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The Effect of Electronic Medical Record Implementation on The Performance of Medical Record Officers

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ABSTRACT

Electronic medical records allow health care providers to be able to serve efficiently and are more secure in terms of security in accessing and recording various patient medical information, in its implementation electronic medical records become more effective on the performance of medical record officers. This study aims to determine the effect of electronic medical record implementation on the performance of outpatient medical record officers at X Hospital, Bandung City. The research method used is quantitative method by distributing questionnaires to 15 respondents of outpatient medical record officers. The results in this study, the effect of the implementation of electronic medical records on the performance of outpatient medical record officers amounted to 55.1% with positive results. From this study, problems were found including: (1) The lack of human resources in mastering technological developments. (2) There is a double medical record number. (3) There is still a lack of facilities and infrastructure that can interfere with the performance of electronic medical record officers in outpatient services.

INTRODUCTION

Health means the state of being healthy, both physically, mentally and socially and not just free from disease to enable him to live a socially and economically productive life (Presiden RI, 2023). Health is the most important part of a person's life, being healthy physically as well as spiritually.

Hospital is a health care institution that offers services in a hospital unit that organizes complete health services, in providing care for patients who need overnight care who get further services, care for patients who come regularly or outpatients where these services are for patients who need treatment without the need to stay overnight in the hospital with a duration not exceeding 24 hours and also treatment carried out according to the date of the next treatment, also has services in the emergency department available for urgent services (Triadi et al., 2024).

RME is an electronic system that stores all information about a patient, such as medical history, test results, and treatment details, facilitating physician communication, improving documentation efficiency, and facilitating information sharing. The advantage is that patients can access their electronic records at the hospital whenever needed (Ariani, 2023).

Improving and strengthening the use of medical record services is expected to be achieved through the implementation of electronic medical records. The benefit of RME for medical personnel is as a foundation or guide in planning, analyzing the disease, and determining the treatment, care, and medical actions needed for patients. This helps protect medical personnel in achieving optimal public health(Amelinda Jeannette Sulistya & STIKes Mitra Husada Karanganyar Papahan Tasikmadu Karanganyar, 2021)

Hospital Management Information System (SIMRS) is an information and communication technology system that processes and integrates information to manage all stages of the service process in hospitals. This is done through the coordination of networking, reporting, and administrative procedures to obtain precise and accurate information, which is an integral part of the Health Information System. SIMRS also serves as a platform capable of seamlessly connecting the flow of information from both inside and outside the hospital (Winarti, 2023). Excellent service quality is highly dependent on the existence of an effective medical record system, which is a crucial factor in the hospital service sector. With optimized service levels, there will be an overall improvement in service quality. Medical records are a technological innovation that is part of the continuous development in healthcare technology. It enables service providers to provide better care and be responsive to patient needs.

In every health facility, Medical and Health Information Recorder (PMIK) is expected to provide high quality health information services and focus on the health information needs of health care providers (Garmelia et al., 2021). PMIK is very important to follow educational requirements in accordance with applicable laws and must also have special education to support the implementation of medical records to the fullest, especially when collecting data or maintaining medical records to the fullest, especially in an effort to reduce the potential for errors.

The implementation of RME is expected to be evenly spread across all health care facilities in Indonesia. This is because there are many benefits of RME, especially from a bioethical point of view. First, it accelerates the exchange of medical information to facilitate the referral process and handling of emergency situations. Second, it provides medical data support that can be accessed directly by the relevant patients. Third, it helps detect inequalities in healthcare delivery with good recording of clinical and demographic variables (principle of equity). The last principle is to maintain the confidentiality of RME data which is guaranteed and can only be accessed by interested parties. Performance is a work activity or process that is based on skills to achieve expected results, reflecting the success and desired behavior of individuals or employees to achieve organizational goals.

Performance refers to work activities or processes that focus on the application of skills to achieve desired results. It is also an indicator of the extent to which a policy or activity program achieves the organization's goals, vision, and mission planned through strategic planning. Performance can be measured when individuals or groups of employees achieve the criteria or success set as a standard in measurement. Therefore, without a set standard of success, performance cannot be assessed (Safrizal, 2021). Performance reflects the success and desired behavior of an individual / employee to achieve organizational goals, the performance of medical record officers is indeed a very important thing for the smooth process of developing RME in health care facilities (Nurfitria et al., 2022).

Based on the research already discussed (M. Amin et al., 2021), RME implementation requires factors that play a role in its success, such as Human Resources support, hardware, finance, leadership, training, and technical support. However, there are also obstacles that may be encountered, such as system errors, rudimentary system design, inability to integrate with other systems, lack of computer skills, and interruption of electricity supply. Data confidentiality and security in the RME system also need to be considered during implementation. Nonetheless, the hospital has not fully implemented RME optimally as there are still components that are not available to support its implementation. These components include Standard Operating Procedures (SOPs) for filling out outpatient electronic medical records and medical support systems such as x-rays, CT scans, ultrasound, and other systems.

