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The Effect of the Application of Electronic Medical Records on the Efficiency of Service Time in Outpatient Units

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ABSTRACT
The implementation of electronic medical records (EMR) is expected to improve healthcare service efficiency; however, outpatient waiting times exceeding the minimum service standard (≤60 minutes) remain a concern. This study aimed to analyze the effect of EMR implementation on outpatient service time efficiency at dr. Rasidin Hospital, Padang. A quantitative study with a cross-sectional analytical design was conducted from January to March 2026, involving 164 outpatients selected through accidental sampling. Data on EMR implementation were collected using a validated and reliable Likert-scale questionnaire, while service time was measured through direct observation and system timestamp tracking. Data were analyzed using univariate and bivariate analyses with the chi-square test (a = 0.05). The results showed that 84.1% of respondents rated EMR implementation as good, while 81.7% experienced efficient service times, with a mean of 41.6 ± 10.8 minutes. Service time efficiency was higher among respondents reporting good EMR implementation than among those reporting poor implementation (86.2% vs. 57.7%; p = 0.001; OR = 4.59; 95% CI: 1.84–11.47). These findings indicate a significant association between EMR implementation and outpatient service time efficiency. Hospitals should integrate EMR with registration, queue management, and pharmacy systems and monitor service performance regularly.

Keywords: *Electronic Medical Record, Efficiency, Service Time, Outpatient, Waiting Time*

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INTRODUCTION

Digital transformation has become the main direction of development of health systems in different countries. The World Health Organization encourages accelerating the use of appropriate digital technologies to make health services more accessible, high-quality, and efficient. Digitization concerns not only the provision of devices, but also the change in the way health data is managed and utilized in decision-making. Therefore, hospitals as the organizers of the most complex services are at the vanguard of the application of such technologies (World Health Organization [WHO], 2021).

In the context of hospitals, quality and efficiency of service are two things that are interrelated and determine patient satisfaction. One of the most applied innovations to achieve this is the electronic medical record (EMR), which is a system that replaces manual recording with integrated digital recording. With this system, patient clinical information can be recorded, tracked, and shared between units more quickly. A review of various studies shows that the implementation of EMR has a positive impact on the quality and workflow of services, although the results depend on the readiness of organizations and users (Buntin et al., 2011; Tsai et al., 2020).

EMR basically serves to unite identity data, disease history, examination results, actions, and therapies in one database. This integration reduces physical file searches, repeated writing, and delays due to files not being found. As a result, health workers can obtain patient information when needed without moving documents between sections. This benefit is the basis of the hope that RME can shorten service time (Menachemi & Collum, 2011; Tsai et al., 2020).

The efficiency of service time becomes very important in the outpatient unit because this unit is the entrance and accommodates the largest number of visits in the hospital. The length of time patients wait from registration and examination to supporting services is often used as a measure of performance and quality of service. In Indonesia, the minimum hospital service standards set an outpatient waiting time of at least 60 minutes from the time the patient signs up to be served by a doctor. This standard is a reference for hospitals in assessing whether the flow of services has been running efficiently (Kementerian Kesehatan Republik Indonesia [Kemenkes RI], 2008; Nguyen et al., 2018).

The Indonesian government places digitization of services as a priority through its health digital transformation strategy. The strategy emphasizes the integration and interoperability of health data, the development of service applications, and the strengthening of the health technology ecosystem. Electronic medical records are becoming one of the important components because patient clinical data is the core of the entire health information system. Thus, the implementation of EMR in hospitals is in line with the national agenda to build connected and data-based health services (Kemenkes RI, 2021).

The policy direction is reinforced by strict legal arrangements regarding medical records. Regulation of the Minister of Health Number 24 of 2022 requires all health care facilities to maintain electronic medical records and gives a deadline for adjustment until the end of 2023. This regulation also regulates the management of medical records, from filling, storage, confidentiality, to releasing information. With this obligation, hospitals can no longer view RME as an option, but as a standard for organizing services (Kemenkes RI, 2022).

