Effectiveness and User Satisfaction of Electronic Medical Records in Indonesia Private Hospital

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ABSTRACT
The implementation of Electronic Medical Records (EMRs) in hospitals offers numerous benefits, including enhanced healthcare quality and safety, improved access to information, increased healthcare professional productivity, and reduced healthcare costs. Despite these advantages, the effectiveness and user satisfaction of EMRs can be hindered by challenges such as high implementation costs, user resistance, and complex integration processes. This study aims to investigate the effectiveness and user satisfaction of EMRs in the inpatient room of Siti Khodijah Muhammadiyah Hospital Branch of Sepanjang. This study employed a cross-sectional approach using validated questionnaire. This survey involved 86 healthcare workers (HCWs) in November 2023. The Technology Acceptance Model (TAM) was applied to assess the effectiveness of EMR implementation, while the ServQual method measured user satisfaction. This study revealed that the relevance (P = 0.001) and accuracy (P = 0.001) of the EMR system are critical factors that significantly influence HCWs' satisfaction. Users who found the EMR system relevant and accurate reported higher levels of satisfaction. However, aspects such as the timeliness (P = 0.404), completeness of data (P = 0.053) and support system (P = 0.670), while important, did not show a statistically significant impact on user satisfaction. Ensuring the relevance and accuracy of the system is essential to enhance user satisfaction. Practically, improving these aspects can lead to better HCW engagement with EMRs, and future research should explore strategies to address the non-significant factors for a comprehensive understanding of EMR effectiveness.

1. Introduction

Electronic Medical Records (EMRs) have become increasingly prevalent in healthcare settings worldwide, especially in hospital setting. Implementing Electronic Medical Records (EMRs) in hospitals offers a multitude of benefits that significantly impact healthcare delivery. One key advantage is the improvement in healthcare quality and safety 1. EMRs play a crucial role in reducing adverse events for patients, decreasing costs, optimizing processes, enhancing clinical research, and achieving the best clinical performances 1. Additionally, the implementation of EMRs leads to elevated quality in healthcare systems, reduced errors, improved diagnosis and treatments, faster healthcare decisions, increased information exchange among healthcare workers, decreased expenses and time, and enhancement of the safety culture among primary care providers 2. These benefits not only enhance patient outcomes but also streamline healthcare operations and improve overall efficiency within the hospital setting.

Furthermore, the adoption of EMRs has been associated with improved access to information, increased healthcare professional productivity, efficiency, quality, and accuracy 3. By digitizing patient records and information, EMRs facilitate prompt tracking of patients' records, reducing costs associated with repetitive medical tests due to lost files, and preventing ordering duplicate tests and procedures, thereby curbing unnecessary healthcare expenditures 4,5. The availability of electronic patient information through EMRs also enhances collaboration among healthcare professionals, accelerates the clinical decision-making process, and ensures enhanced health data security and accuracy, particularly crucial during times of crises such as the COVID-19 pandemic 6. Moreover, the implementation of EMRs has been shown to reduce the workload for healthcare professionals, improve the quality of documentation, enhance safety, and elevate patient care 7.

EMRs not only streamline administrative tasks but also contribute to better-rounded patient care by providing comprehensive and easily accessible patient information to healthcare providers. Additionally, EMRs have the potential to improve healthcare quality, reduce medical errors, decrease costs, and provide professional staff with unrestricted access to patient information, irrespective of time or location 8. This unrestricted access to patient data can lead to more informed decision-making and improved patient outcomes. In terms of operational efficiency, EMRs have been found to enhance doctors' standardized work practices, improve information availability, and boost the safety and quality of care within and between hospitals 9.

The implementation of EMRs can also lead to improved hospital efficiency, with benefits that outweigh the costs of adoption, ultimately resulting in higher patient satisfaction ratings 10. Furthermore, EMRs can foster trust and optimism among healthcare professionals regarding the benefits of EMRs compared to manual record-keeping, leading to increased productivity, data accuracy, and better performance appraisal, aligning with the expectations of health professionals 11.