Based on the research that has been discussed (Sigit, 2023), the implementation of electronic medical records, several problems have been found such as human resources (HR) who are still lacking in mastering technological developments, the unavailability of SPO electronic medical records, the existence of double medical record numbers, and the lack of facilities and infrastructure that might interfere with the quality of work of officers are also expected to improve the work efficiency of medical recorders at AMC Bandung Hospital.

When research was conducted at X Hospital on the effect of electronic medical record implementation on the performance of medical record officers, problems were found including the lack of human resources in mastering

technological developments, there were double medical record numbers and a lack of facilities and infrastructure that could interfere with the performance of electronic medical record officers in outpatient services, so that it was hoped that it could increase the effectiveness of the work of medical record officers at X Hospital Bandung City.

From the background of the problems discussed above, the authors are interested in raising the title "The Effect of Electronic Medical Record Implementation on The Performance of Outpatient Record Officers in X Hospital of Bandung City"

METHODOLOGY

A research method is a data collection approach used to solve problems, find solutions, and establish a correlation between data and methods by carefully evaluating research results (Waruwu, 2023). In this context, the author chose a quantitative approach for his research.

Quantitative research method is a research method based on an approach in which researchers collect data from certain natural locations, including questionnaires, conduct statistical tests, or make observations. Analyzing quantitative or statistical data with the aim of testing hypotheses (Latipah et al., 2021).

Population is the whole of all elements that have characteristics to be investigated and have certain similarities, such as individuals in a group, event, or object to be studied. In this context, the population studied was 15 outpatient medical record officers at X Hospital in Bandung City (Mahastri et al., 2022). The sample, on the other hand, is part of the total population with the same characteristics. This study used a saturated sampling technique, which means selecting all 15 outpatient medical record officers as samples. In other words, saturated sampling technique refers to the determination of a sample in which all members of the population are used as samples (N. F. Amin et al., 2023).

In this study, information was obtained through several ways, namely observation, questionnaire distribution, and referring to literature sources. To calculate the questionnaire using a Likert scale and analyze the data using SPSS version 25.

RESEARCH RESULT AND DISCUSSIONS

The results of the calculation analysis using SPSS version 25.

Normality Test

Table 1. Normality Test Results

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		15
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	.84969468

Most Extreme Differences	Absolute	.248
	Positive	.141
	Negative	-.248
Test Statistic		.248
Asymp. Sig. (2-tailed)		.014[c]
a. Test distribution is Normal.		
b. Calculated from data.		
c. Lilliefors Significance Correction.		

Source: Processed by the author, SPSS 25 (2024)

Based on the normality test, with a significance value of 0.014> 0.05, the authors concluded that the data had a normal distribution.

Validity Test of Electronic Medical Record Implementation

A statement is considered true if rcount exceeds rtable.

Table 2. Validity of the Effect of RME Implementation

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
X1	18.87	2.410	.511	.885
X2	18.93	2.067	.687	.848
X3	19.07	1.638	.886	.791
X4	19.27	1.781	.608	.877
X5	19.07	1.638	.886	.791

Source: Processed by the author, SPSS 25 (2024)

Validity Test of Medical Record Officer Performance

A statement is considered true if rcount exceeds rtable.

Table 3. Validity of Medical Records Officer Performance

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Y1	18.93	1.924	.873	.792
Y2	18.87	2.267	.616	.863
Y3	18.87	1.981	.867	.795
Y4	18.60	2.971	.417	.897
Y5	18.87	2.124	.737	.831

Source: Processed by the author, SPSS 25 (2024)

In table 2 and table 3 each statement where there are 10 questions answered by 15 medical record officers. The significance value is 5% (0.05) of the r_{table} and N = 15 medical record officers, the DF = N-2 formula, the result is 13. Therefore, the r_{table} value used is 0.553. After comparison, each statement element has a result of $r_{count} > r_{table}$, then 1 is valid.

Reliability Test of the Influence of Electronic Medical Record Implementation

Reliability testing using SPSS version 25:

Table 4. Reliability of the Effect of Electronic Medical Record Implementation

Reliability Statistics

Cronbach's Alpha	N of Items
.870	5

Source: Processed by the author, SPSS 25 (2024)

The test is carried out with the provision that if the *Alpha* value exceeds 0.6, the data is considered to have a sufficient level of reliability. The measurement results in the table above show a result of 0.870 which means that the data is considered to have a high level of reliability.

Reliability Test of Medical Record Officer Performance

Reliability testing using SPSS version 25:

Table 5. Reliability of Medical Record Officer Performance

Reliability Statistics

Cronbach's Alpha	N of Items
.869	5

Source: Processed by the author, SPSS 25 (2024)

The test is conducted with the stipulation that if the *Alpha* value exceeds 0.6, the data is considered to have a sufficient level of reliability. In this case, the measurement results recorded in the table show 0.869 which indicates that the data has a high level of reliability.