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However, the implementation of EMR in the field does not always go without obstacles. The readiness of health workers, the availability of infrastructure, as well as management support greatly affect the success of the system. Research on hospitals in Ghana shows that the level of preparedness of service providers, including skills and attitudes towards technology, affects their ability to adopt electronic medical record systems. These findings indicate that systems that are already available do not necessarily produce efficiency if they are not accompanied by the readiness of their users (Abdulai & Adam, 2020; Kruse et al., 2016; Trisnawati, 2024).

In addition to readiness, the burden of documentation is an issue that often accompanies the use of EMR. A systematic review of the burden of clinical documentation notes that health workers can spend a fairly large portion of their time filling out records on electronic systems. If the system interface is not user-friendly or the filling is too detailed, the time that should be used to serve patients is actually taken up by recording. This condition has the potential to slow down the flow of services and reduce the efficiency benefits expected from digitization (Baumann et al., 2018; Moy et al., 2021; Poissant et al., 2005).

Another aspect that cannot be overlooked is the security and privacy of patient data. Storage of data in electronic form poses a risk of unauthorized access, leakage, and loss of data that can harm both patients and institutions. To anticipate this, hospitals typically implement layered access control, authentication, and verification procedures. These security measures are important, but if they are not properly designed, they can add work stages that affect the speed of service (Keshta & Odeh, 2021).

The sustainability of the use of EMR also depends on the user's acceptance of the system. A review of the acceptance of health technologies in low- and middle-income countries shows that the perception of the ease and usefulness of a system determines the intention of users to continue to make use of it. Users who find the system easy to operate and beneficial to their work tend to use it consistently. Conversely, the inconvenience of use can encourage the return of old habits so that efficiency goals are not achieved (Davis, 1989; Djailolo et al., 2026; Kalayou et al., 2020; Venkatesh et al., 2003).

On the patient side, long waiting times in outpatient settings have a direct impact on the experience and assessment of the quality of service. Patients who have to wait a long time tend to feel dissatisfied, and this complaint is often the main input for hospital management. Waiting time also affects the workload and smoothness of services in support units such as pharmaceuticals and laboratories. Therefore, monitoring the service time is an important part of efforts to improve the quality of the hospital on an ongoing basis (Hadjo & Rasyada, 2026; Kemenkes RI, 2008; Wardana & Licia, 2025).

Recent studies show that the impact of EMR on efficiency is diverse (Albagmi, 2021; Cho et al., 2017; Rachmawati et al., 2023). The review of Tsai et al. (2020) found that the implementation of EMR provides benefits to the quality and flow of services, but is also accompanied by barriers such as cost, user resistance, and training needs. The review of Moy et al. (2021) showed that documentation burden can be a hindrance to efficiency, whereas the findings of Abdulai and Adam (2020) highlighted the importance of service provider readiness. This diversity of findings suggests that results in one place cannot necessarily be generalized to another.

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Based on the description, there are research gaps that need to be filled. Research that specifically measures the effect of the application of EMR on service time in outpatient units of regional hospitals in Indonesia, especially in the city of Padang, is still limited. In fact, the obligation to implement EMR has already taken effect and hospitals need empirical evidence to evaluate whether digitization investments actually lead to efficiency. This study aims to analyze the effect of the application of electronic medical records on the efficiency of service time in the outpatient unit of RSUD dr. Rasidin Padang.

The problem that underlies the selection of the title of this study is the gap between the obligations of the application of EMR and evidence that the application actually accelerates the service. Since the Regulation of the Minister of Health Number 24 of 2022 came into force, hospitals are obliged to organize EMR and have invested resources for digitization. However, previous studies have shown that the benefits of EMR on service speed do not automatically arise because they depend on user readiness, documentation load, and quality of system use (Abdulai & Adam, 2020; Moy et al., 2021).

In the hospital dr. Rasidin Padang, [specify preliminary study data or initial data, for example, the percentage of outpatients with waiting times exceeding 60 minutes, patient complaints about the length of service, or obstacles to filling EMR found in polyclinics. This condition raises the question of whether the EMR that has been implemented has contributed to the efficiency of service time, or whether it is only limited to fulfilling administrative obligations. These questions are important to answer in the outpatient unit because this unit accommodates the most visits, so delays have a direct impact on patient satisfaction and the smooth operation of support units such as pharmacies and laboratories. Therefore, this study is needed to provide empirical evidence that can be the basis for management in evaluating and improving the utilization of EMR.

