

FACTORS ASSOCIATED WITH THE IMPLEMENTATION OF ELECTRONIC MEDICAL RECORDS AND THEIR INFLUENCE ON PATIENT CARE SERVICES AT KOPANG COMMUNITY HEALTH CENTER

Muhamad Ridho Andriyana¹, Novi Sri Rahmi², Fathurrahman³, Muhammad Habibullah Aminy⁴, I Made Putu Sudiartha Hartawan⁵, Slamet Mardiyanto Rahayu⁶, Suhartati⁷, Lale Ajeng Khalifatun Wardani⁸, Syatriawan Perdana Putra⁹, Isti Dari Sofianti¹⁰, Amirudin¹¹, Nurfaidah¹², Ni Made Sri Ayu Tianyar¹³, Wahyu Aprilyaningsih¹⁴

^{1,2,5,7,9,10,11,12,13} Akademi Administrasi Rumah Sakit Mataram, Mataram, Indonesia

^{3,4,6,8} Universitas Islam Al-Azhar, Mataram, Indonesia

¹⁴ Universitas Sebelas Maret, Surakarta, Indonesia

²Email: novisirahmi@gmail.com

³Email: fathurrahmanmaks@gmail.com

⁴Email: habibamin22@gmail.com

⁶Email: slamet.mardiyantorahayu84@gmail.com

⁸Email: laleajeng26@gmail.com

¹⁴Email: wahyuaprilaningsih@gmail.com

Submit: 12-09-2026; Revised: 19-09-2026; Accepted: 22-09-2026; Published: 30-09-2026

Abstract

Adopting Electronic Medical Record (EMR) infrastructure plays a pivotal role in optimizing operational workflow, data precision, and overall healthcare service standards. Successful EMR integration hinges on multiple operational determinants, including system usability, rapid data retriever accessibility, software stability, data protection, and inter-unit connectivity. This research evaluates the impact of EMR system dimensions on patient care delivery at UPTD BLUD Kopang Public Health Center. Using a quantitative analytical framework with a cross-sectional design, this study targeted the entire staff utilizing EMR at UPTD BLUD Kopang Public Health Center as the population. Employing a total sampling strategy, 50 active respondents were selected. Primary data were gathered through structured questionnaires, direct observation, and documentary analysis, followed by univariate and bivariate evaluations using the Spearman Rank correlation method ($\alpha = 0.05$). Findings demonstrate that both EMR system performance and patient service delivery are classified in the good category. Statistical computation yielded a Spearman Rank correlation coefficient of $r = 0.700$ with a significance level of $p = 0.000$ ($p < 0.05$), confirming a robust, positive, and statistically significant relationship between EMR system capability and patient service quality. Enhanced system capabilities directly drive superior service outcomes. It is concluded that EMR system performance significantly

drives patient service excellence at UPTD BLUD Kopang Public Health Center. Consequently, continuous software upgrades, robust technical infrastructure maintenance, and ongoing staff development programs are imperative to maximize EMR performance in healthcare administration.

Keywords: *Electronic Medical Record, EMR System, Patient Services, Public Health Center, Spearman Rank*

INTRODUCTION

As a primary healthcare facility, the Community Health Center (*Pusat Kesehatan Masyarakat/Puskesmas*) plays a strategic role in delivering integrated promotive, preventive, curative, and rehabilitative health services to the community (Ministry of Health of the Republic of Indonesia, 2019). As the frontline provider of healthcare services, Puskesmas is required to ensure the availability of timely, accurate, and appropriate medical services, supported by a well-structured administrative management system. Effective administrative and information management is essential for maintaining service efficiency, ensuring patient safety, and improving the overall quality of healthcare delivery. In this context, the availability of accurate patient information and efficient medical record management represents an important component of high-quality primary healthcare services.

The rapid advancement of information technology has significantly transformed the management and delivery of modern healthcare services. The implementation of Electronic Medical Records (EMRs) represents one of the major developments in healthcare digitalization, replacing conventional paper-based documentation with integrated digital patient information systems. EMRs facilitate the systematic storage, retrieval, and management of patient health information, thereby improving the accessibility and availability of medical data for healthcare professionals. The utilization of EMRs can also support more accurate clinical decision-making, streamline administrative processes, and improve the efficiency of healthcare services (Suci Ariani, 2023). Nevertheless, the implementation of EMRs does not automatically guarantee improvements in service quality, as their effectiveness is influenced by technological, organizational, infrastructural, and human resource factors.

