

## THE IMPACT OF CHANGES IN ELECTRONIC MEDICAL RECORDS IMPLEMENTATION ON PATIENT SATISFACTION (EMPIRICAL STUDY IN THE OUTPATIENT CLINIC AT PERSADA HOSPITAL MALANG)

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### Abstract

Hospitals are required to improve the quality of healthcare services by utilizing current technological developments to compete effectively (Ministry of Health, 2020). Digital transformation in healthcare systems has been a global agenda recommended by the World Health Organization (WHO) since the early 2000s, including the implementation of Electronic Medical Records (EMRE) as a strategy to improve service quality, operational efficiency, and patient safety (Ludwick and Doucette, 2009). This study used a quantitative survey approach to analyze the effect of Electronic Medical Record Implementation on Patient Satisfaction in the outpatient clinic at Persada Hospital Malang. The sample consisted of 110 respondents. Sampling was adjusted to meet exclusion and inclusion criteria using a simple random sampling technique. The data collection tool was a closed-ended questionnaire. Data analysis was statistically tested using the Chi-Square Test to determine the effect of changes in Electronic Medical Record Implementation on patient satisfaction with a 95% confidence level or a significance level ( $\alpha = 0.05$ ). The bivariate analysis results indicate a high level of patient satisfaction in the outpatient clinic, supported by five factors: tangibles, reliability, responsiveness, assurance, and empathy. The study concluded that changes in the implementation of Electronic Medical Records directly impacted patient satisfaction in the outpatient clinic at Persada Hospital Malang.

Keywords: Electronic Medical Records, patient satisfaction

### 1. INTRODUCTION

A medical record is a file containing documents about a patient's identity, examination, treatment, and other services provided to a patient at a healthcare facility. The regulation of medical records aims to improve the quality of healthcare services, provide legal certainty in the organization and management of medical records, ensure the security and confidentiality of medical record data, and realize the implementation and management of digital-based medical records, as well as digitally integrated medical record management (Ministry of Health of the Republic of Indonesia, 2022). Meanwhile, Electronic Medical Records (ERM) is the use of information technology devices for the collection, storage, processing, and access of data stored in patient medical records in hospitals within a database management system that aggregates various medical data sources (Handiwidjojo, 2009). According to the WHO (2006), more than 60% of member countries have begun adopting digital information systems in healthcare services. However, this implementation faces challenges in adapting to uneven human resources and infrastructure. Several studies show that the process of implementing technology in hospitals often creates resistance, additional workload, and even decreased job satisfaction if it is not accompanied by effective change management (Ludwick and Doucette, 2019).

In Indonesia, the Ministry of Health has required all hospitals to gradually implement the RME system in accordance with Minister of Health Regulation No. 24 of 2022 since 2020. However, national data indicates that only around 30% of hospitals have fully implemented RME by 2023, with most still facing challenges in terms of human resource readiness and system integration. This change not only

impacts the technical process of patient data management but also significantly impacts the workload, coordination flow, and work dynamics of employees across various service units (Ministry of Health, 2023). Patient satisfaction is a valuable asset because satisfied patients will continue to use their chosen service. However, dissatisfied patients will be twice as likely to tell others about their bad experience. Therefore, to create patient satisfaction, hospitals must be able to create and manage a system to attract more patients and retain them (Noviyanti, 2020). According to Kotler & Keller (2012) in Indrasari, 2019, five factors influence customer satisfaction: product and service quality, service quality, emotional well-being, price, and cost.

Meanwhile, according to Nursalam, the quality of nursing care has several aspects, namely (Maryana & Maya, 2022): tangibles, reliability, responsiveness, assurance, and empathy. Based on these five factors, the researchers developed the 21-item SERVQUAL scale. They also noted the existence of a zone of tolerance, or range within which a service dimension would be considered satisfactory, anchored by the minimum level consumers are willing to accept and the level they believe should be achieved.

