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The Impact of Electronic Medical Record Implementation on Patient Waiting Time at Outpatient Clinics of Dr. Harjono S. Regional Hospital, Ponorogo

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Abstract. *The implementation of Electronic Medical Records (EMR) in healthcare facilities is one of the digitalization strategies aimed at improving efficiency and accelerating administrative processes. This study aims to determine the impact of EMR implementation on patient waiting times in several outpatient clinics at Dr. Harjono S. Regional Hospital, Ponorogo. This research employed a descriptive qualitative approach using observation and interviews with staff in five clinics: Orthopedics, Obstetrics and Gynecology, ENT, Psychiatry, and Pediatrics. The analysis focused on comparing patient waiting times before and after the use of EMR. The results show that waiting times for returning patients decreased significantly due to quicker data access. However, waiting times for new patients remained relatively high due to the complexity of the data input process, including the entry of phone numbers and patient identification. Overall, EMR has had a positive impact by speeding up services and simplifying patient data retrieval. Nonetheless, simplifying the data input process for new patients and enhancing operator training remain necessary*.

Keywords: *Clinics; Electronic; Medical Record; Patient; Waiting Time.*

1. BACKGROUND

Hospitals are healthcare service institutions that provide inpatient, outpatient, and emergency services, and are responsible for recording and managing patient health data. This data is documented in medical records, which serve as a critical foundation for making accurate medical decisions.

Along with the advancement of information technology, Electronic Medical Records (EMR) have begun to be implemented in various healthcare facilities to replace manual systems. EMR enables faster, more accurate, and integrated patient data recording, thereby improving service efficiency and quality. The government, through the Ministry of Health, is promoting the nationwide acceleration of EMR implementation through integration with the SATUSEHAT platform, with a full implementation deadline set for December 31, 2024.

However, according to data from PERSI (Indonesian Hospital Association), out of approximately 3,000 hospitals in Indonesia, only 50% have implemented EMR, and only 16% are managed properly. This indicates a low level of awareness and readiness among hospitals to adopt digital systems, mainly due to technical challenges, lack of training, and resistance to change.

RSUD Dr. Harjono S. Ponorogo is one of the hospitals in East Java that has implemented a Hospital Management Information System (SIMRS) since 2011 and has begun utilizing Electronic Medical Records (EMR) across various service units, including outpatient

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clinics. However, preliminary studies indicate that challenges still exist in its implementation, particularly in the Internal Medicine and Cardiology Clinics. A prominent issue is the lack of discipline among medical personnel in filling out EMRs, which leads to delays in service processes and affects patient waiting times.

Long waiting times can decrease patient satisfaction and reduce the operational efficiency of outpatient clinics. Therefore, an evaluation of EMR implementation is needed as part of the effort to improve service speed. This study aims to analyze the impact of electronic medical record implementation on patient waiting times in the outpatient clinics of RSUD Dr. Harjono S. Ponorogo, so that the results can serve as a basis for policy-making in improving the quality of digitally based healthcare services.

2. THEORETICAL REVIEW

Electronic Medical Records (EMR) are digital systems used to record, store, and manage patient health information in a computerized manner. EMRs include patient identification data, medical history, examination results, medical procedures, treatments, and follow-up plans. According to the Ministry of Health (2023), EMRs play a vital role in administrative, medical, legal, educational, and research aspects.

The advantages of EMR over manual medical records lie in faster data access, reduced risk of errors, improved coordination among medical personnel, and enhanced service efficiency. EMR implementation is also part of the national health system's digital transformation strategy, particularly through integration with the SATUSEHAT platform.

Patient waiting time refers to the interval between the moment a patient registers and the time they receive their initial medical service. Prolonged waiting times can negatively impact patient satisfaction, service quality, and the operational effectiveness of the hospital. According to Fitri Ayu Rachmawati (2023), the implementation of EMR has been proven to reduce waiting times at various stages of service, such as doctor consultations and pharmacy services.

Several previous studies have shown that the use of EMR has a significant impact on accelerating patient service workflows. A study at Hermina Hospital Solo recorded a decrease in waiting time from 200.21 minutes to 140.88 minutes after EMR was implemented. Similarly, the digitalization of the radiology system at PKU Muhammadiyah Hospital Yogyakarta, which is integrated with EMR, successfully reduced the waiting time for emergency (cito) examinations dramatically (Kuncara, 2025).

However, the effectiveness of EMR largely depends on the discipline of medical personnel, the availability of technological infrastructure, and proper system management. Disorganization in EMR entry can lead to service delays and increased patient waiting times, as observed in the preliminary study conducted at RSUD Dr. Harjono S. Ponorogo.

Therefore, examining the relationship between EMR implementation and patient waiting times is essential to determine the extent to which this digital system impacts service efficiency in hospital outpatient clinics.

