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Implementation of Electronic Medical Records at Balong Community Health Center, Ponorogo Regency

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Abstract. *Electronic Medical Records (EMR) are a form of digitalization in healthcare services aimed at improving efficiency, accuracy, and integration of patient data. This study aims to identify the implementation of EMR based on ideal implementation indicators at Puskesmas Balong, Ponorogo Regency. Data were obtained through observation and interviews with registration officers, medical staff, and the head of the health center using the EPUS Klaster application system. The results showed that EMR implementation had a positive impact by accelerating services, facilitating access to patient data, and improving coordination between units. However, obstacles such as network disruptions, lack of training, and dependency on third-party vendors remain significant. Managerial support was also found to be suboptimal in providing necessary facilities and infrastructure. It is necessary to strengthen human resource training, improve IT infrastructure, and conduct regular evaluations to ensure that EMR implementation runs optimally and sustainably.*

Keywords: *Digitalization; Electronic Medical Records; Health Center; Implementation; Information System.*

1. BACKGROUND

In 2023, the Government of Indonesia passed Law No. 17 of 2023 on Health as the new legal basis for health service delivery. This law regulates various important aspects, including patient rights and obligations, service standards, and the role of health facilities in supporting a more integrated national health system. One important aspect of this law is the strengthening of facility-based health services, which emphasizes the importance of transforming information systems in health care facilities, including through service digitization.

Digitalization of the healthcare system is an urgent need to improve the efficiency, effectiveness, and accuracy of patient data recording. One of the digital innovations that became the main pillar in this transformation is the implementation of Electronic Medical Records (RME). RME replaces the manual paper-based system with a digital system that allows recording, storing, and accessing patient health information quickly and accurately. This system is expected to improve service quality, reduce recording errors, and support more informed clinical decision-making (Santoso & Ibnu, 2023).

Regulation of the Minister of Health of the Republic of Indonesia Number 24 of 2022 officially requires all health care facilities to implement the RME system by December 31, 2023. This regulation was issued to support the establishment of an integrated national health information system, while ensuring the security and confidentiality of patient data. However, until early 2024, the implementation of this policy still faces many challenges, especially in first-level health facilities such as community health centers.

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Data from the Indonesian Ministry of Health (2024) shows that out of 10,388 health centers across Indonesia, only 40.5% have fully implemented RME, while 38.2% are still using hybrid systems and 21.3% are still fully dependent on manual systems. In East Java Province alone, out of 972 health centers, 625 have implemented RME, but only around 45% reported the system running optimally (Widodo & Ningsih, 2023).

Puskesmas Balong in Ponorogo Regency is one of 32 Puskesmas that have implemented RME using the EPUS Cluster system. However, the implementation still encounters many obstacles, ranging from limited human resources who have not been fully trained in the use of the system, to inadequate technological infrastructure. One of the most crucial technical problems is that the RME system has not been directly connected (bridging) with the BPJS P-Care application, so officers have to make double records that hamper work efficiency. In addition, the use of systems from third-party vendors has also caused other problems, such as slow response to system disruptions, limited internal access to data management, and high maintenance costs. This is exacerbated by the unstable internet network, which causes the data input process to be hampered and often risks data loss.

A previous study by Susanto et al. (2024) showed that 70% of health facilities using RME systems from external vendors experienced technical disruptions at least once a month. Meanwhile, Rahmawati et al. (2023) stated that capacity building and HR training can increase data input efficiency by 35% and reduce recording errors by 20%. These facts indicate that there is a gap between national policy and implementation conditions in the field (gap analysis), especially in the aspects of technical readiness, resources, and system management.

Against this background, this study aims to describe in depth the implementation of RME at the Balong Health Center in Ponorogo Regency based on ideal implementation indicators, as well as identify barriers and supporting factors for success. The results of this study are expected to be the basis for system improvement and strategic policy making to support the optimization of the RME system in first-level health service facilities.

2. THEORETICAL STUDY

Electronic Medical Records (RME) is a digital system designed to record, store, manage, and transmit patient health information electronically. This system comes as a solution to the weaknesses of manual medical records, such as limited access, risk of data loss, and low efficiency in managing patient information (Setiawan et al., 2020). RME is part of the digital transformation of health services, which aims to improve the quality, efficiency, and security of patient data. According to the Regulation of the Minister of Health of the Republic of

Indonesia Number 24 of 2022, RME must be implemented in all health care facilities, including health centers, hospitals, and clinics. The objectives of this implementation include supporting the integration of the national health information system, accelerating services, and maintaining the confidentiality and security of medical data. RME also plays an important role in supporting clinical decision-making, coordination between service units, and reporting and evaluation of health programs.The theory of technology implementation in public services emphasizes the importance of several factors that determine the success of digital system adoption, namely: human resource readiness, policy support, information technology infrastructure, organizational culture, and technological and mental readiness of users (Setiawan & Sevtiyani, 2023). These six indicators become a reference in assessing whether the implementation of information systems in health facilities can run effectively and sustainably.