Several studies have identified challenges associated with the implementation of EMRs in primary healthcare facilities. Arie et al. (2024), for example, reported problems related to the completeness and accuracy of electronic medical record data at a community health center in Surabaya, which were associated with limited staff understanding and inconsistent implementation of standard operating procedures. Similarly, Riska et al. (2020) identified system instability, data synchronization problems, and inadequate technological infrastructure as factors that could disrupt administrative workflows and potentially affect patient comfort. Human resource capacity is also an important determinant of EMR effectiveness. Nofitriyani et al. (2021) emphasized that

digital literacy, technical competence, and staff training are essential for optimizing EMR utilization. Inadequate technical skills may result in slower and less accurate data entry, which can subsequently contribute to longer patient waiting times.

Organizational management and supervision also play an important role in determining the effectiveness of EMR implementation. Lubis (2020), in a study conducted at Puskesmas Bestari, found that supervision of medical record management had not been implemented optimally, contributing to low staff compliance with established standard operating procedures. Such conditions may increase the occurrence of data-entry errors and require additional time for correction, thereby reducing service efficiency. Soraya et al. (2022) further identified inconsistencies in standard operating procedures, hardware problems, and limited technical training as factors contributing to delays in healthcare services. These findings indicate that the successful implementation of EMRs depends not only on the availability of software applications but also on the reliability of technological infrastructure, staff competence, organizational procedures, supervision, and managerial commitment.

Although studies on EMR implementation have been conducted in various healthcare facilities in Indonesia, empirical evidence specifically examining the factors associated with EMR implementation and their relationship with patient services at Kopang Community Health Center remains limited. As a primary healthcare provider serving a broad segment of the community, Kopang Community Health Center needs to ensure that the implementation of EMRs contributes to timely, accurate, efficient, and high-quality patient care without creating additional administrative barriers. Therefore, this study aims to identify and analyze the factors related to the implementation of Electronic Medical Records that influence patient services at Kopang Community Health Center. The findings are expected to provide empirical evidence for healthcare managers and policymakers in developing appropriate strategies to strengthen EMR implementation and improve the quality and efficiency of primary healthcare services.

METHOD

This study employed an analytic quantitative approach with a cross-sectional observational design to empirically examine the relationship between Electronic Medical Record (EMR) system factors and patient care services at Kopang Community Health Center, Central Lombok, West Nusa Tenggara, Indonesia. The study was conducted from March to April 2026. The cross-sectional design enabled the independent variable, namely EMR system factors, and the dependent variable, namely patient care services, to be measured simultaneously during the study period. Data were collected using a structured questionnaire administered to healthcare personnel and staff directly involved in the use and management of EMRs. The study population comprised medical

record officers, registration officers, administrative staff, and other healthcare personnel who routinely used or accessed the EMR system in patient care. Because the population was relatively small, total sampling was applied, whereby all eligible members of the population were included as study participants. Inclusion criteria consisted of active staff members at Kopang Community Health Center who routinely used the EMR system and provided informed consent, whereas personnel who were absent during data collection or withdrew their consent were excluded.

The independent variable was EMR system factors, representing respondents' perceptions of the quality and functionality of the EMR system used in patient care. This variable was assessed through five indicators: ease of system use, speed of patient-data access, system stability, patient-data security, and interoperability or integration of data across healthcare service units. The dependent variable was patient care services, which was assessed through five indicators: service speed, service accuracy, smoothness of the patient care workflow, accuracy of patient-data entry and retrieval, and ease of obtaining healthcare services. Data were collected through structured questionnaires based on the study variables and their respective indicators, supported by direct observation of patient-care processes involving EMRs and documentation review. Secondary data included the institutional profile of Kopang Community Health Center, patient-visit statistics, organizational structure, standard operating procedures for EMR implementation, and other relevant institutional documents. The use of questionnaires, observation, and documentation was intended to provide complementary information regarding EMR implementation and patient care processes.

Data processing consisted of editing, coding, scoring, data entry, and tabulation prior to statistical analysis. Univariate analysis was conducted to describe the distribution of each study variable using frequencies and percentages, with the percentage calculated as $P = (f/N) \times 100$, where P represents the percentage, f the observed frequency, and N the total number of respondents. Bivariate analysis was subsequently performed to examine the relationship between EMR system factors and patient care services. Because the questionnaire responses were measured using an ordinal Likert scale, the Spearman's rank correlation test was employed. Statistical significance was determined at an alpha level of 0.05. A p -value < 0.05 was interpreted as indicating a statistically significant relationship between EMR system factors and patient care services, whereas a p -value ≥ 0.05 indicated that a statistically significant relationship was not demonstrated.