3. RESEARCH METHOD

This study employs a descriptive qualitative approach aimed at evaluating the impact of Electronic Medical Record (EMR) implementation on patient waiting times in the outpatient clinics of RSUD Dr. Harjono S. Ponorogo. According to Sugiyono (2016), qualitative research is a method oriented toward meaning and context, where the researcher serves as the main instrument, and data is collected through interviews and direct observation. The analysis is based on the PIECES framework (Performance, Information, Economy, Control, Efficiency, Service) to assess aspects such as workflow efficiency, information quality, system control, and patient satisfaction with the provided services.

This research was conducted in March 2024 at RSUD Dr. Harjono S. Ponorogo, located at Jl. Laksamana Yos Sudarso, Segading, Pakunden, Ponorogo District, Ponorogo Regency, East Java. The researcher employed the PIECES framework as the basis for analysis, which encompasses six key aspects in evaluating the performance of information systems, particularly in the context of digital-based healthcare services.

The population in this study includes all healthcare workers and patients at the outpatient clinics of RSUD Dr. Harjono S. Ponorogo who are directly or indirectly involved in the implementation of Electronic Medical Records (EMR). Due to time and resource constraints, the researcher used purposive sampling to select participants choosing respondents deemed to have relevant information related to the research focus. The sample consisted of 1 IT staff member, 1 head of medical records, 1 staff member from each clinic, and 20 patients from various clinics.

To enhance data validity, this study employed source and theoretical triangulation. Source triangulation was conducted by combining the results of interviews, observations, and documentation. Theoretical triangulation involved comparing field findings with relevant theories, such as information system efficiency theory, public service management, and the

concept of waiting time in healthcare services. This approach aims to strengthen the interpretation of results and provide deeper analytical insight.

The sampling technique used in this study was a non-probability sampling approach, specifically purposive sampling, which involves the deliberate selection of samples based on specific criteria. This technique is suitable for qualitative research as it allows researchers to reach informants who genuinely understand the context being studied.

The variables examined in this study consist of independent and dependent variables. The independent variable is the implementation of Electronic Medical Records (EMR), which refers to the digital system used for recording patients' medical data in the outpatient clinic. Meanwhile, the dependent variable is patient waiting time, defined as the duration from patient registration to the receipt of medical services.

The types of data used in this study consist of primary and secondary data. Primary data were obtained directly through interviews with the Head of Medical Records, clinic staff, IT personnel, and patients, as well as from observations of service flow in the outpatient clinic. Meanwhile, secondary data were gathered from journals, books, and relevant online sources that support the analysis of EMR implementation and its impact on patient waiting times.

The instruments used for data collection were interviews and observations. Semi-structured interviews were conducted to gather in-depth information from each respondent. Direct observation was carried out in the outpatient clinic to monitor service processes and the use of the EMR system by medical personnel. These two methods complement each other to obtain comprehensive and valid data.

Data analysis was conducted through the processes of data reduction, data presentation, and conclusion drawing. The data obtained from interviews, observations, and documentation were categorized into themes based on the PIECES framework. This process aimed to gain a comprehensive understanding and to explain the relationship between the implementation of Electronic Medical Records (EMR) and patient waiting time in depth.

This study also adhered to research ethics principles, including informed consent, anonymity, and confidentiality. Respondents were given an explanation of the research objectives and were asked to sign a consent form if they agreed to participate. Respondents' names were not included in the research report, and all information provided was kept confidential and used solely for academic purposes.

4. RESEARCH RESULTS

The Use of Electronic Medical Records (EMR) at RSUD Dr. Harjono S. Ponorogo

Interviews with polyclinic staff, IT personnel, and the head of the medical records department revealed that RSUD Dr. Harjono has implemented Electronic Medical Records (EMR) across all outpatient clinics as part of its digital transformation efforts. The use of EMR runs smoothly, especially in the Orthopedic, Pediatric, ENT, Psychiatric, and Obstetrics & Gynecology clinics. Medical staff are generally accustomed to operating the system, making medical record documentation a routine part of the service flow.

The main obstacle identified is the lengthy data entry process for new patients due to the large number of required fields, such as personal identity and phone number. Nevertheless, the e-prescription feature, which is directly integrated with the pharmacy installation, has proven effective in speeding up the medication retrieval process, thereby reducing queues at the pharmacy. Patients have also noticed significant improvements in service quality, particularly in reduced waiting times, more efficient data retrieval, and better preparedness of doctors during anamnesis, as the patient's medical history is readily available in the system.

The results of interviews with 20 patients support these findings. Most patients stated that services now feel faster compared to before the implementation of the EMR system. They no longer experience long waits due to lost or misplaced physical records. Staff can easily access patient data in real time, making the service more orderly, efficient, and professional. Patients feel more respected because doctors appear to understand their condition from the outset.

