

Evaluation of The Implementation of Electronic Medical Records On The Completeness Of Emergency Room (IGD) Patient Documentation at Lembang Regional Hospital

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Abstract.

The implementation of Electronic Medical Records (EMR) is part of the digital transformation of healthcare services aimed at improving the quality of documentation and continuity of patient care. This study aims to evaluate the implementation of Electronic Medical Records on the completeness of patient documentation in the Emergency Department (IGD) at Lembang Regional General Hospital. The study used a quantitative approach with a descriptive design and an evaluative approach. The study population was 1,850 Electronic Medical Record documents from ER patients, with a sample of 329 documents determined using the Slovin formula and Simple Random Sampling techniques. Data were collected through observation, documentation studies, and quantitative analysis checklists, then analyzed using descriptive statistics in the form of frequency distribution and percentages. The results showed that the entire ER service documentation process had used Electronic Medical Records. The level of completeness of documentation reached 85.1%, while 14.9% of documents were still incomplete. The most frequently incomplete component was the doctor's signature (10.3%), followed by patient education (6.1%) and physical examination (4.6%). The conclusion of the study shows that the implementation of Electronic Medical Records at Lembang Regional Hospital has supported the completeness of IGD patient documentation, but there is still a need to improve user compliance, monitoring, and evaluation to optimize the quality of medical record documentation.

Keywords: Documentation Completeness, Electronic Medical Records, Emergency Department, Health Information Management and Hospital Information System.

I. INTRODUCTION

The development of information technology has driven the transformation of healthcare services through the implementation of Electronic Medical Records (EMR). In Indonesia, the implementation of EMR is mandatory for all healthcare facilities based on Minister of Health Regulation Number 24 of 2022 as part of the national digital health transformation (Regulation Of The Minister Of Health Of The Republic Of Indonesia Number 24 Of 2022, 2022). EMR supports more effective patient information management, improves data accessibility, accelerates services, and supports clinical decision-making (Deviana Indriyanti1, 2024).

The completeness of medical record documentation is an indicator of the quality of healthcare services. Complete documentation includes patient identification, history, physical examination, diagnosis, procedures, therapy, and healthcare provider authentication. This completeness is essential to ensure continuity of care, quality evaluation, educational and research purposes, and as legal evidence when necessary (Dady, 2026).

Emergency Department (ER) services are characterized by a high demand for speed, which often results in inadequate documentation. Yet, comprehensive documentation is essential to support communication between healthcare professionals, ensure continuity of care, and reduce the risk of clinical errors, administrative and legal issues (Brasoveanu et al., 2020).

The success of RME implementation depends not only on the system used but also on human resources, training, ease of use, and healthcare worker compliance. Even when RME is implemented, incomplete documentation can still occur due to technical constraints and user factors (Apriani et al., 2023). Lembang Regional Hospital has implemented RME in its emergency department (ED) services, but evaluation of the completeness of patient documentation is still needed to assess its effectiveness.

This study aims to evaluate the implementation of Electronic Medical Records (EMR) on the completeness of IGD patient documentation at Lembang Regional Hospital, including the implementation of EMR, the level of completeness of documentation, incomplete components, and influencing factors. This study is important as evaluation material to improve the quality of EMR management and IGD services. The novelty of this study lies in the focus of the evaluation of EMR implementation at Lembang Regional Hospital, which specifically assesses the completeness of IGD patient documentation and the influencing factors.

II. METHODOLOGY

This study uses a quantitative approach with a descriptive research design and an evaluative approach to systematically describe the implementation of Electronic Medical Records (EMR) on the completeness of patient documentation in the Emergency Department (ER) of Lembang Regional Hospital. The data obtained are in the form of numerical data analyzed using descriptive statistics to determine the level of completeness of electronic medical record documentation. According to Sugiyono (2023), quantitative research is a research method based on the philosophy of positivism with data collection using research instruments and statistical data analysis. The study was conducted in the Emergency Department of Lembang Regional Hospital, West Bandung Regency from June to July 2026.

The research population was all Electronic Medical Record documents of patients who received services at the Emergency Room of Lembang Regional Hospital during the research period, totaling 1,850 documents (Sugiyono., 2017). The research sample was Electronic Medical Record documents of IGD patients who met the inclusion and exclusion criteria. The determination of the number of samples used the Slovin formula with a 5 percent error rate, resulting in a sample of 329 medical record documents. The sampling technique used was Simple Random Sampling, a technique that provides an equal opportunity to each member of the population to be selected as a research sample (Sugiyono, 2013).

