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UTILIZATION OF ELECTRONIC MEDICAL RECORDS AS DIGITAL HEALTH TECHNOLOGY TO IMPROVE SERVICE QUALITY AND PATIENT'S QUALITY OF LIFE

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ABSTRACT

Background: The development of health technology in recent years has brought about major changes in the health care system in various countries. This innovation makes it easier for people to be more aware of their health conditions and encourages the adoption of a healthier lifestyle. Through more practical and targeted monitoring, health technology plays a crucial role in helping improve people's quality of life. Objective: To determine the use of electronic medical records as a digital health technology in improving the quality of service and the quality of life of patients. Method: The method used was a literature review, conducted through the Google Scholar database. Results: The analysis results show that electronic medical records have a crucial role in improving the quality of service through more accurate recording, faster data access, and efficiency in the care process. Conclusion: Electronic medical records have been proven to have a crucial role in improving the quality of health care and actively contribute to improving the quality of life of patients. To maximize the benefits of this technology, proper implementation is needed, accompanied by training of medical personnel and the development of adequate infrastructure.

INTRODUCTION

The development of digital health technology in recent years has brought major changes to the healthcare service system. Various innovations such as telemedicine, health monitoring applications, and administrative digitalization have been introduced to make services faster, more accurate, and more accessible. Healthcare facilities are also required to adapt to these changes because service needs are becoming increasingly complex, the number of patients continues to rise, and the management of clinical information demands greater efficiency.

Research shows that digitalization plays an important role in improving service effectiveness while maintaining patient safety. Until now, many healthcare facilities have still relied on manual paper-based medical records. This system has several limitations, such as the risk of document damage or loss, data duplication, storage challenges, and the lengthy process of retrieving information. In addition, manual record-keeping is prone to errors

and often experiences delays in data entry, which can ultimately affect service quality. Several studies also emphasize that the use of paper-based systems limits coordination among healthcare workers and contributes to operational inefficiency (Pubmedia, 2021).

To address these challenges, electronic medical records (EMR) have begun to be developed and used in various healthcare facilities. EMR is a digital system that manages all patient health data in an integrated manner from personal identity and medical history to examination results, medical procedures, and supporting diagnostic tests. This system enables more accurate, secure, and easily accessible data storage for authorized healthcare professionals. Various sources also assert that EMR is an essential component of the current digital transformation in the healthcare sector (ICONES, 2022). The implementation of EMR has been proven to offer many benefits, including improved documentation accuracy, easier access to data, greater service efficiency, and better information security. EMR also supports healthcare workers in making faster, data-driven clinical decisions, thereby reducing the risk of medical errors and strengthening interprofessional collaboration. Recent studies show that facilities implementing EMR have experienced increased productivity alongside reduced administrative burdens.

The quality of healthcare services is strongly influenced by the speed and accuracy of available medical information. With EMR, healthcare professionals can directly access patient histories, provide more precise treatment, and minimize the potential for clinical errors. The positive impact is evident in improved patient safety, continuity of care, and overall patient experience. As service quality improves, patient quality of life also increases, especially for individuals with chronic conditions who require long-term monitoring. However, the implementation of EMR is not without challenges. Some ongoing obstacles include inadequate digital infrastructure, varying levels of healthcare worker competence, high implementation costs, and resistance to changes in workflow. Additionally, several studies highlight issues related to system interoperability, data security, and the need for continuous training to optimize the use of EMR. These challenges underscore the importance of more comprehensive strategies and strong policy support.

The purpose of this study is to understand how the use of electronic medical records, as part of digital technology in the healthcare sector, can help improve the quality of healthcare services and patient quality of life particularly through more organized data recording, faster access to information, and more effective care processes. In addition, this study aims to examine the extent to which this system can support medical personnel in making more accurate clinical decisions. Therefore, the findings of this research are expected to serve as a foundation for developing more integrated healthcare services that better align with patient needs.

METHODS

The research method used in this study is a literature review approach aimed at examining the utilization of electronic medical records as a digital health technology to improve service quality and patient quality of life. The article search was conducted through the Google Scholar database using the keywords “Electronic Medical Records,” “Digital Health Technology,” “Service Quality,” and “Patient Quality of Life,” which are relevant to the research topic. The initial search resulted in 50 articles, which were then screened based on their titles and abstracts to identify those relevant to the study, yielding 13 international articles. In the next stage, an eligibility assessment was carried out by reviewing the full texts according to the inclusion criteria, namely articles published within the last five years (2020–2025), employing clear research methods, and being relevant to the research objectives. Based on this selection process, four articles were eliminated for not meeting the publication year criteria. Consequently, nine articles that fulfilled all criteria were selected and used as the basis for analysis in this study.

RESULT AND DISCUSSION

The results and discussion in this section are compiled from nine reviewed journals to provide a comprehensive overview of the effectiveness of electronic medical records in healthcare services. Each journal presents different findings covering

patient safety, user satisfaction, service efficiency, patient empowerment, and advanced technologies such as deep learning which together offer a clearer understanding of the benefits and challenges of implementing digital systems in healthcare. By presenting each journal separately, this section aims to highlight the patterns, strengths, and barriers commonly found in the application of electronic medical records across various research contexts.

The study conducted by Sinaga and Sumartini (2025) is a literature review using the PRISMA approach that analyzed ten national and international journals regarding the effectiveness of Electronic Medical Records (EMR). The findings indicate that EMR improves patient safety through more accurate and structured documentation. In addition, EMR enhances patient satisfaction and increases nursing efficiency by simplifying access to information and reducing medication errors that commonly occur with manual record systems.