## 2. RESEARCH METHODS

This research is a quantitative study using a survey method. The study was conducted by collecting data on outpatients. The population in this study was 9,443 patients waiting in the outpatient clinic at Persada Hospital Malang, Malang, from August 1 to September 30, 2025. A sample of 110 respondents was selected using the Slovin Formula, with sampling using the Simple random sampling technique. The analysis technique used bivariate data analysis (Chi Square) with a 95% confidence level or a significance level ( $\alpha = 0.05$ ). The aim was to determine the effect of changes in the implementation of electronic medical records on patient satisfaction in outpatient clinics at Persada Hospital Malang.

## 3. RESEARCH RESULTS

**Table 5.1** Distribution of respondent identities including: Age, Gender

General Data	Category	Total f	Percentage %
<b>Age</b>	18-25 th	13	14
	26-25 th	5	5
	36-45 th	31	31
	46-55 th	24	26
	56-65 th	37	34
<b>Gender</b>	Man	62	68
	Woman	48	32
<b>Work</b>	Work	46	42
	Doesn't work	64	58

Based on the data in Table 5.1, it shows that the majority of respondents, 37 people or 34%, are aged between 56-65 years. Most of them are male, namely 62 respondents or 68%, with unemployed status, namely 64 respondents or 58%.

## Respondent-Specific Data

**Table 5.2** Frequency Distribution of Electronic Medical Record Implementation and Patient Satisfaction Variables

Variable	Value	Indicator	Mean Value
Implementation of Electronic Medical Records	Lowest	X1.3.1	3,30
	Highest	X1.2.2	4,45
Patient Satisfaction	Lowest	Y1.1.7	3,91
	Highest	Y1.2.6	4,99

Source: General Research Data 2025

Based on the data above, the lowest score for the implementation of Electronic Medical Records (EMR) was that staff often needed consultations regarding the use of EMR, with an average score of 3.30. The highest score was that staff did not need much time to learn how to use EMR to support their work in the hospital. Regarding patient satisfaction, the highest score was that patient examinations were conducted according to their queue number, with an average score of 4.99. The lowest score was that the medical equipment used was clean and suitable, with an average score of 3.91. Based on the results of the Chi-Square test, the Pearson Chi-Square value was obtained at 434.722 with a degree of freedom (df) of 396 and a significance value of 0.007. Because the significance value is smaller than 0.05, it can be concluded that there is a statistically significant relationship between the implementation of electronic medical records and patient satisfaction tested. In addition, the Linear-by-Linear Association value of 7.131 with a significance of 0.008 also shows that there is a significant linear association, which indicates a systematic relationship pattern between the implementation of electronic medical records and patient satisfaction. Therefore, it can be concluded that the hypothesis of the implementation of electronic medical records has a significant effect on patient satisfaction is accepted.

#### 4. DISCUSSION

Based on the data in Table 5.2, the average score for the implementation of electronic medical records was 4.45, with the lowest score being 3.30. The average score for changes in electronic medical record implementation fell into the very high to moderate categories. These results indicate that patients perceived the level of electronic medical record implementation to be very high, reflecting a fast, effective, and acceptable process due to proper, straightforward management. A medical record is a file containing notes and documents about a patient's identity, examinations, treatments, procedures, and other services provided to the patient (Ordila et al., 2020). Every medical professional is obligated to complete the medical record completely and accurately (Octarina et al., 2017). Medical records are also an indicator of the quality of a healthcare facility (Amran et al., 2021). The better and more complete the medical record file, the better the quality of the healthcare facility (Mukhlis, 2020). Several studies have been conducted on the impact of electronic medical records (EMR) use on employee stress. Gardner, Cooper, et al. (2021) found that approximately 70% of EMR users experienced stress, with 26% experiencing excessive fatigue. Another study showed that physicians using EMRs in hospitals had stress levels 1.9 times higher. Melnick, Dyrbye, et al. (2019) found that 45.9% of EMR user respondents experienced symptoms of work stress, with the majority giving low scores on the System Usability Scale (Irfan, 2022). This was due to staff unpreparedness in implementing electronic medical records.