The research instrument was a quantitative analysis checklist to assess the completeness of the Electronic Medical Record documentation of ER patients. The components assessed included patient identity, date and time of service, chief complaint, history, physical examination, diagnosis, medical action, name or signature of the officer, and patient disposition. Data collection was conducted through observation of the implementation of the Electronic Medical Record and documentation studies of the Electronic Medical Record documents that were the research sample. The data obtained then went through stages of editing, coding, data entry, and tabulation before being analyzed using descriptive analysis in the form of frequency distribution and percentage. The percentage of completeness was calculated using the formula $P = F/N \times 100\%$, then categorized as complete if it reached $\geq 80\%$ and incomplete if it was $< 80\%$.

The research procedure began with the preparation of a proposal and obtaining a research permit, followed by data collection through observation and documentation studies using a quantitative analysis checklist. Data processing, including editing, coding, data entry, and tabulation, was then performed. Data were then analyzed descriptively to illustrate the completeness of the Electronic Medical Record documentation for Emergency Room patients at Lembang Regional Hospital. The research was conducted with due regard to ethical research principles, including data confidentiality, respondent anonymity, research consent, institutional approval, beneficence, and justice.

III. RESULTS AND DISCUSSIONS

Sample Characteristics

Table 1 Sample Characteristics Based on Gender

Gender	Frequency	Percentage
Man	164	49.8%
Woman	165	50.2%
Total	329	100%

Based on Table 1, it is known that the majority of ER patients are female, as many as 165 patients (50.2%), while 164 patients were male (49.8%).

Table 2 Sample Characteristics Based on Age Group

Age Group	Frequency	Percentage
0–17 years	85	25.84%
18–45 years	120	36.47%
46–60 years	67	20.36%
>60 years	57	17.33%
Total	329	100.00%

Based on the research results, the largest age group was the 18–45 year age group with 120 patients (36.47%), while the smallest age group was the >60 year age group with 57 patients (17.33%).

Implementation of Electronic Medical Records in the Emergency Room

Observations show that the entire patient care documentation process in the Emergency Department utilizes the Electronic Medical Records (EMDR) system. Healthcare workers record patient identity, triage results, history, physical examination, diagnosis, medical procedures, and service instructions through the SIMRS application.

However, several obstacles were still found in the implementation of RME, such as limited internet network, long service times during peak hours, and some officers who had not filled in all documentation components completely.

Table 3 Implementation of RME in the Emergency Department

Implementation Aspects	Yes	No
Electronic identity recording	Yes	-
Triage documentation	Yes	-
Diagnostic documentation	Yes	-
Action documentation	Yes	-
Electronic signature	Yes	-

Level of Completeness of Emergency Room Patient Documentation

Table 4 Level of Completeness of Electronic Medical Record Documentation

Category	Frequency	Percentage
Complete	280	85.1%
Incomplete	49	14.9%
Total	329	100%

Based on the results of the analysis of 329 electronic medical record files of IGD patients, it was found that the majority of electronic medical record documentation was in the complete category, namely 280 files (85.1%), while 49 files (14.9%) were in the incomplete category.

Incomplete Documentation Components

Table 5 Incomplete Documentation Components

Component	Incomplete (n)	Percentage
Anamnesis	12	3.6%
Physical examination	15	4.6%
Diagnosis	5	1.5%
Medical treatment	10	3.0%
Doctor's signature	34	10.3%
Patient education	20	6.1%

Based on the document review, several documentation components were still found to be incomplete. The most frequently incomplete component was the doctor's signature, which was 34 files (10.3%), followed by patient education with 20 files (6.1%), physical examination with 15 files (4.6%), anamnesis with 12 files (3.6%), medical procedures with 10 files (3.0%), and diagnosis with 5 files (1.5%).

IV. DISCUSSION

Analysis of Electronic Medical Records Implementation

The study results show that Lembang Regional General Hospital has implemented an Electronic Medical Records system through SIMRS, which is integrated into the emergency department (ED) services. This implementation supports rapid patient data recording and improves the availability of real-time health information.

This finding is in line with research (Pratiwi et al., 2022) which states that the implementation of SIMRS at Lembang Regional Hospital has been running well and is able to increase the efficiency and effectiveness of hospital services.

In addition, the implementation of electronic medical records integrated with SIMRS can simplify patient data management, increase information accessibility, and support improvements in the quality of health services.