Researchers are interested in studying this topic because EMR in hospital dr. Rasidin Padang has been doing well, so the hospital is a viable location to assess the real benefits of the established system. This condition allows the study to focus on the effect of system implementation on service time, not on the failure of the initial implementation. The results of the study are expected to provide an objective picture for management regarding the contribution of EMR to the speed of service and become the basis for further development.

METHODS

This study is quantitative research with a cross-sectional analytical design conducted in the outpatient unit of RSUD dr. Rasidin Padang in January-March 2026. The study population is all patients who visited the outpatient unit during the study period. The sample size was calculated using the Lemeshow formula for a finite population so that 164 patients were obtained, which were selected by accidental sampling technique, namely patients who happened to be encountered and met the criteria when collecting data. Inclusion criteria include patients who are 18 years old, have undergone at least one previous visit so that they are familiar with the flow of EMR based services, are able to communicate well, and are willing to become a respondent by signing an approval sheet. Exclusion criteria include emergency patients who are transferred to the emergency department, patients who leave the service before it is completed, and patients whose

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data is incomplete. The independent variable is the application of EMR which includes system utilization, completeness of filling, and ease of access, while the dependent variable is the efficiency of service time. EMR application variable data were collected through a guided interview using a Likert-scale structured questionnaire that respondents filled out immediately after the service was completed, with instruments that have been tested for validity (Pearson product-moment correlation) and reliability (Cronbach's alpha ≥ 0.70) in respondents with similar characteristics. Variable data of service time efficiency were collected through direct observation by researchers and trained enumerators using stopwatches and observation sheets, which were confirmed by time stamp tracing on the EMR system. The time is calculated from the time the patient registers until the doctor finishes serving, then categorized as efficient if it is 60 minutes according to the minimum hospital service standards and inefficient if it is >60 minutes.

The collected data is processed through the stages of editing, coding, data entry, and data cleaning. Univariate analysis is done to describe the frequency and percentage distribution in categorical variables and mean and standard deviation in numerical variables (Purba et al., 2026). Bivariate analysis uses the chi-square test at the level of significance α = 0.05 to test the effect of the application of EMR to the efficiency of service time, with odds ratio (OR) and 95% confidence interval to show the effect. If the expected count is not met, the Fisher's exact test is used. Ethical aspects are maintained by explaining the objectives, benefits, and research procedures to prospective respondents, then obtaining written consent (informed consent) voluntarily without coercion. The researcher guarantees the anonymity and confidentiality of the respondent's identity and data, states that the respondent is free to withdraw at any time without affecting the services received, and uses the data only for research purposes.

RESULTS

1. Characteristics of Respondents

The study involved 164 outpatients in DR. Rasidin Padang. Characteristics of respondents by age, gender, education, occupation, type of guarantor and polyclinics visited are presented in Table 1.

Table 1. Frequency Distribution of Respondents (n = 164)

Characteristics	Categories	f	%
Age (years)	18-30	38	23,2
	31-45	52	31,7
	46-60	48	29,3
	>60	26	15,9
Gender	Men	71	43,3
	Female	93	56,7
Education	Elementary/Junior High School	34	20,7
	High school / equivalent	79	48,2
	College	51	31,1
Jobs	PNS	22	13,4
	Private employees	47	28,7
	Self-employed	31	18,9

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Characteristics	Categories	f	%
	Housewife	38	23,2
	Other	26	15,9
Types of guarantors	BPJS Health	141	86,0
	General / other insurance	23	14,0
Polyclinics	Internal Medicine	48	29,3
	Son	37	22,6
	Surgery	24	14,6
	Obstetrics and gynecology	33	20,1
	Nervous	22	13,4

Table 1 shows that most respondents are in the age group of 31-45 years (31.7%) and female (56.7%). Almost half of the respondents have high school/equivalent education (48.2%), and most of the jobs are private employees (28.7%). Most respondents use BPJS health insurance (86.0%). The most visits came from internal medicine polyclinics (29.3%), while other polyclinics were fairly evenly distributed.

