



## **The Effect of Electronic Medical Records on Service Quality and Patient Satisfaction: A Literature Review**

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### **Abstract:**

Electronic medical records (EMR) are important to implement because they reduce doctors' workload, costs and errors. With Electronic Medical Records, Doctors and health workers also benefit from easy access to patient information which ultimately helps improve patient safety and clinical decision-making such as diagnoses, allergic reactions, and drug duplication. Electronic Medical Record (EMR) benefits patients because of efficiency in the health care process. Therefore, the purpose of this study was to review the literature on the implementation of EMR on service quality and patient satisfaction. Based on a comparison of hospitals that have implemented EMR vs. Paper Medical Records (PMR), it was found that implementing EMR would improve service quality more optimally than PMR. EMR enables healthcare providers to access and update patient information in real-time, quickly and accurately, increasing patient comfort and helping reduce waiting times by increasing healthcare efficiency. The level of patient satisfaction with EMR is statistically significantly better than PMR because EMR can improve the quality of care received by patients, the doctor's attention to patients during consultations increases, patient satisfaction with explanations increases, and communication between patients is well established. Conclusion: The implementation of EMR in hospitals significantly improves the quality of services provided by healthcare organizations and patient satisfaction.

**Keywords:** Electronic Medical Record, Service Quality, Patient Satisfaction

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## **1- Introduction:**

A hospital is a complex, professional and capital-intensive medical facility. This complexity arises because hospital services encompass various service, educational, and research functions, covering various behavioral and medical disciplines. Hospitals, as health centers, are required to provide comprehensive services for patients. With Electronic Medical Records, doctors and health workers also benefit from easy access to patient information which ultimately helps improve patient safety and clinical decision-making, such as diagnosis, allergic reactions and drug duplication. Aspects of efficiency and electronic use of medical records reduce operating costs and increase revenue in healthcare facilities, especially for hospitals. So, filling in the patient's medical record (RM), including EMR is an obligation every doctor and other health worker must do. Compliance in documenting medical records using EMR will improve service quality, patient satisfaction and patient safety due to misidentification and patient profiling (Nyoman et al., 2021).

The introduction of Electronic Medical Record (EMR) provides benefits, including saving time, preventing documents from being lost, and increasing patient participation in their care. EMR is considered an efficient system for improving patient engagement and physician communication. Notably, EMR improves patient compliance and satisfaction with the healthcare system (Wali et al, 2020). Service Quality is important in healthcare organizations. After all, the quality of health services will make healthcare organizations more efficient because everyone who works in healthcare organizations will always work better in a system that is constantly improved, and will foster job satisfaction, commitment, and morale improvement in the healthcare profession, which will ultimately lead to patient satisfaction (Pohan, 2013). Fachmi and Setiawan, (2020) stated that Service Quality is an assessment of the perfection of products or services from the value of benefits consumers feel based on a comparison between what consumers expect and what consumers receive. This means that when a health service place can provide good service to patients, then either directly or indirectly, there will be a feeling of satisfaction in customers, where customers feel happy and satisfied that the health service place has provided a service that is following the expectations and expectations of these customers. In addition, a study conducted in Saudi Arabia found that using EMR improves various aspects of the

health system, such as physician productivity, access to information, and quality of health services (Khalifa M, 2017). Kitesa et al, (2021), a study conducted on 184 hospital patients in Ethiopia, showed that implementing EMR in hospitals contributed significantly to the waiting time for patients to get health services.

Patient satisfaction results from an evaluation carried out by the patient between what is desired and the reality the patient feels (Xesfingi & Vozikis, 2016). In healthcare, satisfaction is an attitude shaped by emotions, which must be measured by a multidimensional total subjective assessment of attributes associated with the healthcare experience (Spiridon et al., 2018). According to Wali et al (2020), EMR is considered an efficient system for improving patient engagement and clinician communication. In particular, EMR improves patient compliance and satisfaction with the healthcare system. Service time also affects the increase in patient satisfaction. Ibrahim et al (2022), a study conducted on 321 patients in 14 public hospitals in Malaysia, showed that hospitals with the application of EMR significantly affected patient satisfaction. Jin et al (2022) research on RSU patients in China, the results showed that the application of EMR in hospitals had an impact on patient satisfaction ( $b = .162, p = .000 < 0.01$ ) and improved service quality ( $b = .316, p = .000 < 0.01$ ).