Documentation Completeness Analysis

Completeness of documentation is one indicator of medical record quality. Research shows that the level of completeness of documentation reached 85.1%.

Although most documents were completed completely, several items were found to be incompletely documented. This situation can impact continuity of care, the claims process, medical audits, and the legal aspects of healthcare services.

Factors Causing Incomplete Documentation

Based on the results of observations, the factors that cause incomplete documentation include:

1. High number of emergency room patient visits.
2. High workload of health workers.
3. Network or system disruption.
4. Lack of monitoring and evaluation of document completeness.
5. Suboptimal user compliance with filling in all items in the RME system.

Research on EMR implementation in Indonesian healthcare facilities also shows that human resource factors, organizational readiness, and technical constraints are the main obstacles in implementing electronic systems.

Comparison with Previous Research

The results of this study are in line with research (Pratiwi et al., 2022) which states that the implementation of SIMRS at Lembang Regional Hospital is able to support operational services effectively and efficiently.

This study also supports the findings (Rasyid et al., 2024) which explains that the use of Electronic Medical Records offers benefits in the form of increased data access, accelerated service delivery, and improved patient documentation quality. However, challenges remain, including user adaptation and completeness of data entry.

V. CONCLUSION

This study shows that the implementation of Electronic Medical Records (EMR) in the Emergency Department of Lembang Regional Hospital has been running well and all service documentation processes have been carried out through an electronic system integrated with the SIMRS. The level of completeness of medical record documentation reached 85.1%, so that in general it has met the complete category. However, incompleteness was still found in several documentation components, especially the doctor's signature, patient education, physical examination, history taking, medical procedures, and diagnosis. The observation results also showed that incomplete documentation was influenced by the high number of patient visits, health worker workload, network or system disruptions, lack of monitoring and evaluation, and less than optimal user compliance in completing all components of the EMR system. These findings indicate that the success of EMR implementation is not only determined by system availability, but also by the consistency of documentation implementation by health workers.

This study still has limitations because it was conducted in a single hospital with a focus on Emergency Department services and used a descriptive approach. Therefore, the results cannot describe the implementation of EMR in other healthcare facilities. Furthermore, the study only evaluated the completeness of documentation without examining other aspects, such as system security, user satisfaction, or the impact of implementation on overall service quality. Therefore, further research is expected to be conducted in a wider scope of hospitals by adding other variables to obtain a more comprehensive picture of EMR implementation. Practically, the results of this study can be used as evaluation material for Lembang Regional General Hospital to strengthen monitoring and evaluation of completeness of documentation, increase healthcare worker compliance in completing electronic medical records, and optimize system support so that the quality of documentation and service quality in the Emergency Department can continue to improve.

REFERENCES

- [1]. Apriani, W., Ulfah, A., Studi, P., Medis, R., Kesehatan, I., & Ganesha, PP (2023). Analysis of the completeness of the initial medical assessment form for the Emergency Department (IGD) to support the quality of medical records at RSAU Lanud Sulaiman Bandung.
- [2]. Brasoveanu, A., Moodie, M., & Agrawal, R. (2020). Textual evidence for the functionality of independent medical reviews. *CEUR Workshop Proceedings*, 2657, 1–9.
- [3]. Dady, RD (2026). Legal protection of patient personal data in electronic medical records: An analysis of Indonesian health law. *Glosains: Indonesian Global Science Journal*, 7(2), 316–327. <https://doi.org/10.59784/glosains.v7i2.680>
- [4]. Deviana Indriyanti. (2024). Senti.
- [5]. Regulation Of The Minister Of Health Of The Republic Of Indonesia Number 24 Of 2022. (2022). State Gazette of the Republic of Indonesia. <https://www.peraturan.go.id>
- [6]. Pratiwi, TD, Hidayat, M., Ratnajaya, A., Yulianty, F., Manajemen, M., & Sangga Buana, U. (2022). Implementation of SIMRS application technology in the Outpatient Installation of Lembang Regional Hospital.
- [7]. Rasyid, M., Aqid, BM, et al. (2024). Implementation of EMR System in Indonesian Health Facilities: Benefits and Constraints.
- [8]. Sugiyono. (2013). Educational research methods: Quantitative, qualitative, and R&D approaches. Alfabeta.
- [9]. Sugiyono. (2017). Quantitative, qualitative, and R&D research methods. Alfabeta.
- [10]. Sugiyono. (2023). Quantitative, qualitative, and R&D research methods. Alfabeta.