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Analysis of the Implementation of Electronic Medical Records for Outpatient Registration at Dustira Hospital

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Abstract: This research is based on the importance of implementing Electronic Medical Records (EMR) in the digitalization of healthcare services, particularly in the outpatient registration process. The purpose of this study is to analyze the implementation of EMR in outpatient registration, examine the role of Medical Recorders, and identify obstacles and possible solutions. The research method used is descriptive with a qualitative approach, which includes direct observation, in-depth interviews, and analysis of SOP documents and flowcharts, as well as a literature review of related scientific journals and books published in the last decade. This literature review is used to strengthen the theoretical basis, compare the results obtained in the field with previous research, and develop a state of the art framework. The results of the study indicate that the EMR system has been connected at all stages of registration, starting from checking patient data, inputting information into the Hospital Management Information System (SIM-RS), to printing the Participant Eligibility Letter (SEP). The role of Medical Recorders is very important in ensuring the smooth registration process and the accuracy of patient data. However, several issues arose during the system's implementation, including technical issues with the SIM-RS, an unstable network, and a lack of technical training for Medical Recorders. Based on the findings, it is recommended to strengthen the technology infrastructure, improve the SIM-RS system, and implement regular training and digital literacy programs for Medical Recorders to support the creation of effective, accurate, and long-term outpatient registration services.

Keyword: Electronic Medical Records, Outpatient Registration, SIM-RS, Medical Records, Dustira Hospital.

INTRODUCTION

The development of information technology in the healthcare sector has driven the transformation of health service data recording and management systems from manual to electronic. One important implementation is the Electronic Medical Record (EMR), which plays a role in supporting efficiency and accuracy in patient data management, particularly in the outpatient registration process. This system not only improves service speed but also minimizes data entry errors and supports hospital management reporting and analysis. EMR

has become a strategic tool in healthcare management because it enhances efficiency, accuracy, and patient data integration across service units (Sucipto & Sadikin, 2025). Davina emphasizes the importance of a socio-technical approach in EMR implementation, which combines readiness of digital infrastructure with the behavioral adaptation of healthcare personnel. When these two elements align, the patient registration process becomes more efficient, faster, and less prone to errors (Davina, 2024).

In Indonesia, the implementation of Electronic Medical Records has become part of the Ministry of Health's strategic policy through the Regulation of the Minister of Health of the Republic of Indonesia Number 24 of 2022 on Medical Records. However, implementation across health facilities still faces various challenges, including infrastructure readiness, human resource capacity, and understanding of standard operating procedures (SOPs) that support electronic systems. Medical record officers play a central role in operating and ensuring that the system runs according to the established workflow. At Dr. Soetomo General Hospital, the implementation of an electronic information system for outpatient registration has shown positive results, including accelerated registration processes and reduced queues. This indicates that the EMR system directly affects the quality of frontliner services (Wulansari, 2021).

Several studies show that the success of EMR implementation is strongly influenced by infrastructure readiness, continuous training, organizational culture, management support, and internal policies within hospitals. Research conducted by Rahmadiani and her team (2022) reveals that key factors determining the success of EMR in Indonesia include information technology system integration, early user involvement, and continuous process evaluation. Furthermore, Davina (2024) stresses that the socio-technical approach, which integrates technological readiness with human behavioral adaptation, is essential. Another literature review by Istiqamah (2025) also shows that systems implemented without active user participation and a deep understanding of standard operating procedures tend to face difficulties during implementation. In terms of policy, research by Hossain et al. (2025) indicates that EMR implementation in Indonesian hospitals encounters substantial cultural barriers, particularly in early stages such as outpatient registration. Aqid et al. (2024) examined how the success of electronic medical record systems depends on the speed of data entry methods and the skills of human resources involved in the registration process. Research by Torab-Miandoab et al. (2024) developed an interoperability framework emphasizing the need for connectivity between multiple systems in digital registration. Therefore, this study highlights the importance of analyzing the implementation of the electronic medical record system in the registration process of general hospitals such as Dustira Hospital.