RESULTS AND DISCUSSION

The empirical analysis indicated that healthcare workers at Kopang Community Health Center generally perceived the performance of the Electronic Medical Record (EMR) system as good. This finding suggests that the functionality and technical features of the EMR system were generally capable of

supporting routine healthcare operations and facilitating the continuity of patient care. The ease of system use enabled healthcare personnel to enter patient information more efficiently, while rapid access to patient data supported the timely delivery of healthcare services, particularly during periods of high patient volume. These findings indicate that the usability and accessibility of the EMR system constitute important aspects of its effective utilization in primary healthcare settings.

Despite the generally favorable assessment, several technical challenges remained evident in the implementation of the EMR system. Occasional network disruptions and periods of system instability may interfere with data entry, retrieval, and the continuity of service processes. Such technical constraints indicate that the effectiveness of EMR implementation depends not only on the availability and functionality of the application itself but also on the reliability of the supporting technological infrastructure. Continuous maintenance, system monitoring, and infrastructure improvement are therefore relevant to sustaining the performance and reliability of EMR-based healthcare services.

The quality of patient care services at Kopang Community Health Center was also categorized as good based on the empirical findings. The implementation of EMRs contributed to the streamlining of patient-service processes, from registration and data retrieval to clinical care and related services. The transition from conventional paper-based documentation to an integrated electronic system facilitated faster access to patient information and reduced several administrative steps associated with manual record management. These conditions may support more efficient service delivery and improve the timeliness and continuity of patient care. However, the observed service quality should be interpreted within the specific organizational and operational context of Kopang Community Health Center.

The analysis further demonstrated a positive and statistically significant relationship between EMR system factors and patient care services. This finding suggests that better perceptions of EMR system performance were associated with better perceptions of patient care services among the respondents. System characteristics such as ease of use, rapid data access, system stability, data security, and integration across service units may facilitate smoother healthcare workflows and more efficient patient management. Nevertheless, the observed association should be interpreted as a statistical relationship rather than definitive evidence of a causal effect, particularly given the cross-sectional design of the study. The findings support the importance of strengthening EMR functionality and supporting infrastructure as part of efforts to improve the efficiency and continuity of primary healthcare services.

This study has several limitations that should be considered when interpreting its findings. First, the study was conducted exclusively at Kopang Community Health Center, limiting the generalizability of the findings to other community health centers with different organizational, technological, or

operational characteristics. Second, the primary data were obtained through self-administered questionnaires, which may introduce subjective perceptions and individual response bias. Third, the analysis focused primarily on the relationship between EMR system factors and patient care services and did not incorporate potentially relevant confounding factors, such as staff competence, workload or burnout, organizational support, and network connectivity. Future studies involving multiple healthcare facilities, larger samples, longitudinal designs, and additional organizational and human-resource variables may provide a more comprehensive understanding of the factors influencing the effectiveness of EMR implementation and patient care services.

CONCLUSION

The performance of the Electronic Medical Record (EMR) system factors was categorized as good, as reflected in the effective operation of system usability, speed of data retrieval, system reliability, protection of medical information, and connectivity across service units. Similarly, patient care service efficiency was categorized as good, as indicated by reduced administrative waiting times, greater accuracy of medical services, smoother service workflows, and easier digital medical record documentation. Statistical analysis further demonstrated a positive and statistically significant linear correlation between EMR system factors and patient care service efficiency, indicating that better EMR system functionality and performance were associated with higher levels of patient care service efficiency at Kopang Community Health Center.