2. Frequency Distribution of EMR Implementation and Service Time Efficiency

Univariate analysis was conducted to describe the variable frequency distribution of RME implementation and its three dimensions, as well as the efficiency of service time. The results are presented in Table 2.

Table 2. Frequency Distribution of EMR Implementation and Service Time Efficiency (n = 164)

Variable	Categories	f	%
Application of EMR (overall)	Good	138	84,1
	Less good	26	15,9
System utilization	Good	141	86,0
	Less good	23	14,0
Filling fittings	Good	135	82,3
	Less good	29	17,7
Ease of access	Good	137	83,5
	Less good	27	16,5
Service time efficiency	Efficient (60 Minutes)	134	81,7
	Inefficient (>60 Minutes)	30	18,3

Numeric variables	Mean	SD	Median	Min-Maks
Service time (minutes)	41,6	10,8	39,0	18-94

Table 2 shows that most respondents (84.1%) rate the application of RME in the good category. The three dimensions were also rated good by more than 80% of respondents, with the highest rating on system utilization (86.0%) and the lowest on completeness of filling (82.3%). 81.7% of respondents were served within 60 minutes, while 18.3% exceeded the standard. The

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average service time was 41.6 minutes (SD ± 10.8) with a median of 39.0 minutes. The fastest time is 18 minutes and the longest is 94 minutes.

3. Effect of Application of EMR on the Efficiency of Service Time

Table 3. Effect of Application of EMR on the Efficiency of Service Time (n = 164)

Variable	Categories	Efficient f (%)	Inefficient f (%)	Total f (%)	χ^2	*p*-value	OR (95% CI)
Application of EMR	Good	119 (86,2)	19 (13,8)	138 (100)	11,92	0,001	4,59 (1,84-11,47)
	Less good	15 (57,7)	11 (42,3)	26 (100)			
System utilization	Good	120 (85,1)	21 (14,9)	141 (100)	7,77	0,005	3,67 (1,41-9,56)
	Less good	14 (60,9)	9 (39,1)	23 (100)			
Filling fittings	Good	118 (87,4)	17 (12,6)	135 (100)	16,60	<0,001	5,64 (2,31-13,75)
	Less good	16 (55,2)	13 (44,8)	29 (100)			
Ease of access	Good	117 (85,4)	20 (14,6)	137 (100)	7,60	0,006	3,44 (1,38-8,58)
	Less good	17 (63,0)	10 (37,0)	27 (100)			
Total		**134 (81,7)**	**30 (18,3)**	**164 (100)**			

Table 3 shows that the efficiency of service time is achieved in 86.2% of respondents with good EMR implementation, compared to 57.7% of respondents with less good RME implementation. This difference is statistically significant (χ^2 = 11.92; p = 0.001). An OR score of 4.59 (95% CI: 1.84-11.47) means that patients in hospitals with good RME implementation have a 4.59 times greater chance of being served efficiently. The three dimensions of RME also significantly affect the efficiency of service time (p < 0.05). The greatest effect was shown by the completeness of the filling (OR = 5.64; p < 0.001), followed by system utilization (OR = 3.67; p = 0.005) and ease of access (OR = 3.44; p = 0.006). The entire 95% confidence interval does not include the number 1, so the relationship can be expressed as meaningful.

DISCUSSION

1. Frequency Distribution of EMR Implementation and Service Time Efficiency

The results of a study of 164 respondents showed that most respondents, namely 84.1%, assessed the application of electronic medical records (EMR) in the outpatient unit of RSUD dr. Rasidin Padang was in the good category, while 15.9% of other respondents rated it less good. A very dominant proportion in this category indicates that EMR has been received and run quite effectively in supporting outpatient services. This achievement can be seen as a picture of the hospital's success in transforming from a manual recording system to a digital system, which basically aims to improve the quality, efficiency, and security of patient information management. However, the presence of 15.9% of respondents who still give a bad assessment shows that the application of EMR is not fully uniform and there are still aspects that need attention.