Dustira Hospital, as a military hospital that also serves the general public, has adopted an Electronic Medical Record system in its outpatient registration process. However, the effectiveness and consistency of its implementation still require in-depth analysis to determine whether the workflow aligns with existing SOPs and whether the system supports the work efficiency of medical record officers. This evaluation is essential to support data-based decision making. The implementation of the EMR system in this section plays an important role in expediting the registration process, preventing data duplication, and strengthening accurate clinical documentation (Yunita et al., 2025). However, challenges still exist in the implementation of the EMR system at Dustira Hospital, which remains unstable due to inconsistent network connectivity and frequent system errors during outpatient registration services.

This study aims to analyze the implementation of the Electronic Medical Record in the outpatient registration process at Dustira Hospital. The research focuses on the alignment of system implementation with the applicable flowchart and SOPs, as well as its impact on the work efficiency of medical record officers. This study also contributes to the development of hospital information systems oriented toward healthcare quality and patient safety, in line with global e-Health development trends.

METHOD

This study uses a descriptive qualitative approach aimed at obtaining an in-depth understanding of the implementation of the Electronic Medical Record in the outpatient registration process at Dustira Hospital. The descriptive qualitative approach is considered relevant because it can explain phenomena naturally, contextually, and in accordance with field realities without manipulating variables (Sugiyono, 2019). This study focuses on evaluating the alignment between the implementation practices of the electronic system and the flowchart and Standard Operating Procedures (SOPs) established by the hospital.
Steps of the Descriptive Qualitative Research Methodology:

1. Identification of the Problem and Determination of the Research Focus

The researcher begins by identifying existing problems in the field through preliminary studies and literature review, then determines the core of the research related to EMR implementation and the role of Medical Record officers.
Research Location and Time

This study was conducted at Dustira Hospital in Cimahi, West Java. The research process took place from March to May 2025 and was adjusted to the operational schedule of the outpatient registration unit.

2. Research Subjects

The research subjects are outpatient registration officers who serve as Medical Record personnel. Subject selection follows several criteria, including: Head of the Medical Record Unit, individuals directly involved in the use of the Electronic Medical Record system, and those willing to participate as research informants. Informants were selected using purposive sampling, meaning that they were intentionally chosen based on their relevance and direct involvement in the electronic registration process (Moleong, 2021).

Data Collection Techniques

Data were collected using four techniques:

a. Observation

The researcher directly observed outpatient registration activities carried out by Medical Record officers, focusing on workflow and the use of the EMR system. Observations were guided by SOPs and flowcharts.

b. Interviews

Semi-structured interviews were conducted with informants (Medical Record officers) to explore their experiences, understanding, constraints, and perceptions regarding EMR implementation. The interview themes included workflow, use of the Hospital Information System (SIM-RS), technical obstacles, and human resource readiness.

c. Document Analysis

The researcher analyzed supporting documents such as registration flowcharts, SOPs, system user manuals, and EMR implementation reports within the hospital.

d. Literature Review

The researcher reviewed sources from scientific journals, books, and previous studies related to EMR use and outpatient registration systems, particularly in Indonesia and developing countries. This literature review was used to strengthen the analysis, compare field findings with previous studies, and formulate the state-of-the-art framework.

Data were analyzed using thematic analysis, consisting of data reduction, data presentation, and conclusion drawing (Miles and Huberman, 2014). Data reduction was carried out by selecting significant information from interviews and observations. The reduced data were then grouped into central themes relevant to the research objectives. Conclusions were drawn through analysis of findings and comparison with standard procedures and hospital documents. To ensure the validity of the research results, triangulation techniques were used by comparing data from interviews, observations, and documentation.

RESULTS AND DISCUSSION

Based on the observations, the outpatient registration workflow generally follows the stages outlined in the Standard Operating Procedures (SOPs), starting from patient identity verification, data entry into the EMR system, selection of the destination clinic, and printing of the queue number and control card. All these processes are carried out electronically through the integrated hospital information system. However, in certain situations—such as when the system experiences technical issues or when the network connection is unstable—the registration process is still performed manually using paper forms as a temporary solution.

