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Readiness for Electronic Medical Record Implementation at Simpang Kawat Public Health Center, Jambi City in 2024

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Abstract

Human resources are the main asset that determines the success of Electronic Medical Record (EMR) implementation. This study aims to analyze the readiness for EMR implementation at Simpang Kawat Public Health Center, Jambi City in 2024 through the aspects of input, process, and output. This research used a descriptive qualitative method with in-depth interviews with informants selected purposively. Data collection techniques included interviews, observation, and documentation, with validity testing using source and method triangulation. In the input aspect, the quantity of human resources is sufficient, but routine training has not been scheduled. BOK funds are sufficient for monthly operations. Technical obstacles were found in the damaged generator. The service process is digital in accordance with PMK No. 24 of 2022. The output shows increased time efficiency and minimized data errors through the integration of NIK and BPJS. Overall, EMR implementation has been going well, but improvements are needed in supporting infrastructure, especially electricity backup, and periodic training to maintain the quality of digital services.

Keywords: Implementation, Electronic Medical Record, Human Resources, Infrastructure.

INTRODUCTION

Digital transformation in Indonesia's healthcare sector has accelerated significantly through the implementation of Electronic Medical Records (EMR). Based on Minister of Health Regulation No. 24 of 2022, all healthcare facilities are required to implement EMR by December 31, 2023, at the latest (Indonesian Ministry of Health, 2022). This policy aims to improve the quality of healthcare services, ensure patient data security, and integrate the national health information system through the SATUSEHAT platform. However, the transition from manual to digital systems is not without obstacles, as it requires thorough preparation in terms of human resources, infrastructure, and financial support.

At the regional level, the Jambi City Health Office has encouraged all community health centers to adopt the RME system. Based on monitoring data, the Simpang Kawat Community Health Center is one of the health facilities that has shown high performance in sending data to the central system, with consistent achievements above 90%. However, initial observations indicate operational challenges that could hinder the sustainability of the system. One of the prominent technical obstacles is the damage to the backup power generator (genset), which forces staff to manually perform double entry during power outages, which must then be re-entered into the system once power is restored. This situation has the potential to cause time inefficiency and data error risks. In addition to infrastructure constraints, human resources also play a crucial role. The readiness of officers to operate new features in the RME requires continuous training, not just initial socialization at the start of implementation. The gap between regulations that require full digitization and the technical reality in the field is a major issue that needs to be studied in greater depth.

This study aims to analyze in depth the readiness for the implementation of Electronic Medical Records at the Simpang Kawat Community Health Center in Jambi City in 2024.

RESEARCH METHODS

This study used a qualitative method with a descriptive approach. The research location was at the Simpang Kawat Community Health Center in Jambi City. There were seven informants selected purposively, including the Head of the Community Health Center, the Head of Administration, the RME Administrator, and the Cluster Manager. Primary data was obtained through in-depth interviews and direct observation, while secondary data was obtained through document review, such as SOPs and health center profiles. Data analysis followed the Miles and Huberman model, which consists of data collection, data reduction, data presentation, and conclusion drawing. Data validity was tested through source and method triangulation.

RESULTS AND DISCUSSION

Results

Input

Human resource

The quantity of human resources at the Simpang Kawat Community Health Center is considered sufficient, with seven RME managers in each service cluster. However, in terms of quality, there is no regular training program for staff. Training is only conducted at the beginning of implementation or incidentally via Zoom when there are feature updates.

"All service sections already have RME and each cluster has its own person in charge. Regarding training, there is no routine training, only at the beginning or via Zoom if there are new feature changes." (Inf-1 & Inf-3).

Money

Funding for RME operations is fully supported by BOK funds. The budget allocation ranges from IDR 800,000 to IDR 900,000 per month to pay for application subscription fees and other needs. The Head of Administration and related informants confirmed that these funds are sufficient to cover monthly needs:

"The funding is sufficient and is covered by BOK funds every month." (Inf-1 & Inf-2).

Facilities and infrastructure

The availability of RME infrastructure in each cluster of the Simpang Kawat Community Health Center is adequate, including computers, keyboards, printers, scanners, and internet networks. However, there are major obstacles in terms of electricity due to the lack of backup power caused by a broken generator that has never been used.

"The facilities are adequate and the network is stable, but if there is a power outage, we have no backup because the generator is broken. If the lights go out, we are forced to use laptops or manual methods first, then transfer to the RME application once the power is back to normal." (Inf-2 & Inf-3).

Method

The implementation guidelines for RME at the Simpang Kawat Community Health Center are in accordance with national regulations, namely Minister of Health Regulation No. 24 of 2022. The Community Health Center also has Standard Operating Procedure (SOP) documents available in physical form at the registration and administration offices as technical guidelines for staff.

"The SOPs are already in document form and are in accordance with the latest Minister of Health Regulation on RME." (Inf-1 & Inf-3).

