potentially opens access to unauthorized parties. This is evident in the display of the first page of the EMR at Hospital X, indicating a security gap and diminishing the protection of patient privacy.

The use of computerization in medical records must implement a system that minimizes the risk of information leakage. Each user is required to have a Personal Identification Number (PIN) and password, or can use a fingerprint or iris scanner as a method of authenticating their identity (Setyawan, 2017). This is also supported by the results of Husni's research (2022) which states that the security aspects of using electronic informed consent include secure data storage in the server database. Each officer in various service units is given a username and password to access the system according to their responsibilities. Electronic device security consists of two categories, namely software and hardware. For software, the security measures implemented include periodic data backups, installation of antivirus software, and implementation of firewalls and encryption. As for hardware, although security efforts have been made, there are still many that do not meet the specified standards. In the context of privacy, there is a Standard Operating Procedure (SPO) that regulates the use of electronic informed consent, ensuring that each user can only access the system in accordance with the authority granted through a username and password.

To increase users' awareness of data security, it is important to socialize the risks posed by exchanging usernames and passwords with other parties. In addition, users also need to be reminded of the obligation to change passwords regularly, at least every month. The appointment of a person in charge of electronic medical record management is also necessary to ensure the implementation of supervisory duties on a daily basis (Rahma & Suryani, 2024).

The inpatient registration process at Hospital X in Bandung City is carried out by entering patient data into the Electronic Medical Records (RME) system through digital forms. This form includes several categories of important information, namely: Patient Data which includes the old medical record number, name, address, domicile, region, education, occupation, place of birth, date of birth, age, daily language, ethnicity, ID card number, gender, marital status, and parents' name and occupation; Patient Responsible Person Data which includes name, relationship to the patient, address, region, occupation, age, and telephone number; Patient Payment Data consisting of payment method, referral number from the puskesmas, referral date and diagnosis, BPJS card number (for non-general patients), and SEP (Participant Eligibility Letter) number; and Patient Examination Type which records the name of the doctor treating the patient.

In the aspect of integrity of Electronic Medical Records (RME) in Hospital X, Bandung City, the data is considered to be maximized because this system is able to keep a clear history of data changes. The authentication system implemented uses the Employee Identification Number (NIP) along with a username and password for each user, aiming to limit access only to authorized parties. However, despite the password-based authentication, users felt that this security system was still not optimal. One issue is the "remind me" feature at login, which can make it easy for unauthorized parties to access accounts without permission. This suggests the need for improved access control in RME to further ensure the security of patient data and prevent unauthorized access.

Authentication is closely related to information access, where in Hospital X, not all health workers have the same access rights to enter or change data. Each health worker has a different level of access, tailored to their duties and responsibilities. This is supported by the Regulation on access to electronic medical records which must be systematically structured to restrict access of unauthorized individuals, in order to prevent potential alteration, modification, or deletion of health data. One approach that can be implemented is to establish access in read-only mode. In addition, the system must be equipped with features that are able to detect and record information regarding "what was changed", "who made the change", and "when the change occurred" (Hatta, 2017).

This is in line with the results of Maliala & Suryani's research (2024) which showed that the security, integrity, and availability aspects of the Electronic Medical Records (RME) system at Hospital X are already at a good and adequate level, as evidenced by the automatic log out feature that increases data security. In addition, staff showed improvement in capabilities and skills, which contributed to operational effectiveness and efficiency.

According to research conducted by Rusdi et al. (2024) revealed that evenly distributed computer procurement can reduce the need for manual filling of medical records. In addition, access rights on the computer must be set with a system of one access right for one user, which is adjusted to the responsibilities of each officer.

In the aspect of data availability at Hospital X in Bandung City, the implementation of Electronic Medical Records (RME) has not reached its optimal potential. Although RME has been adopted, the hospital still relies on paper medical record documents, especially for outpatients referred for hospitalization. This reliance hinders electronic data accessibility and efficiency. Data availability in RME is crucial to ensure that patient information can be accessed at any time, especially in emergency situations or when making urgent clinical decisions. Supported by Aulia & Sari (2023), staff experienced difficulties in adjusting to the electronic-based Electronic Medical Record (RME) system. Technical glitches in the system and errors in data collection for reporting are additional obstacles. In addition, the need for hardcopy forms that have not been fully met in the RME system also complicates this adaptation process.

The implementation of the Electronic Medical Records (EMR) system at Hospital X in Bandung is expected to enhance data availability, allowing the hospital to fully transition from paper documents to a more efficient and secure electronic system. The access control aspects within the EMR have been well established, with clearly defined access rights for each user according to their roles and responsibilities, ensuring that only authorized personnel can access and modify medical information. Additionally, the existing non-repudiation system ensures that any changes to information can be tracked and accounted for.

However, the transition from manual to electronic records faces several challenges, including technical obstacles related to infrastructure that affect the efficiency of staff work, particularly during patient data entry. These disruptions highlight the need for improvements in technology infrastructure, such as the maintenance of stable computer networks and hardware. With these enhancements, it is hoped that the transition will proceed more smoothly and improve the quality of care.

The implementation of the Electronic Medical Records (EMR) system can also enhance the efficiency and quality of information, providing easier access for doctors and nurses to make accurate medical decisions. Although there are operational costs associated with the system change, these costs are comparable to the management of manual medical records, making this decision both sound and beneficial without adding financial burdens. Overall, the adoption of the EMR system adds significant value to the hospital, leading to improvements in effectiveness, efficiency, and the quality of care provided.

CONCLUSION

The implementation of Electronic Medical Records (EMR) at Hospital X in Bandung has brought significant improvements in the efficiency and effectiveness of inpatient services. The system has enhanced access to patient information, streamlined documentation processes, and reduced the risk of clinical errors. However, the transition to EMR has not been without challenges. Issues such as inefficient performance by some registration staff, technical difficulties with computers and network (LAN), and slow adaptation to the new system have hindered the optimal use of EMR. These challenges highlight the need for continuous training, effective socialization programs, and adequate support to help staff adapt to the digital workflow.

To ensure the successful implementation of EMR, it is essential to address factors related to organizational structure, human resources, and technological constraints. Regular maintenance of EMR infrastructure, efficient troubleshooting mechanisms, and ongoing evaluation of system performance are crucial. By focusing on these aspects, Hospital X can enhance the reliability and usability of the EMR system, leading to better patient care, accurate documentation, and seamless access to medical information. Consistently improving EMR adoption will contribute to a more efficient, effective, and integrated healthcare service in the long run.

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