The results of interviews with Medical Record officers show that most of them feel that the EMR system has made their work easier. The system is considered efficient in accelerating the registration process and minimizing the risk of data entry errors. Nevertheless, they also acknowledged several technical obstacles, such as slow system access during peak hours and a limited number of computers available at the registration counters. One informant also stated that the initial training on the use of the EMR system was conducted only once and was not sufficient to address various real-world situations encountered in daily operations.

Document analysis of the flowchart revealed that the ideal registration process should include a patient data verification stage before the queue card is printed. However, observations indicated that in practice, verification is often performed simultaneously with or even after the control card printing, due to time efficiency considerations and the high number of patients that need to be served. Although this difference appears minor, it indicates potential discrepancies between documented procedures and actual practices in the field.

Overall, the findings of this study illustrate that the implementation of the Electronic Medical Record in the outpatient registration process at Dustira Hospital has generally been well executed and supports the work efficiency of Medical Record officers. The system helps facilitate administrative tasks and speeds up patient service flow. However, several technical challenges and minor inconsistencies between practice and procedural documents remain, and these need to be addressed by hospital management to ensure that the system operates more optimally and in accordance with established service standards.

1. Outpatient Registration Flow Based on the SOP

Based on the SOP document titled “Outpatient Registration Flow for JKN, General, and Contractor Patients”, the outpatient registration process at Dustira Hospital consists of several stages in Figure 1 and Figure 2.