Process

Planning

Based on the interview results, the Simpang Kawat Community Health Center does not have specific plans or a regular schedule for developing human resources related to RME. Training is

conducted internally, on an ad hoc basis, or in response to feature updates from the center through coordination via WhatsApp or Zoom groups.

"There is no specific plan, we just go with the flow. Training is not scheduled, it is only conducted via Zoom or shared in the group if there are recent updates or specific moments." (Inf-1 & Inf-3).

Implementation

The service process from registration to medication collection has been fully digitized and integrated across clusters. The use of NIK and BPJS numbers as a database has successfully eliminated the risk of duplicate data. In terms of security, community health centers have established a memorandum of understanding (MOU) with a third party (Infokes Vendor) whose system meets the standards of the Ministry of Health. Data security is also strengthened through accreditation commitments and strict access procedures.

"Everything is digital using NIK, so there is no possibility of duplicate data. Confidentiality is ensured through an MOU with vendors and an accreditation commitment; external parties cannot access data without following official procedures." (Inf-4 & Inf-7).

Output

Based on the results of the study, the implementation of RME at the Simpang Kawat Community Health Center has had a significant positive impact on service quality. The use of NIK and the integration of BPJS as the main database has ensured patient data accuracy, eliminated the risk of duplicate data, and accelerated medical information input and access times. In addition, this digital system has increased cost efficiency through the reduction of paper use (paperless) and optimized real-time drug stock management.

"Entering data using NIK and BPJS greatly helps reduce recording errors and speeds up processing time. In the past, there was often duplicate data, but now everything is neat and tidy, and patient waiting times at registration are shorter because the system automatically pulls the data." (Inf-1, Inf-3, & Inf-4).

Discussion

Input

Human resource

Human resources are a crucial asset in the successful transition from manual to electronic medical records. The results of the study show that the Simpang Kawat Community Health Center implemented a cascade training model, in which knowledge was disseminated internally by officers who had undergone primary training. This is in line with the findings of Fitriani et al. (2024), who state that peer-to-peer knowledge transfer is an effective strategy for overcoming the limitations of formal training quotas. Regulatory support also enables other health workers to manage medical records after receiving adequate training.

However, the effectiveness of this system is limited by the absence of a structured routine training program. The dissemination of updates to the e-Puskesmas application features from the Infokes vendor is only carried out reactively through WhatsApp or Zoom groups. This finding is in line with the analysis by Handayani et al. (2022), which emphasizes that without consistent competency development, staff understanding of new features risks being superficial, thereby preventing the optimal realization of RME's potential to improve service quality. Compared to the research by Faida and Ali (2021), the success of RME is highly dependent on governance support that provides a special budget for regular training, rather than relying solely on informal communication. Therefore, even though staff adaptation is currently good, strengthening planned training is necessary to minimize data input errors and maximize patient services in the future.

Money

Funding is a crucial supporting factor in the sustainability of Electronic Medical Records (EMR) implementation. The results of the study show that EMR operational funding at the Simpang Kawat Community Health Center is adequate, utilizing Health Operational Assistance (BOK) funds. A budget of Rp800,000.00 to Rp900,000.00 per month is routinely allocated to finance application

subscriptions to vendors. The availability of this consistent budget ensures that access to the EMR system remains stable without operational cost constraints.

The management of these funds is in line with the findings of Pasule et al. (2025), which confirm that BOK funds from the central government are designed to support improvements in basic health services in accordance with Minimum Service Standards (SPM). The success of the Simpang Kawat Community Health Center in allocating BOK funds for the RME system reflects strategic planning. The budget is not only prioritized for field activities, but also includes strengthening digital infrastructure that directly supports the efficiency and quality of patient services (Pasule et al., 2025).

Facilities and infrastructure

The availability of facilities and infrastructure is a physical factor that determines the smooth implementation of Electronic Medical Records (EMR). The results of the study show that the Simpang Kawat Community Health Center already has adequate hardware, including computers, keyboards, printers, and scanners in each service cluster, supported by a stable internet network. This condition is in line with the findings of Yulis et al. (2020), which state that the completeness of hardware and networks in each service unit is the main capital in the transition from manual to digital systems. This shows that the Simpang Kawat Community Health Center has prioritized digital infrastructure in accordance with national policies.

However, a crucial challenge was found in the aspect of backup power resources. Damage to the generator set caused a power outage, forcing officers to take manual notes and re-enter the data (double entry) after the power came back on. This technical problem is similar to the findings of Widayanti et al. (2023) at the Samigaluh I Community Health Center, which emphasized that power outages can hinder the flow of data that should be real-time. Therefore, the adequate infrastructure at the Simpang Kawat Community Health Center needs to be supported by improvements to the backup power facilities to ensure the consistency of digital services under various operational conditions.