Electronic medical records (EMRs) are important to implement because of their ability to reduce physician workload, costs and errors. Paper-based reporting has many drawbacks, including manual data entry and requiring manual processing. Therefore, a systematic review of electronic medical record (EMR) systems for patient satisfaction and quality of care is important to know the extent of its application.

## **2- Materials and Method:**

The research method used is literature review, which is to conduct a more careful and thorough study, which can be divided into two: meta-analysis and meta-synthesis. In the metanalyses, research results from many articles with the same subject are discussed and analyzed based on planned statistical procedures. In metanalyses, patterns and relationships between research results from various articles are sought, analyzed and conclusions are made. Meta-analysis is included in the deductive approach, in other words, before conducting a metanalyses, the author has determined the major premises to be used

(top-down approach). Meta-analysis is usually done using PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) approach. The initial stage in the PRISMA method, identifying research questions as keywords to then determine the research database as an article search area, data base commonly used by PubMed, Scopus, Google Scholar, Science Direct and other official sources, and adjusted to the research title, abstract and keywords used to find articles. In this study, database sources used Scopus, Google Scholar and PubMed. The keywords used are "Electronic Medical Record" AND "service quality" AND "patient satisfaction". Inclusion criteria with inclusion criteria for national and international research articles in English and published in 2020- 2023 related to the title of the effect of Electronic Medical Record on Service Quality and patient satisfaction. Research articles that can be accessed in full (full text) are not abstracts only and are not paid. Articles from the database sources used are Scopus, Google Scholar and PubMed. Exclusion criteria and the exclusion criteria in this study are sourced from other databases, national and international research articles unrelated to the research problems studied, the use of languages except English, articles published less than 2020 and articles cannot be downloaded in full.

Researchers searched Scopus, PubMed and Google Scholar, and found 149 journals and articles related to the keywords "Electronic Medical Record" AND "service quality" AND "patient satisfaction". Then sorting out duplicate journals so that there are 103 journals, then judging from the title and abstract, there are 84 journals that are not under the research. Researchers then pursued again by looking at the completeness of journals and found only 11 complete journals. From 11 journals, only 5 journals were obtained that met the research criteria to be taken.

### **3- Result and Discussion:**

Lin 2022, This study involved 262,569 patients (patient data 2013-2018), aiming to see the effect of EMR application on the quality of hospital services. The study shows that full implementation of EMR results in lower inpatient mortality [adjusted hazard ratio (HR) 0.947, 95% confidence interval (CI): 0.897–0.999,  $P=0.049 <0.05$ ], and lower risk of readmission within 14 days compared to hospitals without EMR (adjusted HR 0.627, 95% CI: 0.577–0.681,  $P<0.001$ ). Full EMR implementation has a lower risk of 48-hour postoperative mortality

(adjusted HR 0.372, 95% CI: 0.208– 0.665,  $P=.001$ ) compared without EMR. This means that full implementation of EMR will improve optimal service quality (Lin et al. 2020).