Despite the numerous benefits associated with EMR implementation, one significant challenge for EMR implementation to be ineffective, leading to uninstallation post-implementation, substantial delays, cost overruns, or failure to utilize the EMR to its full potential 12. This ineffectiveness often stems from treating EMR implementation solely as an IT project rather than a holistic business process transformation involving IT components, which can hinder the integration of EMRs into existing workflows and practices. Moreover, challenges such as high implementation costs, end-user resistance, and complex implementation processes have been noted as common hurdles in EMR adoption within hospitals 13. Furthermore, the lack of system customization to meet hospital-specific needs, poor support and training from IT personnel, and resistance to change among healthcare professionals have been highlighted as obstacles to effective EMR implementation 2.

In addition to the factors mentioned above, the user satisfaction factor is an important factor in the successful implementation of EMR in hospitals. User satisfaction is considered a critical element influencing the effectiveness and sustainability of EMR systems within healthcare settings 14. The level of user satisfaction with EMRs can impact various aspects of healthcare delivery, including patient care, operational efficiency, and overall system performance. Research has demonstrated a close relationship between user satisfaction and the successful adoption and utilization of EMRs among healthcare professionals 7. Positive correlations have been identified between the elements of use, quality, and user satisfaction of EMRs, indicating that user satisfaction plays a pivotal role in shaping the overall perception and acceptance of EMRs within hospital settings 7. Moreover, user satisfaction with EMRs has been recognized as a significant predictor of the success of EMR implementation, highlighting the importance of addressing user needs and preferences to ensure the effective utilization of EMR systems 15.

Studies have also highlighted the impact of user satisfaction on healthcare quality and patient outcomes post-EMR implementation 16. Additionally, successful EMR implementation depends on addressing unintended adverse consequences identified by users and customizing EMRs to meet user needs, further emphasizing the importance of user satisfaction in driving successful EMR adoption 17. Furthermore, user satisfaction with EMRs has been linked to improvements in patient satisfaction and overall healthcare service delivery 18.

The utilization of EMRs leads to increased speed in patient interviews, easy obtainment of patient histories, and documentation of treatments, ultimately improving the efficiency of healthcare delivery 19. Additionally, EMRs facilitate better discussion and feedback on antibiotic choices, contributing to effective antibiotic stewardship in inpatient settings 20. Moreover, the implementation of EMRs in hospitals results in increased completeness of documentation compared to paper-based medical records, particularly in documenting signs, symptoms, weight, height, and malnutrition screening, thereby enhancing record-keeping practices 21. EMR warnings serve as a valuable tool in optimizing inpatient medication management, such as the administration of contraindicated medications, contributing to patient safety and quality care in hospital settings 22.

The purpose of this study is to investigate the effectiveness and user satisfaction of Electronic Medical Records (EMRs). The benefit of this study is to provide insight into the effectiveness and satisfaction of EMR users at Siti Khodijah Muhammadiyah Hospital Sepanjang Branch, which can help improve the quality of patient care and user experience.

2. Material and Method

This research used a cross-sectional approach. The population for this study consisted of 86 respondents who were users of the inpatient information system, including doctors, nurses, medical recorders, midwives, radiographers, medical analysts, and administrators. A total sampling technique was used to select participants who had direct interaction with the EMR system in their daily tasks.

The research was conducted at Siti Khodijah Muhammadiyah Hospital Branch of Sepanjang, specifically in the inpatient room. The study was carried out in November 2023, involving all health professionals who use the hospital's EMR using the Technology Acceptance Model (TAM) 23 which consists of indicators perceived usefulness, perceived ease of use, and intention to use. Siti Khodijah Muhammadiyah Hospital Branch of

Sepanjang is a reputable healthcare provider in Indonesia. The hospital has implemented an EMR system in the inpatient room to enhance patient care and record-keeping. Meanwhile, the dependent variable in this research used the ServQual method for the user satisfaction about inpatient EMR system. Primary data were collected through questionnaires and was designed to assess various aspects of EMR implementation and user satisfaction, utilizing the Technology Acceptance Model (TAM) and ServQual method. Respondents who agreed to participate signed an informed consent sheet before filling out the questionnaire. This research has received approval from the Ethics Committee of the Siti Khodijah Muhammadiyah Hospital, Branch of Sepanjang in November 2023 with number 18/KET-KEPK/11-/2023. Data analysis was performed in stages using SPSS software. Univariate analysis was conducted to describe the characteristics of each variable and their frequency distribution. Bivariate analysis was used to examine the correlations between the effectiveness of EMR implementation and user satisfaction. Chi-square tests were applied to determine the significance of these relationships.