REFERENCES

- Arie, D. A. L., Novana, F. E., Listiawan, N., Safara, D., & Sutha, D. W. (2024). Analisis kelengkapan dan keakuratan data rekam medis elektronik di Puskesmas X Surabaya. *Jurnal Manajemen Informasi Kesehatan Indonesia*, 12 (1), 1-10.
- Arie, D. A. L., Putri, R., & Sari, M. (2020). Analisis kelengkapan dan keakuratan data rekam medis elektronik di puskesmas. *Jurnal Manajemen Informasi Kesehatan*, 8 (2), 85-94.
- Azzahra, S. N., & Wahab, S. (2024). The impact of electronic medical record implementation on service effectiveness at Karangsari Public Health Center. *Jurnal Ekonomi dan Sistem Informasi (JESI)*, 5 (2), 45-52.
- Hatta, G. R. (2017). *Pedoman Manajemen Informasi Kesehatan Di Sarana Pelayanan Kesehatan*. Universitas Indonesia Press.
- Irma Dewi, A., Pradnyani, P. E., & Putra, I. G. N. (2024). Pengaruh kualitas pelayanan terhadap ketepatan waktu pengisian rekam medis elektronik di Puskesmas Salembaran Jaya. *Jurnal Penelitian Kesehatan Masyarakat (JPKEMAS)*, 4 (1), 22-30.
- Kementerian Kesehatan Republik Indonesia. (2019). *Peraturan Menteri Kesehatan Republik Indonesia Nomor 43 Tahun 2019 tentang Pusat*

- Kesehatan Masyarakat*. Jakarta: Kementerian Kesehatan Republik Indonesia.
- Kementerian Kesehatan Republik Indonesia. (2022). *Peraturan Menteri Kesehatan Republik Indonesia Nomor 24 Tahun 2022 tentang Rekam Medis*. Jakarta: Kementerian Kesehatan Republik Indonesia.
- Kuntoadi, G. B., Firmansyah, M., & Suryadi, Y. (2023). Analysis of inhibiting factors in the implementation of electronic medical records at East Pamulang Community Health Center. *IJITRA: International Journal of Information Technology and Research Applications*, 2 (1), 15-24.
- Mulyana, D. (2020). *Metodologi penelitian kualitatif*. PT Remaja Rosdakarya.
- Nofitriyani, N., Astuti, W., & Hidayat, R. (2021). Optimalisasi rekam medis elektronik dan implikasinya terhadap kualitas pelayanan kesehatan. *Jurnal ADMI*, 9 (1), 55-63.
- Nofitriyani, N., Susanti, T., & Putri, A. N. (2024). Optimalisasi rekam medis elektronik dan implikasinya terhadap kualitas pelayanan kesehatan. *Jurnal ADMI*, 8 (1), 33-41.
- Pradnyani, P. E., Putra, I. G. N., & Sari, M. (2023). Faktor-faktor yang memengaruhi kepuasan penggunaan rekam medis elektronik di unit rawat jalan. *Jurnal Universitas Pahlawan*, 7 (3), 101-109.
- Pradnyani, P. E., Wirawan, I. M., & Dewi, N. P. (2019). Faktor-faktor yang memengaruhi kepuasan penggunaan rekam medis elektronik. *Jurnal Manajemen Informasi Kesehatan*, 7 (1), 12-21.
- Ranjbar, A., & Mohammadi, M. (2021). *Conceptual framework development in quantitative health research*.
- Riska, R., Mahendra, I., & Sari, N. (2020). Quality evaluation on the implementation of electronic medical records in primary health centers. *Bali Medika Journal*, 7 (1), 25-34.
- Riska, R., Wahyudi, D., & Putri, A. (2024). Quality evaluation on the implementation of electronic medical records in primary health centers. *Bali Medika Journal*, 11 (1), 55-63.
- Shortliffe, E. H., & Cimino, J. J. (2014). *Biomedical informatics: Computer applications in health care and biomedicine*. Springer.
- Soraya, R., Yulianti, E., & Sari, D. (2023). Optimalisasi penggunaan rekam medis elektronik dalam meningkatkan efisiensi pelayanan kesehatan di Puskesmas Tajinan. *Jurnal Kesehatan Terapan Indonesia*, 5 (2), 67-75.
- Soraya, S., Putra, A., & Lestari, R. (2022). Optimalisasi penggunaan rekam medis elektronik dalam meningkatkan efisiensi pelayanan kesehatan di puskesmas. *IJITRA*, 3 (2), 77-86.
- Suci, A. (2023). Analisis keberhasilan implementasi rekam medis elektronik dalam meningkatkan efisiensi dan mutu pelayanan. *Jurnal Manajemen Kesehatan*, 9 (1), 14-22.
- Sugiyono. (2020). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Alfabeta.

- Turban, E., Pollard, C., & Wood, G. (2018). *Information technology for management*. Wiley.
- UPTD BLUD Puskesmas Kopang. (2025). *Profil UPTD BLUD Puskesmas Kopang tahun 2025*. Praya: Dinas Kesehatan Kabupaten Lombok Tengah.