Agiwahyuanto and colleagues (2025) carried out a quantitative correlational study with a cross-sectional design involving 200 healthcare workers, including physicians and nurses, to assess user satisfaction with EMR systems. Using a five-point Likert questionnaire analyzed through PLS-SEM, the study found that system quality, information quality, service quality, and technological compatibility significantly influence user satisfaction. These findings emphasize that successful EMR implementation depends not only on the technology itself but also on the overall user experience.

Sutha and colleagues (2025) conducted a narrative literature review of 29 articles from databases such as PubMed, Medline, CINAHL, and Google Scholar. Their findings show that EMR positively impacts service quality, care efficiency, and coordination among healthcare professionals. However, the study also identifies several challenges, including risks of data input errors and potential information breaches. These barriers highlight the importance of adequate safety mechanisms and proper training in the implementation of EMR systems.

Through a PRISMA-based systematic review of five selected journals, Setyadi and Nadjib (2023) found that EMR significantly enhances healthcare service quality compared to manual record systems. EMR reduces patient waiting times, improves access to medical information, and increases overall patient satisfaction. The digital system also improves documentation accuracy, thereby supporting more effective and well-informed clinical decision-making.

Anggraeni and colleagues (2024), through a systematic literature review of 12 international articles, reported that Electronic Health Records (EHR) improve operational efficiency in hospitals. EHR reduces medical errors, accelerates administrative processes, streamlines workflow, and enhances both patient and provider experiences. As a result, EHR is considered an essential solution for improving productivity and service quality in healthcare facilities.

Anshari (2019) examined the differences between Electronic Medical Records (EMR) and Electronic Health Records (EHR), particularly in relation to patient empowerment. The review highlights that EHR offers broader coverage because it not only stores clinical data but also enables active patient involvement in managing their health. Therefore, EHR is seen as more effective in supporting patient-centered care and shared clinical decision-making.

Xie and colleagues (2020) conducted a systematic review of 98 articles focusing on the use of deep learning for processing temporal data in EHR. The study found that deep learning models effectively handle complex, time-dependent patient data for prediction and analysis. However, the review also notes that the interpretability of deep learning models remains limited, indicating the need for further development to ensure these technologies are safe, transparent, and clinically applicable.

In a pre-post intervention study involving 92 healthcare workers, Syamsuriansyah and Hizriansyah (2025) examined the impact of training and documentation improvement using EMR. Their results showed a significant increase in patient safety scores—from 52 to 98—after a six-week intervention. This demonstrates that enhancing documentation quality through structured training can directly improve patient safety and encourage optimal EMR utilization in clinical settings.

Si and colleagues (2019), through a systematic review of 49 articles, explored the use of deep learning in patient data representation within EHR. The study found that RNN and LSTM are the most commonly used methods due to their strong ability to predict diseases based on patient data patterns. The review concludes that deep learning has considerable potential to improve clinical data analysis, particularly in supporting faster and data-driven medical decision-making.

CONCLUSION

The findings indicate that electronic medical records (EMR) significantly improve healthcare service quality by providing faster and more accurate access to patient information, supporting better clinical decision-making, and reducing common issues found in manual systems such as lost files, duplicate data, and delayed entries. EMR also enhances patient safety and overall service quality, although its implementation still faces challenges including staff shortages, training needs, infrastructure limitations, and concerns regarding data security and privacy. Therefore, successful EMR adoption requires strong policies, adequate technological support, and improved competency among healthcare workers. Overall, EMR plays an essential role in the digital transformation of healthcare and has great potential to improve patients' quality of life through more efficient, integrated, and safe healthcare services.

REFERENCES

Agiwahyuanto, F., et al. (2025). Improving end-user satisfaction with electronic medical records system. Jurnal Sistem Informasi Kesehatan, 21(1), 33-46.

Anggraeni, D., et al. (2024). Hospital efficiency using electronic health records for patient service quality. International Journal of Health Information Management, 1(1), 309- 334.

Anshari, M. (2019). Redefining Electronic Health Records (EHR) and Electronic Medical Records (EMR) to promote patient empowerment. International Journal on Informatics for Development, 8(1), 35–39.

Setyadi, A., & Nadjib, M. (2023). The effect of electronic medical records on service quality and patient satisfaction. Jurnal Administrasi Kesehatan Indonesia, 2(12), 2780-2791.

Si, Y., Du, J., Li, Z., Jiang, X., Miller, T., Wang, F., Zheng, W. J., & Roberts, K. (2019). Deep representation learning of patient data from electronic health records (EHR): A systematic review. (Systematic review of 49 studies).

Sinaga, R., & Sumartini, S. (2025). Effectiveness of electronic medical records on patient safety. Jurnal Keperawatan dan Kesehatan, 7(1), 1095-1104.

Sutha, J., et al. (2025). The impact of use of electronic medical records on quality of health services and patient safety. International Journal of Health Quality, 3(1), 1-11.

Syamsuriansyah, & Hizriansyah. (2025). Health information quality and patient safety performance: A study at Awet Muda Narmada Regional Hospital. Journal of Health and Nutrition Research, 4(1), 102–115. https://doi.org/10.56303/jhnresearch.v4i1.352

Xie, F., Yuan, H., Ning, Y., Ong, M. E. H., Feng, M., Hsu, W., Chakraborty, B., & Liu, N. (2020). Deep learning for temporal data representation in electronic health records: A