Factors Influencing Changes in Patient Waiting Time

The implementation of Electronic Medical Records (EMR) has had a tangible impact on service efficiency, particularly in reducing patient waiting times in the outpatient clinics. Interviews with medical personnel and 20 patients revealed that the registration process has become faster, especially for returning patients. However, new patients still require more time due to the extensive identity data input process. Other influencing factors include system speed and network stability, which generally perform well but may occasionally experience disruptions.

Operator proficiency in using the system is also a crucial factor. Staff who are experienced and familiar with the EMR can complete data input quickly, while new staff may require more time. System integration between registration, medical records, and outpatient clinics also accelerates the service flow, as patients no longer have to wait for physical documents to be transferred manually.

Overall, the main barrier to wait time efficiency does not lie in the EMR system itself, but rather in administrative aspects, particularly when handling new patients. Therefore, further strategies are needed, such as integrating population or BPJS (national health insurance) data to streamline the registration process.

Discussion

EMR Implementation and Service Effectiveness

The use of Electronic Medical Records (EMR) at RSUD Dr. Harjono has generally succeeded in improving the quality of healthcare services. Interview and observation results show that medical documentation has become more efficient, doctors can immediately access complete patient data, and the medication dispensing process has been expedited through the e-prescription feature. According to Rubiyanti (2023), EMR is a system capable of accelerating the diagnosis and treatment process, as patients' medical information is stored digitally and in a structured manner. This aligns with Ministry of Health Regulation No. 24 of 2022, which emphasizes that EMR is a solution to improve the effectiveness and efficiency of patient data management.

The data input process for new patients remains a significant challenge, as it requires more time and accuracy. Solutions such as integration with the population administration system (Dukcapil) or the BPJS database could help significantly reduce registration time.

Factors Influencing Waiting Time

The reduction in patient waiting time following the implementation of Electronic Medical Records (EMR) is significantly influenced by several factors. These include patient type (new or returning), the completeness of data entry fields, system speed, operator experience, and the integration of service workflows — all of which can either accelerate or delay service delivery. Yolanda (2024) states that real-time access to patient data through EMR can expedite medical decision-making. Meanwhile, Arnovita (2024) emphasizes the importance of medical personnel adapting to the new system in order to optimize its use.

Although the EMR system functions effectively, administrative challenges during the registration of new patients require serious attention. Further digitalization and regular training for staff are essential to ensure the system can be utilized to its full potential.

Theoretical and Field Findings Triangulation

Based on the triangulation analysis, there is a strong alignment between the theories reviewed in the literature and the findings in the field. Rubiyanti (2023) and Yolanda (2024) emphasize the importance of fast access and data integration as key indicators of successful EMR implementation—factors that were also directly experienced by patients and medical

staff at RSUD Dr. Harjono. In addition, the influence of patient type on waiting time aligns with the theory proposed by Rr. Ratna Arietta (2012), which states that new patients tend to require longer service time due to the initial data entry process.

The PIECES approach used in the analysis indicates that the EMR system has a significant impact on efficiency and information. Service processes have become faster, data is more accurate, and patients feel more valued. These findings support the notion that the EMR system is not merely a recording tool but also a strategic instrument for enhancing the overall quality of healthcare services.

5. CONCLUSION AND RECOMMENDATIONS

Based on the findings of this study, it can be concluded that the implementation of Electronic Medical Records (EMR) at RSUD Dr. Harjono S. Ponorogo has been comprehensively applied across all outpatient departments and is effectively operated by healthcare personnel. The system has had a positive impact on accelerating medical documentation, improving data accuracy, and enhancing service efficiency. Digitally recorded and integrated patient information facilitates cross-unit access and reduces reliance on manual documentation. Nevertheless, challenges remain in the registration process for new patients, which takes longer due to the numerous data fields that must be completed. Factors influencing changes in patient waiting time include patient type, system speed, operator skills, and the integration of service workflows. Overall, the implementation of EMR has contributed to reducing patient waiting times and improving service quality, as reflected in the PIECES analysis framework.

Based on these findings, RSUD Dr. Harjono S. Ponorogo is advised to continue improving the Electronic Medical Records (EMR) system to make it more efficient and user-friendly, especially in the registration process for new patients. Integration with external data sources such as the Civil Registry (Dukcapil) or BPJS is expected to accelerate data entry. Furthermore, enhancements in network infrastructure, regular system evaluations, and ongoing training for healthcare workers are necessary to ensure optimal utilization of the system. Medical personnel are also expected to be more disciplined and consistent in filling out EMR data in accordance with procedures, as well as to maximize the use of system features to support service delivery. Future researchers are encouraged to conduct further studies with a broader scope and a mixed-methods approach to explore the impact of EMR on other aspects such as healthcare workers' workload or patient satisfaction in a more comprehensive manner.

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