Correlation Test

Correlation testing used SPSS version 25:

Table 6. Correlation between RME Implementation and RM Officer Performance

Correlations

		Pengaruh Implementasi RME	Kinerja Petugas Rekam Medis
Pengaruh Implementasi RME	Pearson Correlation	1	.743**
	Sig. (2-tailed)		.002
	N	15	15
Kinerja Petugas Rekam Medis	Pearson Correlation	.743**	1
	Sig. (2-tailed)	.002	
	N	15	15

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Processed by the author, SPSS 25 (2024)

The correlation test above shows a *Pearson Correlation* of 0.743. Then it can be seen in the correlation coefficient guidelines that the value of 0.743 is in the interval 0.71 - 0.90. So it can be concluded that the effect of the implementation of electronic medical records on the performance of medical record officers has a strong relationship.

Simple Linear Regression Test

Simple linear regression on the effect of electronic medical record implementation on the performance of medical record officers using SPSS 25.

Table 7. Simple Linear Regression of RME Implementation and RM Officer Performance

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	13.790	5.671		2.431	.030
	Pengaruh Implementasi RME	.702	.176	.743	3.997	.002

a. Dependent Variable: Kinerja Petugas Rekam Medis

Source: Processed by the author, SPSS 25 (2024)

Based on Table 7. above, the results of simple linear regression analysis show that constant (α) has a value of 13.790, while the regression coefficient (b) is 0.702. Therefore, the simple regression line equation can be formulated as follows:

Y = a + bX

Y = 13,790 + 0,702

The interpretation of the above equation is as follows:
1) The constant value of 13.790 indicates that when the RME Implementation Effect variable has a value of 0, the Medical Records Officer Performance variable will increase by 13.790.
2) The regression coefficient for the RME Implementation Effect variable (X) is 0.702, which means that when the value of the RME Implementation Effect (X) increases by 1%, the value of the Medical Records Officer Performance (Y) will increase by 0.702. Since the regression coefficient is positive, this indicates that variable X has a positive influence on variable Y.

Hypothesis Test

The following is a test of the hypothesis of the effect of electronic medical record implementation on the performance of medical record officers.

Table 8. Hypothesis of the Effect of RME Implementation and Medical Record Officer Performance

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	13.790	5.671		2.431	.030
	Pengaruh Implementasi RME	.702	.176	.743	3.997	.002

a. Dependent Variable: Kinerja Petugas Rekam Medis

Source: Processed by the author, SPSS 25 (2024)

From the test results that have been carried out, it can be seen that the t_{count} value is 3.997, while the t_{table} with a sample size of n = 15 - 2 = 13 and a significance level of α = 5% is 1.771. Thus, it can be concluded that since the t_{count} value exceeds the t_{table} value, H0 is rejected and H1 is accepted. That is, there is sufficient evidence to state that the implementation of electronic medical records has a significant impact on the performance of outpatient medical record officers at X Hospital in Bandung City.

Test of the Coefficient of Determination

The following is a test of the coefficient of determination:

Table 9. Coefficient of Determination of the Effect of RME Implementation and RM Officer Performance

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.743[a]	.551	.517	1.594
a. Predictors: (Constant), Pengaruh Implementasi RME				

Source: Processed by the author, SPSS 25 (2024)

The results of the coefficient of determination test which is sought using SPSS in a simple linear regression test, the result is how much influence the independent variable in this study is the effect of RME Implementation on the dependent variable in this study resulting in a value where the influence between variables (X) and (Y) is 55.1%.

CONCLUSIONS AND RECOMMENDATIONS

Based on research conducted at RS X Bandung City, the implementation of the use of electronic medical records for outpatient services that have implemented SIMRS has begun. The implementation of electronic medical records is expected to help officers and improve the patient service process to be more efficient than the use of manual medical records. The results of research on the effect of electronic medical record implementation on the performance of outpatient medical record officers at X Hospital in Bandung City show that based on testing by distributing questionnaires to 15 respondents of outpatient medical record officers, the calculated t value is 3.997 with a t table value of 1.771. Thus, it can be concluded that H0 is rejected and H1 is accepted. This indicates that the implementation of electronic medical records affects the performance of outpatient medical record officers at X Hospital in Bandung City, with an influence of 55.1%. Meanwhile, the remaining 44.9% is influenced by other variables.

However, there are suggestions to ensure the successful implementation of RME and maximize its impact on the performance of outpatient medical record officers, namely by providing comprehensive training to medical record officers in the use of the RME system to ensure good understanding and effective use. Ensure good integration between the RME system and other systems used in health services to optimize workflow and information exchange. Encourage active support from health facility management to facilitate RME adoption and ensure adequate infrastructure and resources. Conduct regular evaluations of RME implementation and performance of medical record officers to identify areas that require improvement and

opportunities for further enhancement. By implementing these suggestions, it is hoped that the implementation of RME can maximally improve the performance of outpatient medical record officers and provide sustainable benefits to the health service.

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