Meanwhile, the data results from the frequency of patient satisfaction, overall the average score was 4.99, and the lowest score was 3.91. Based on the previous index category, it was included in the Very High and High categories. These results indicate that patient satisfaction achieved while waiting

for services at the outpatient polyclinic of Persada Hospital Malang is classified as High, this is because nurses apply calls based on the serial number of patients who come first, doctors and nurses also serve patients politely and friendly. The results of this study are in line with research (Pratiwi and Sani, 2017) satisfaction in the obstetrics and gynecology polyclinic of Surakarta City Hospital, the majority of whom are satisfied, as many as 79 people (91.9%). This is because the service officers have been able to register patients with good communication regardless of the social status, ethnicity, culture and religion of the patient, But the results of this study are not in line with research by (Sara, 2019) on 62 respondents with research results more than half 39 (62.9%) respondents felt dissatisfied with the services provided, this lack of satisfaction was caused by the waiting room being too small and examinations not being carried out on time. According to the results of the study, supporting theories and related research, the researcher assumes that most patients feel satisfied.

Patient satisfaction is supported by five factors: tangibles, reliability, responsiveness, assurance, and empathy. These five factors influence patient satisfaction, which nurses must implement in providing nursing care.

The results in Table 5.4 show a Pearson Chi-Square value of 434.722, with a degree of freedom (df) of 396, and a significance level of 0.007. Because the significance level is less than 0.05, it can be concluded that there is a statistically significant relationship between Changes in Electronic Medical Record Implementation and patient satisfaction. Furthermore, the Linear-by-Linear Association value of 7.131 with a significance level of 0.008 also indicates a significant linear association, indicating a systematic relationship between Changes in Electronic Medical Record Implementation and patient satisfaction. Therefore, it can be concluded that the hypothesis that changes in electronic medical record implementation have a significant impact on patient satisfaction is accepted. Respondents felt that medical records can assist in determining a patient's medical history, assist in developing a care plan, and safeguard legal interests in compensation cases such as personal accidents or malpractice, thus reducing the time required to record patient data. Because the use of medical records can help nurses perform their jobs better, this study can serve as a reference to determine whether the use of medical records has a significant impact on how well nurses perform their jobs.

According to (Widayatun in Nufadillah & Setiatin, 2021), satisfaction is a person's feeling of pleasure or disappointment that arises after comparing their perception or impression of the performance or results of a product with their expectations. An effective service system is a system or arrangement that brings people together, thus involving feelings, emotions, desires, hopes, attitudes, self-esteem, and behaviors to win the hearts of patients and ensure the service process as a soft system runs effectively, meaning it is able to leverage the emergence of pride and form positive love from officers in the eyes of patients. Officers in providing services to patients must act effectively, precisely, quickly and without requiring long waiting times. Manually writing medical records is time-consuming and incomplete data indicates that nurses may be less than optimal in carrying out their duties. This is related to patient satisfaction and nurse performance satisfaction, which, according to Wexley & Yuki (2022) and Mas'ud (2024), are very important in determining individual performance. Physical factors such as inadequate work environment conditions and non-physical factors such as relationships between employees also affect performance. A conducive work environment can increase the productivity of medical personnel and patient satisfaction.

## 5. CONCLUSION

1. The implementation of Electronic Medical Records (EMR) is a work aid that improves nurses' agreement, accuracy, and productivity, thereby creating comfort and convenience, and accelerating the patient identification process at the Persada Hospital Malang outpatient clinic.
2. Patient satisfaction can be achieved by creating a conducive and comfortable waiting room environment, making patients feel valued.
3. There is an impact of changes in the implementation of Electronic Medical Records on patient satisfaction at the Persada Hospital Malang outpatient clinic.

## 6. SUGGESTION

1. Management is advised to conduct regular training, maintain the system, and provide a responsive technical team so that the EMR truly becomes a work tool that increases the speed, accuracy, and productivity of healthcare workers.
2. Hospital management needs to maintain patient satisfaction levels through policies that prioritize service, infrastructure, fairness, and workload balance. High patient satisfaction will strengthen loyalty and emotional attachment to the organization.

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