The study by Faida and Ali (2021) stated that HR readiness is a key element in the implementation of RME, including system understanding, adequate training, and commitment to change. Meanwhile, Widiawati and Monica (2024) highlighted that an adaptive organizational culture and visionary leadership will strengthen the success of the digital transition. In addition, the existence of supporting infrastructure such as a stable internet network, data storage servers, and technical support from the IT team greatly determines the sustainability of the system (Suharno & Lestari, 2024).Previous research by Widodo and Ningsih (2023) showed that of the hundreds of health centers that have implemented RME, only some have managed to run it optimally. This is due to technical constraints and low internal involvement in system management, especially in puskesmas that rely on external vendors.In the context of Puskesmas Balong, the field findings reinforce the results of previous studies, that limited human resources, dependence on third parties, and infrastructure constraints are real barriers to RME implementation. However, there are great opportunities to improve service quality if training strategies, internal capacity building, and system evaluation are consistently applied. Based on the theoretical review and previous studies, this research was conducted to provide a real and comprehensive picture of the implementation of RME in Balong Health Center, as well as to contribute to the development of theory and practice of health information system implementation at the primary care level.

3. RESEARCH METHOD

This study uses a descriptive qualitative approach to describe and understand the implementation of Electronic Medical Records (RME) at the Balong Health Center in Ponorogo Regency in depth. This approach was used because it is suitable for uncovering the process, constraints, and factors that influence the success or obstacles of RME implementation in the context of first-level health services. The subjects in this study were all parties directly involved in the implementation of RME at the Balong Puskesmas, including 1 head of the puskesmas, 1 registration officer, 1 doctor, 1 nurse, and 1 midwife. Sampling was conducted using the total sampling technique.

Data collection was conducted through in-depth interviews and observations were made using a checklist sheet. Interviews were semi-structured to provide exploratory space for informants to convey their experiences. Observation was used to directly observe service activities and the use of the RME system in patient registration and data recording activities. The research instruments were interview guides and observation sheets developed based on the indicators of RME implementation from the Indonesian Ministry of Health and the theory of information technology implementation in health services. The data obtained were analyzed using thematic analysis method based on Miles and Huberman (2014), namely through the stages of data reduction, data presentation, and conclusion drawing. This study also used source and method triangulation to increase data validity. The validity test results show that the data is consistent between interviews and observations, and describes the real conditions in the field objectively. The research model used refers to the health information system implementation framework according to Setiawan and Sevtiyani (2023), which includes six main indicators: (1) human resource readiness, (2) organizational work culture, (3) leadership governance, (4) information technology infrastructure, (5) compliance with policies and regulations, and (6) technology readiness. These six indicators became the basis for formulating categories and themes during the data analysis process.

4. RESEARCH RESULTS

Based on the results of observations and interviews, an overview of the actual condition of RME implementation at the Balong Health Center was obtained. The following presents the results of the analysis based on the 6 main indicators of health information system implementation.

Readiness of Human Resources

Registration officers have a basic understanding of the use of the EPUS Cluster system used at the Balong Health Center. However, the training received is still limited and irregular, so some officers rely on self-learning and the help of colleagues. This has an impact on variations in the speed and accuracy of data input.

Technology Infrastructure

Computer and network facilities are available, but there are frequent internet connection interruptions that cause the system to be slow or even inaccessible. In addition, the bridging of the RME system with BPJS P-Care has not functioned optimally, so officers have to do double recording, which slows down services.

Organizational Culture and Technology Adaptation

Most medical personnel showed a positive attitude towards the use of RME because it was considered helpful in documentation efficiency. However, there was also initial resistance from senior medical personnel who were more accustomed to manual recording.

Leadership and Governance

The leadership of the health center supports the implementation of RME, but has not been optimal in establishing a regular evaluation system and providing follow-up training. Decisions related to technical issues are left entirely to the application vendor, which slows down the handling of problems.

Compliance with Regulations

The health center has implemented internal policies regarding confidentiality and security of patient data in accordance with Permenkes No. 24 of 2022. However, not all medical personnel fully understand the legal aspects and responsibilities of electronic data.

Readiness of Technology and Supporting Systems

The EPUS Cluster system has adequate basic features, but is not yet integrated with national systems such as SatuSehat and BPJS. The absence of a backup system is also a risk when there is a system disruption.

Table 1. Summary of Research Findings Based on Implementation Indicator.