3. Results

Research data were analysed using SPSS software. Univariate analysis was carried out to provide an overview of the characteristics of each variable studied and to see the frequency distribution value of each variable. Univariate analysis results can be seen in table 1.

Table 1. Frequency Distribution of Respondent Characteristics

User Characteristics	N	%
Age		
20 - 30 years	24	27.9%
≥ 30 - 40 years	35	40.7%
≥ 40 - 50 years	27	31.4%
Education		
Academy/D3	36	41.9%
S1	43	50.0%
S2	7	8.1%
Years of experiences		
≤ 2 years	17	19.8%
≥ 2 - 4 years	24	27.9%
≥ 4 - 6 years	29	33.7%
≥ 6 years	16	18.6%
Work unit		
Inpatient Room	36	41.9%
Radiology Unit	13	15.1%
Laboratory Unit	18	20.9%
Medical Records Unit	7	8.1%
Administrator	12	14.0%

The demographic characteristics of the respondents in this study (table 1) provide valuable insights into the user base of the Electronic Medical Records (EMR) system at Siti Khodijah Muhammadiyah Hospital Branch of Sepanjang. The univariate analysis of respondent characteristics highlights several key findings.

The majority of information system users are aged between 30 and 40 years (40.7%). This indicates a relatively young and potentially tech-savvy user base, which is beneficial for the adoption and effective use of EMR systems. Studies have shown that younger people tend to have a more positive attitude towards digital health technologies and are more willing to engage with them 24. This positive attitude towards technology among younger individuals can be attributed to factors such as familiarity with technology from an early age and a greater comfort level with using digital tools 25. Additionally, younger users are more likely to value the benefits that technology can offer in terms of improving healthcare service delivery, such as providing accurate, up-to-date, and complete information through EMRs 26.

Half of the respondents (50.0%) hold a Bachelor's degree, while a significant portion (41.9%) have an Academy/Diploma (D3) level of education. Only 8.1% have a Master's degree (S2). Research has indicated a positive correlation between education level and technology proficiency, with individuals who have higher levels of education often demonstrating greater comfort and proficiency in using digital tools 24. Studies have shown that healthcare professionals with advanced education, such as physicians with postgraduate degrees, are more likely to embrace and effectively use EMR systems in their clinical practice 26. These professionals are better equipped to understand the technical aspects of EMRs, interpret complex medical data, and leverage the functionalities of the system to improve patient care and outcomes 27.

The distribution of work experience among respondents is fairly balanced, with the largest group having 4-6 years of experience (33.7%). Those with 2-4 years of experience make up 27.9%, and those with less than 2 years account for 19.8%. Respondents with more than 6 years of experience constitute 18.6%. This variation in experience levels among users can contribute significantly to a diverse range of insights and feedback on the electronic medical record (EMR) system. Individuals with 4-6 years of experience may have a good balance of familiarity with the system and a nuanced understanding of its functionalities, potentially offering practical suggestions for improvement based on their hands-on experience 28. On the other hand, users with 2-4 years of experience may still be in the process of fully integrating the EMR system into their workflow, providing feedback on usability and efficiency from a slightly different perspective 28. Those with less than 2 years of experience may offer fresh insights and highlight areas where the system could be more intuitive for new users, contributing to user-friendly enhancements 28. Additionally, individuals with more than 6 years of experience may bring a wealth of historical knowledge about the evolution of the EMR system within their organization, offering insights into long-term usability, challenges, and benefits 28.

The majority of respondents work in the inpatient room (41.9%), followed by the laboratory unit (20.9%) and the radiology unit (15.1%). A smaller percentage are from the medical records unit (8.1%) and administration (14.0%). This distribution reflects the direct impact of the EMR system on those who are primarily responsible for patient care and documentation. The high representation from the inpatient room emphasizes the importance of the EMR system in daily patient management and care coordination. Thus, the demographic profile of the respondents underscores the importance of considering user characteristics in the implementation and ongoing optimization of EMR systems. Tailoring the system to meet the needs and leverage the strengths of its users can significantly enhance both the effectiveness of the EMR system and user satisfaction. Bivariate analysis was carried out by analysing the corelation between effectiveness of EMR implementation with satisfaction of EMR user. The effectiveness of EMR implementation assessed using indicators: relevant, accurate, up to date, complete, and support system. User satisfaction of EMR is measured using the Technology Acceptance Model (TAM) dimension. The results of the bivariate analysis can be seen in table 2.