Assessment of the implementation of the EMR is built from three main dimensions, namely system utilization, completeness of filling, and ease of access. The system utilization dimension describes the extent to which health workers and officers actively use EMR in daily service

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activities. The completeness dimension of filling is related to the completeness, accuracy and timeliness of recording patient data, which is an important indicator of the quality of medical records. Meanwhile, the ease of access dimension shows how easily users can open, search, and utilize patient information whenever needed. These three dimensions are interrelated and together form the respondents' perception of the quality of EMR implementation, so that the results of this study can be the basis for hospitals to maintain good aspects and improve aspects that are still weak, for example through user training, improvement of system features, and strengthening technical support.

This result is in line with the direction of the health digital transformation policy that encourages the use of technology to make services higher-quality and more efficient. A review of various studies shows that the implementation of EMR has a positive impact on the quality and workflow of services, although its success depends largely on the readiness of the organization and users. In other words, the newly available system produces benefits when supported by mature management. The findings of this study corroborate this picture because both categories dominate the assessment of respondents (Tsai et al., 2020).

Researchers assume that the high proportion of good assessment is related to the obligation to implement EMR that has been applied to all health care facilities. The obligation encourages hospitals to prepare systems, human resources, and procedures more seriously. In addition, hospitals that have run an EMR for a certain period of time tend to have a more stable workflow. This condition makes the patient feel a smoother service so as to give a positive assessment.

In the dimension of system utilization, as many as 86.0% of respondents rated it good and this figure is the highest among the three dimensions. Utilization of the system illustrates the extent to which EMR is actually used in the service process, rather than simply available. A systematic review of the factors influencing the acceptance of health technologies shows that the perception of usability and ease of use determine the intention of users to make sustainable use of the system. Users who feel the system helps their work tend to use it consistently in daily activities (Kalayou et al., 2020).

In technology acceptance theory, the utilization behavior of a system is influenced by the perception of usability and the perception of ease of use. If both perceptions are positive, users will view the system as part of a reasonable way of working. The high utilization of the system in this study is in accordance with the theory because health workers have been accustomed to using EMR in every stage of service. This habituation also reduces the tendency to return to manual recording (Kalayou et al., 2020).

Researchers assume that the high utilization of the system is the result of the integration of EMR into the flow of daily services, from registration to doctor's examination. When the entire unit uses the same system, health workers have no other choice but to take advantage of it. This habit forms a digital work culture that supports consistency of service. However, there are still 14.0% of respondents who assess the utilization as not good, so it needs to be considered by management.

The completeness dimension of filling obtained a good assessment from 82.3% of respondents, which is the lowest number among the three dimensions. Completeness of filling relates to the extent to which patient data is recorded intact on the system. Reviews of the burden of clinical documentation note that health workers can spend a large portion of their time filling

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out electronic records, especially when the interface is less user-friendly. These conditions can reduce the accuracy of filling and make some of the data not filled completely (Meilani et al., 2025; Moy et al., 2021).

Research in Ghanaian hospitals shows that providers' readiness, including skills and attitudes towards technology, affects their ability to optimally use electronic medical record systems. Poorly prepared service providers tend to fill the system roughly and inconsistently. This explains why filling completeness is the most difficult dimension to achieve compared to other dimensions. User readiness appears to be key to the quality of recorded data (Abdulai & Adam, 2020).

Researchers assume that the low completeness of filling compared to other dimensions is caused by the high volume of visits that require health workers to work quickly. In conditions of long lines, filling in columns that are considered less urgent is often delayed or missed. In addition, the large number of fields can increase the burden of recording. Therefore, the simplification of forms and the supervision of filling them out deserve special attention.

The dimension of ease of access was rated good by 83.5% of respondents. Ease of access concerns the speed and smoothness of health workers opening and browsing patient data on the system. A review of the security and privacy of electronic medical records states that multiple access controls, authentication, and verification are required to protect patient data. However, too complex security measures can add stages of work and affect the speed of access. Therefore, hospitals need to balance data security with ease of use (Keshta & Odeh, 2021).