Based on several research results, the application of EMR contributes significantly to service quality, namely; Improved accuracy and completeness of patient information, EMR allows healthcare providers to access and update patient information in real-time. Healthcare providers can quickly and accurately access a patient's medical history, medication list, and other important information. This can help reduce errors and improve the quality of care provided (Maarsight et al, 2022). Waiting time, EMR can help reduce waiting times by improving healthcare efficiency. For example, if a patient's medical history is easily accessible in the EMR, healthcare providers may be able to diagnose and treat the patient more quickly, thereby reducing wait times (Kitesa et al, 2021; Ibrahim et al, 2022). The Link between EMR and Patient Satisfaction In healthcare, satisfaction is an attitude shaped by emotions, which must be measured by a multidimensional total subjective assessment of attributes associated with the healthcare experience (Spiridon et al., 2018). EMR can be significant in improving patient satisfaction with healthcare. In a study conducted by Wali et al (2020), on 377 patients in Saudi Arabia, overall patient satisfaction scores with EMR were statistically significant compared to Paper Medical Records (PMR) namely (3.7241 vs. 3.6919,  $<0.001$ ). Wali 2020, The results of the study showed that the doctor's attention to patients during consultation increased from 77% ( $n = 291$ ) to 82.3% ( $n = 314$ ) with the application of EMR with a P-value of  $<0.001$  and patient satisfaction with explanation increased from 80.7% ( $n = 302$ ) to 85.8% ( $n = 325$ ). The time patients spent during consultations also increased from 73.8% ( $n = 279$ ) to 80.4% ( $n = 303$ ) and active listening increased from 73.5% ( $n = 278$ ) to 77.3% ( $n = 289$ ). After applying EMR, patients' perception that there is time to ask about their health improved from 79.4% ( $n = 300$ ) to 84% ( $n = 316$ ). Finally, patients' feelings that doctors were more interested in medical records improved from 44.1% ( $n = 166$ ) to 57.5% ( $n = 218$ ). All indicators differ significantly with a P-value of  $<0.05$ . This shows that implementing EMR efficiently increases patient satisfaction (Wali et al, 2020).

Ibrahim et al (2022), conducted a study on a total sample of 321 patients in Malaysia, comparing health

facilities with EMR and health facilities not using EMR or manual with paper, where 48.9% of patient samples from health facilities have applied EMR. It shows that health facilities with the application of EMR have a higher average patient satisfaction value of 4.08 while without EMR 3.81 (P-value 0.03 <0.05). Regarding communication, patients with EMR health facilities have a higher and significant score of 4.08 and without EMR 3.96 (P-Value 0.04 <0.05). This shows that with the use of EMR, patient satisfaction and communication in health services improve. Jin et al (2022) research on hospital patients in China, the results showed that the application of EMR in hospitals had an impact on patient satisfaction ( $b = .162$ ,  $p = .000 < 0.01$ ) and improved service quality ( $b = .316$ ,  $p = .000 < 0.01$ ). Based on several research results, the application of EMR contributes significantly to patient satisfaction, namely; Improved quality of care, EMR can improve the quality of care provided by healthcare providers by allowing them to access and update patient information in real-time. This can lead to better clinical decision-making and more efficient care delivery, resulting in higher levels of patient satisfaction (Wali et al, 2022). Increased patient involvement, EMR can empower patients by giving them access to their medical records and allowing them to participate more actively in their health care. Patients who feel more involved in their health care tends to have higher satisfaction levels with their care. (Ibrahim et al, 2022). Improved communication: EMR can improve communication between patients and healthcare providers by allowing them to share information more easily. This can help reduce misunderstandings and improve the patient-provider relationship, leading to higher levels of patient satisfaction (Ibrahim et al, 2022).

#### **4- Conclusion:**

Based on the results of a comparison of hospitals that have implemented EMR vs Paper Medical Records (PMR), it was found that the implementation of EMR can significantly impact the quality of services provided by healthcare organizations. Because of its ability to reduce physician workload, cost and errors, EMR allows healthcare providers to access and update patient information in real-time, quickly and accurately, improving patient convenience and helping to reduce wait times by improving healthcare efficiency. EMR implementation contributes significantly to increased patient satisfaction.

Because EMR can improve the quality of care patients receive, allowing them to access and update patient information in real-time, physicians' attention to patients during consultations increases, patient satisfaction with explanations increases, improves communication between patients and healthcare providers by allowing them to share information more easily, thereby increasing patient satisfaction and potential for revisit. Because of its significant role in improving service quality and patient satisfaction. Therefore, hospitals must implement EMR and health workers' compliance to follow EMR SOPs.

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