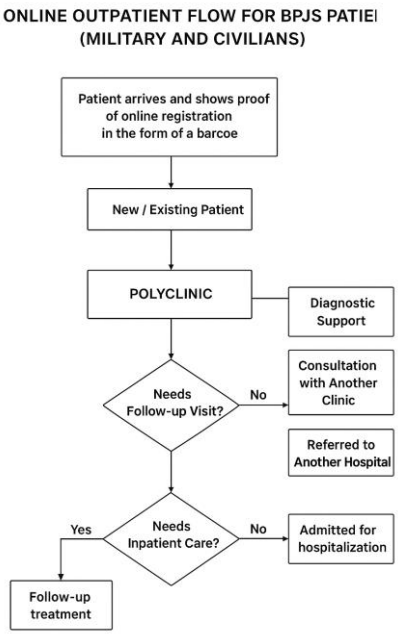

Figure 1. Online Outpatient Flow For BPJS Patient

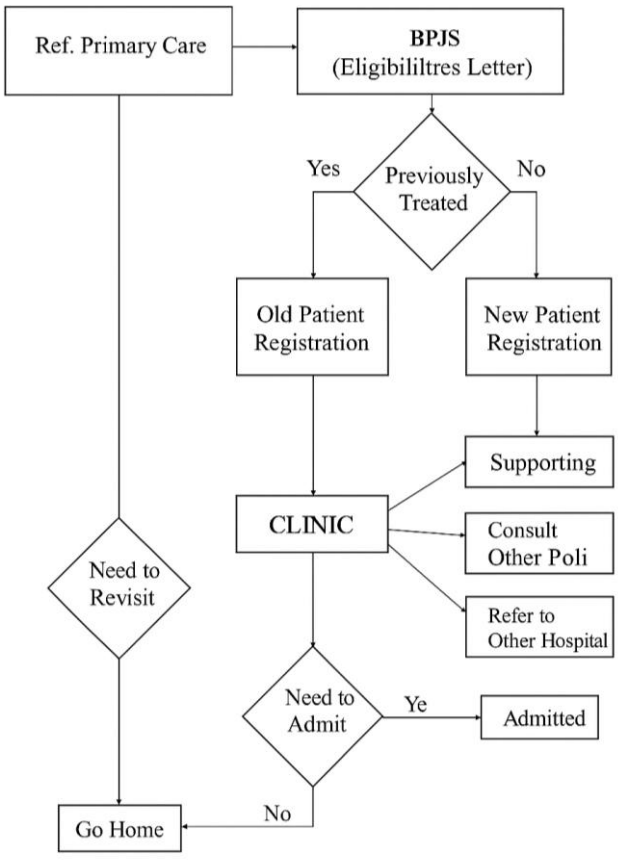

Figure 2. On-Site Outpatient Flow of BPJS

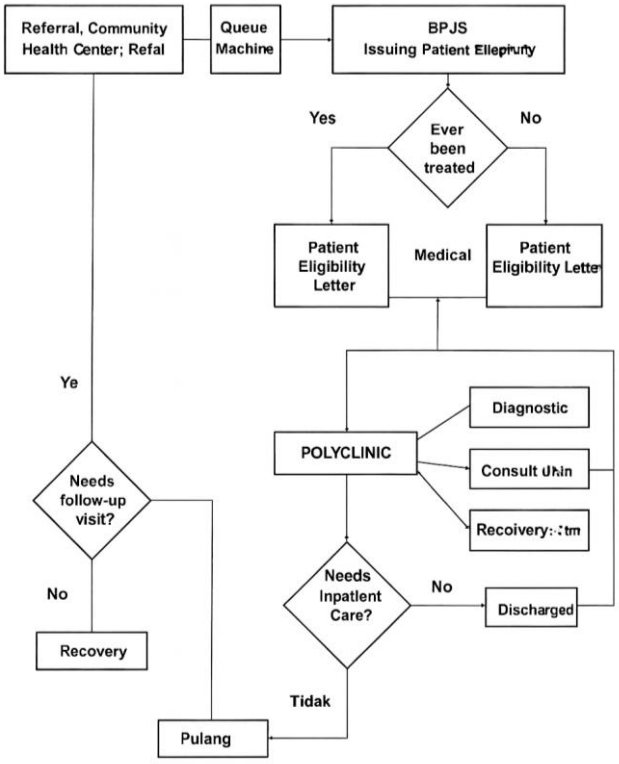

Figure 3. On-Site Outpatient Flow of BPJS and Contractor

2. Implementation of Electronic Medical Records in the Registration Process

Based on observations and analysis of the SOP, it was found that the EMR system has been used for:

a. Registration of New/Returning Patients: conducted through the Hospital Information System (SIM-RS), with data entry performed digitally and automatically connected to the billing system and SEP.
b. Digital Document Validation: such as BPJS cards, referral letters, and ID cards, which undergo a scanning process and are stored in electronic format.
c. Automatic Creation of KIB and Medical Records: when a patient is registered for the first time.
d. Data Synchronization Between Units: after the registration process, the data can be immediately accessed by the intended polyclinic.

However, this implementation is not yet fully efficient. Several issues are still found, such as slow system access during peak server load and a lack of technical training for newly recruited Medical Record officers.

3. The Role of Medical Record Officers in Supporting the Digital System

Medical Record Officers play a crucial role in ensuring the smooth operation of the EMR system. Based on interviews and observations of several officers in the outpatient registration unit, which consists of 16 staff members:

a. They are responsible for the accuracy of patient data, including entering identity information and initial diagnoses.
b. They perform fingerprint scanning and validation of the Participant Eligibility Letter (SEP).
c. They act as system coordinators between verification, billing, polyclinic, and pharmacy units.

However, field findings show that the implementation of EMR at Dustira Hospital actually provides many tangible benefits for Medical Record Officers. The system simplifies their work because the registration process becomes faster and more integrated with other units

such as polyclinics, pharmacies, and billing. Patient data accuracy is also better maintained, duplication risks can be minimized, and data security is improved through the centralized system. Therefore, although human resource readiness is often identified as a barrier in various studies, at Dustira Hospital the implementation of EMR has proven to enhance the operational efficiency of Medical Record Officers and improve the quality of patient data manageme

CONCLUSION

Based on the research conducted, the implementation of electronic medical records at Dustira Hospital has been carried out through the SIM-RS system, which covers the entire outpatient registration process, starting from data verification, identity entry, SEP printing, to the integration of information with the polyclinic and pharmacy units. The role of medical record officers is crucial, as they are responsible for data accuracy, electronic document management, and ensuring smooth communication between service units. Although this system offers convenience and efficiency, several challenges remain, such as system delays during high load, limited technical training for newly hired medical record officers, and insufficient supporting infrastructure.

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