Researchers assume that the high assessment of ease of access indicates that the network infrastructure and devices in hospitals are adequate. Seamless access allows healthcare professionals to find patient data without searching for physical files. This also contributes to the speed of service flow. Meanwhile, 16.5% of respondents who rated poorly were likely to experience network disruptions or system delays at any given time.

In the service time efficiency variable, 81.7% of respondents were served within 60 minutes, while 18.3% exceeded the limit. The average service time was 41.6 minutes (SD ± 10.8) with a median of 39.0 minutes, and a range of 18-94 minutes. This achievement shows that the majority of patients have been served according to the hospital's minimum service standards. However, the maximum time of 94 minutes indicates that there are still patients with waiting times that far exceed the standard.

Outpatient waiting time is a quality indicator commonly used to assess the performance of hospital services. Research at tertiary teaching hospitals in Ethiopia reports that the length of waiting time is influenced by the registration process, queue system, and availability of health personnel (Biya et al., 2022). The findings suggest that service time is the result of a series of interrelated processes, rather than a single stage. This is in line with the measurement in this study which calculates the time from registration to completion of service.

Researchers assume that the high proportion of efficient services is related to the good implementation of EMR because patient data can be accessed without physical file search. Reduced repetitive recording also speeds up the inspection phase. However, patients whose time exceeds 60 minutes are likely to come from polyclinics with dense visits or that have a delay in the

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arrival of doctors. Thus, time efficiency is determined not only by the system, but also by other operational factors.

2. Effect of Application of RME on the Efficiency of Service Time

The results of bivariate analysis showed that there is a significant influence between the application of electronic medical records (EMR) and the efficiency of service time in the outpatient unit of RSUD dr. Rasidin Padang. Service time efficiency was achieved in 86.2% of respondents with good EMR implementation, while in respondents with less good EMR implementation the figure was only 57.7%. This difference is statistically significant ($\chi^2 = 11.92$; $p = 0.001$) with an OR value of 4.59 (95% CI: 1.84-11.47). That is, the implementation of a good EMR increases the chances of efficient service by 4.59 times.

This finding is in line with the results of a systematic review that concluded that the implementation of electronic health information systems contributes to improving the efficiency and quality of service. The digital system allows patient data to be quickly available so that file retrieval and repetitive recording processes can be reduced. The benefits are especially felt in units with a high volume of visits such as ambulatory. Thus, the results of this study corroborate evidence that digitization of records is associated with smoother service flow (Tsai et al., 2020).

Researchers assume that this meaningful effect occurs because EMR cuts the previously time-consuming stages on manual systems. In manual logging, files must be searched, transferred between units, and rewritten at each stage of service. In EMR, all these stages are replaced by integrated data access. It is this time saving at each stage that is likely to accumulate into a shorter total service time.

In terms of theory, the success of information systems can be explained through the Information Systems Success model that puts the quality of the system, the quality of information, and the quality of service as determinants of use and net benefits for the organization. These net benefits can take the form of time savings and increased work productivity. If the system and information are of good quality, users will benefit from them and the organization will benefit from operations. The results of this study are in accordance with the model because the implementation of a good EMR is followed by the achievement of more efficient service time (Petter & McLean, 2020).

Research in Indonesia on hospitals also shows that the use of hospital information systems is related to the acceleration of services. An integrated system from registration and polyclinic to pharmacy facilitates coordination between units. As a result, patients do not have to wait long because the information has moved digitally. This finding supports the results of research that the quality of system implementation has an effect on service time (Fadhil & Wulandari, 2022).

Researchers assume that the conditions in the hospital dr. Rasidin Padang are similar to the findings because EMR has been connected to several service units. When the doctor can see the patient's history since the patient entered the examination room, the anamnesis and data tracing time are reduced. It also allows the doctor to start the examination without waiting for the file to arrive. Thus, the connectedness of the system becomes one of the explanations of the influence of EMR on efficiency.

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Analysis on the system utilization dimension showed that 85.1% of respondents with good utilization were served efficiently, compared to 60.9% with poor utilization ($p = 0.005$; OR = 3.67). These results show that the more consistently the system is used, the greater the chance of efficient service. A review of the acceptability of health technologies states that perceptions of usability and ease of use encourage users to utilize systems sustainably, and that consistent utilization is what results in work benefits. Systems that are only partially used will not provide optimal time savings (Kalayou et al., 2020).