No	Indicator	Key Findings
1.	Human Resources	Lack of training, self-learning
2.	IT Infrastructure	Unstable connection, not bridging BPJS
3.	Organizational Culture	Positive support, initial resistance
4.	Leadership and Governance	Supportive, but dependent on vendors
5.	Regulation	There is already an SOP, not all personnel understand
6.	Technology Readiness	The basic system is good, not yet integrated, no backup yet

Discussion

Human Resources Readiness

Interview results show that registration officers and health workers at Balong Health Center have not received adequate training regarding the use of the RME system. Most learn independently or through peer guidance. This condition shows that human resource readiness is still an obstacle in optimizing the system. This finding is in line with the opinion of Rahmawati et al. (2023), who asserted that regular training can increase data entry efficiency by 35% and reduce recording errors by 20%. Low technical competence has an impact on the irregular use of the system and increases the risk of patient data errors.

Organizational Culture

Most medical personnel showed an open attitude towards the use of RME and recognized its benefits in speeding up service delivery. However, resistance was still found especially from more senior health workers, who felt more comfortable with manual record keeping. This suggests that although an adaptive culture towards technology is taking shape, it is not yet fully prevalent. Widiawati and Monica (2024) state that the success of digitizing public services is strongly influenced by an organizational culture that is ready to face change and willing to innovate.

Leadership and Governance

Puskesmas leaders support the implementation of RME and have provided basic tools for system operations. However, direct involvement in the monitoring and evaluation process of the system is still lacking. Reliance on vendors for any technical glitches indicates weak internal governance of the information system. According to Faida and Ali (2021), leadership support is crucial in the implementation of digital systems, especially in building evaluation systems and ensuring the sustainability of system implementation. Without active leadership, the system is vulnerable to not running optimally and sustainably.

Information Technology Infrastructure

The infrastructure owned by the Balong Health Center is still limited. Internet connection disruptions and the absence of integration between the RME system and the BPJS application (P-Care) cause the service process to be slow and must be done twice by officers. This fact is reinforced by Widodo and Ningsih (2023), who revealed that 45% of health centers in Indonesia experienced similar obstacles. Without adequate infrastructure, digital systems cannot run efficiently and can disrupt the quality of health services.

Compliance with Regulations

Administratively, Puskesmas have developed SOPs that regulate the security and confidentiality of patient data. However, not all health workers understand the content of these regulations thoroughly. This poses a potential risk of violating the patient's right to confidentiality of medical data. The Indonesian Ministry of Health (2022) emphasizes that the implementation of RME is not only a technical matter, but also involves legal aspects and professional ethics. Therefore, training and socialization of regulations must go hand in hand with technical training.

Technology Readiness

Puskesmas Balong uses an RME system developed by a third-party vendor, EPUS Klaster. This system is not directly connected to national systems such as SatuSehat and does not have a backup mechanism in case of disruption. In addition, control of the system rests entirely with the vendor, making the maintenance process slow and expensive. A study by Susanto et al. (2024) showed that 70% of facilities using systems from vendors experienced technical disruptions at least once a month. Complete reliance on third parties without internal reinforcement risks reducing the efficiency and sustainability of the system.

5. CONCLUSION AND RECOMMENDATIONS

Based on the results of the research and discussion that has been carried out, it can be concluded that the implementation of Electronic Medical Records (RME) at the Balong Health Center, Ponorogo Regency has been running but not yet fully optimal. Based on the six indicators of health information system implementation, it was found that limitations in human resource readiness, information technology infrastructure, and internal system mastery were the main obstacles in the effective utilization of RME. Although most health workers showed a positive attitude towards using the system, minimal and unscheduled training led to competency gaps among officers. Inadequate infrastructure, such as an unstable internet connection and the system's lack of integration with BPJS applications, adds to the workload and slows down the service process. Puskesmas leadership is supportive of the implementation, but the fact that system management still relies on external vendors indicates the need to strengthen the independence of information system management.

This study shows that successful digitization of health services at first-level facilities requires more than just system procurement. A comprehensive strategy is needed that includes human resource capacity building, regular system evaluation, and the development of reliable and secure technology infrastructure. The local government through the health office also needs

to play an active role in technical assistance and supervision of the implementation of RME at the puskesmas level.The limitation in this study lies in the scope that only covers one puskesmas, so the results cannot be generalized widely without further study.To improve the implementation of RME in Puskesmas Balong, it is recommended that Puskesmas Balong increase the capacity of human resources through regular and structured training on the use of the RME system. This training should not only be technical, but also include an understanding of regulations, data security, and digital risk management. In addition, it is necessary to strengthen technological infrastructure, especially improving internet connections.

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