Method

Policies and operational standards are the legal foundation and technical guidelines that ensure the continuity of the system in accordance with regulations. The results of the study show that the implementation of RME at the Simpang Kawat Community Health Center has a strong legal basis with reference to Minister of Health Regulation No. 24 of 2022. In addition, the availability of Standard Operating Procedures (SOPs) in physical document form makes it easier for officers to understand the digital workflow. This is in line with the research by Soraya et al. (2024), which confirms that the legal umbrella of PMK No. 24 of 2022 provides clear legal certainty in the digital management of patient data at the Community Health Center.

The readiness of internal regulations in the form of documented SOPs at the Simpang Kawat Community Health Center is also in line with Hariyati's (2023) thinking, which emphasizes that SOPs are the key to the success of digital transformation in overcoming technical obstacles in a structured manner. Research support from Nugroho et al. (2022) also states that the implementation of the PMK requires the standardization of operational procedures in every health facility. With the availability of SOP documents that can be accessed directly by officers, the Simpang Kawat Community Health Center has fulfilled the aspects of legality and standardization of digital health services. However, ongoing socialization is still needed to ensure that staff remain compliant with the latest operational procedures, especially when the system undergoes feature updates from the vendor.

Process

Planning

The results of the study show that the Simpang Kawat Community Health Center does not yet have specific plans or a regular schedule for developing the capacity of RME users. Coordination related to technical constraints and feature updates is still situational through digital media such as WhatsApp or Zoom. This condition is in line with the findings of Wati and Apriyanti (2024), which reveal that without continuous training planning, staff knowledge tends not to develop and remains at a “sufficient” level. At the Simpang Kawat Community Health Center, the challenge of staff rotation

requires a regular training schedule to maintain operational competency standards despite personnel changes.

The importance of future planning is also emphasized by Emrianti et al. (2024), who state that organizational readiness includes leadership governance in mitigating risks. Without a planned maintenance and system update schedule, health centers are at risk of sudden system failures that hinder service delivery. Furthermore, in line with the research by Hapsari et al. (2023), management capacity in planning digital workflows is crucial to service efficiency. Therefore, careful planning at the Simpang Kawat Community Health Center is essential to ensure the sustainability of competencies, anticipate developments in SATUSEHAT technology, and mitigate technical hardware risks.

Implementation

The service process at the Simpang Kawat Community Health Center, from registration to the pharmacy, has been completely transformed to a digital system. The use of NIK and BPJS numbers as the main database has proven effective in minimizing human error and double identities. This is in line with research by Husna and Ningsih (2024), which emphasizes that identity validation such as NIK is a crucial factor in preventing patient identification failures. In addition, this automation ensures that medical information is organized in real-time, in line with Damanik's (2025) findings that the transition to a web-based electronic system can replace manual records that are prone to damage or loss.

The accuracy of the clinical data generated also strengthens the quality of diagnosis, as analyzed by Prisusanti et al. (2024) that the main benefits of RME are increased data accuracy and reduced input errors. From a security perspective, the Puskesmas has guaranteed data confidentiality through an MOU with an Infokes vendor certified by the Ministry of Health. This step is in line with the research by Siregar and Sinaga (2025) on the importance of legal protection for sensitive patient data. Referring to the security evaluation theory by Soraya et al. (2025), even though the technical guarantees from vendors already cover the aspects of confidentiality, integrity, and availability, the discipline of internal users in terms of authentication remains a determining factor for overall system security.

Output

The implementation of RME at the Simpang Kawat Community Health Center has had a significant positive impact on the quality and efficiency of services. The acceleration of data input and real-time data access has been proven to reduce the risk of medical errors and provide cost efficiency through the reduction of paper documents (paperless). This is in line with Ikawati's (2024) research, which states that RME plays a major role in improving service quality through ease of communication between health workers and the availability of timely data.

Accuracy in the registration section has also increased significantly thanks to the use of NIK and BPJS-based systems that eliminate duplicate data. This finding is supported by Kurniawan et al. (2025), who emphasize that accurate data integration enables services to be more transparent and organized. In the pharmacy unit, system integration minimizes medication errors because electronic prescriptions ensure the accuracy of drug administration, in accordance with Putri and Santoso's (2022) theory regarding patient safety in digital prescription systems. In addition to clinical aspects, RME strengthens clean organizational governance by reducing the risk of administrative fraud. As explained by Ramadhani (2024), digital records serve as an effective internal control tool, ensuring that every use of health center resources can be accurately accounted for.

CONCLUSIONS

The implementation of RME at the Simpang Kawat Community Health Center has been running well overall, but improvements are needed in terms of supporting infrastructure. The quantity of human resources is sufficient, although the quality of training needs to be improved periodically.

The availability of BOK funds ensures the continuity of the system's operations. The main obstacle is the damage to the generator, which has the potential to disrupt the stability of digital services. It is recommended that the Community Health Center immediately repair the backup electrical facilities and establish a regular training schedule for all medical staff to optimize the continuously evolving features of RME.

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