Researchers assume that the use of the system has an effect because the use of inconsistent EMR causes double recording, i.e., on the system and on paper. Double logging actually adds to the workload and slows down service. In contrast, full utilization makes the entire process centralized on a single system. Therefore, patients with good system utilization are served faster.

The dimension of filling completeness showed the greatest effect on service time efficiency, with 87.4% efficiency on complete filling compared to 55.2% on incomplete filling ($p < 0.001$; OR = 5.64). Completeness of data is the foundation so that the information needed at the next stage is available. The study of the documentation burden shows that the quality of electronic records is strongly influenced by the design of the system and the workload of health workers. Incomplete data forces health workers to complete or re-query information so that service time increases (Moy et al., 2021).

Research in Ghana suggests that the readiness of service providers, including skills and attitudes towards technology, determines the successful use of electronic medical records. Prepared providers tend to fill in the data correctly and on time. Timely filling enables the clerk at the next stage to immediately go to work without waiting. This explains why filling completeness has the strongest influence in this study (Abdulai & Adam, 2020).

Researchers assume that the completeness of the filling has the greatest effect because all stages of service are dependent on the data recorded in the previous stage. For example, complete data on complaints and vital signs from the nurse allows the doctor to immediately determine a follow-up examination. On the contrary, empty data gives rise to additional breaks and communication. Therefore, the completeness of the data determines the smooth flow of services.

The dimension of ease of access also had a significant effect, with 85.4% efficiency on easy access compared to 63.0% on difficult access ($p = 0.006$; OR = 3.44). Ease of access reflects the speed with which healthcare professionals open and search patient data. A review of the security of electronic medical records mentions that access control and authentication need to be implemented, but procedures that are too layered can slow down users. Therefore, ease of access becomes an important part of the resulting efficiency of the system (Keshta & Odeh, 2021).

Researchers assume that the ease of access has an effect because network disruption or slow systems immediately stop the flow of services in polyclinics. Under these conditions, health workers must wait for the system to recover or temporarily switch to manual recording. The effect of this dimension is smaller than the completeness of filling, possibly because the hospital infrastructure is relatively stable so that disturbances rarely occur.

Although the effect of EMR is significant, there are still 13.8% of respondents with good EMR who are not served efficiently, and 57.7% of respondents with poor EMR who are still served efficiently. This condition indicates that the service time is also determined by other factors outside

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the system. Research on outpatient waiting times shows that the registration process, the queue system, and the availability of health workers also influence the length of service (Biya et al., 2022). Thus, EMR should be viewed as one of the determining factors that need to be combined with improved queue management and doctor scheduling.

CONCLUSIONS

This study concluded that the application of electronic medical records (EMR) is significantly related to the efficiency of service time in the outpatient unit of RSUD dr. Rasidin Padang. A total of 84.1% of respondents rated the implementation of EMR as good, and 81.7% experienced efficient service time, with an average service time of 41.6 ± 10.8 minutes. Service time efficiency was higher in respondents with good EMR implementation compared to those with poor implementation (86.2% vs. 57.7%; difference of 28.5 percentage points; $p = 0.001$). The value of OR = 4.59 (95% CI: 1.84–11.47) means that the odds of experiencing efficient service on a good EMR application are about 4.6 times compared to a less good application. Since the lower bound of the confidence interval is above 1, this relationship cannot be considered accidental. A fairly wide range of intervals indicates that the actual magnitude of the effect can still differ from this estimate, so it needs to be confirmed on a larger sample.

However, EMR is not the only determinant. In a good implementation of EMR, there are still 13.8% of respondents whose service time is not efficient, and in a less good implementation, 57.7% of respondents still experience efficient service. This suggests the presence of other factors, such as the volume of visits, doctor availability, and interunit flow, which have not been controlled for in this study. Thus, the benefits of RME do not stop at the change of media from paper to screen, but rather manifest when the system is used properly in the workflow of the service.

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