Table 2. Cross table of Effectiveness of EMR implementation and User Satisfaction of EMR

Effectiveness of EMR Implementation	User Satisfaction of EMR				Total		P Value
	Not Enough		Good		N	%	
	N	%	N	%			
1. Relevant							
a. Not enough	32	74.42%	11	25.58%	43	100	0.001
b. Good	7	16.28%	36	83.72%	43	100	
2. Accurate							
a. Not enough	32	78.05%	9	21.95%	41	100	0.001
b. Good	6	13.33%	39	86.67%	45	100	
3. Up to date							
a. Not enough	1	33.33%	2	66.67%	3	100	0.404
b. Good	39	46.99%	44	53.01%	83	100	
4. Completeness							
a. Not enough	2	33.33%	4	66.67%	6	100	0.053
b. Good	34	42.50%	46	57.50%	80	100	
5. Support System							

Effectiveness of EMR Implementation	User Satisfaction of EMR				Total		P Value
	Not Enough		Good		N	%	
	N	%	N	%			
a. Not enough	43	51.81%	40	48.19%	83	100	0.670
b. Good	2	66.67%	1	33.33%	3	100	

Based on the research findings on the effectiveness of EMR implementation and user satisfaction of EMR in the inpatient room of Siti Khodijah Muhammadiyah Hospital, Sepanjang branch, several key insights were identified that highlight the relationship between the effectiveness of EMR implementation and user satisfaction levels. Users who rated the EMR implementation as not sufficiently relevant tended to be less satisfied, with 74.42% expressing dissatisfaction. Conversely, users who found the EMR relevant showed a higher satisfaction level, with 83.72% being satisfied (P Value = 0.001). This indicates that the relevance of EMR significantly impacts user satisfaction.

The accuracy of information within the EMR also proved to have a significant influence on user satisfaction. Among users who deemed the EMR inaccurate, 78.05% were dissatisfied, whereas 86.67% of those who found the EMR accurate were satisfied (P Value = 0.001). These findings underscore the importance of data accuracy in EMR for enhancing user satisfaction. Regarding the timeliness of data in the EMR, users who rated the EMR as not up-to-date tended to be less satisfied, with 33.33% expressing dissatisfaction and 66.67% expressing satisfaction. On the other hand, 46.99% of users who considered the EMR up-to-date were satisfied, although this relationship was not statistically significant (P Value = 0.404). This suggests that while data timeliness is important, its impact on user satisfaction is not as pronounced as relevance and accuracy.

There is a tendency that the completeness of information in the EMR affects user satisfaction. Users who rated the EMR as incomplete showed a higher rate of dissatisfaction, with 33.33% being dissatisfied. Conversely, 57.50% of users who found the EMR complete were satisfied (P Value = 0.053). Although not statistically significant, this data indicates that the completeness of information in the EMR can influence users' perceptions of satisfaction. The support system for EMR implementation did not show a significant relationship with user satisfaction. Among users who rated the support system as inadequate, 51.81% were satisfied, while 48.19% were dissatisfied. Conversely, 66.67% of those who found the support system adequate were dissatisfied (P Value = 0.670). This suggests that the support system may not be a primary determinant of EMR user satisfaction. Thus, this study shows that the effectiveness of EMR implementation in terms of relevance and accuracy significantly influences user satisfaction in the inpatient ward of Siti Khodijah Muhammadiyah Hospital, Sepanjang branch. These findings can serve as a reference for hospital management to improve EMR implementation to achieve higher user satisfaction levels.

4. Discussion

The Correlation Between EMR Relevance and User Satisfaction

Based on Table 2, of respondents reported that the EMR system is highly relevant to their work, with a p-value of 0.001. This low p-value indicates a statistically significant positive relationship between the relevance of the EMR system and user satisfaction. The high relevance of the EMR system strongly influences user satisfaction. Ensuring that the EMR system continues to align well with the users' needs and workflows is crucial for maintaining high levels of satisfaction. Relevance, often synonymous with convenience, plays a pivotal role in determining user satisfaction within the context of medical record usage in hospitals. The relationship between the relevance and satisfaction of medical record users in hospitals is a crucial aspect that impacts the quality of healthcare services provided. This is in line with several studies which state that user satisfaction, defined as the level of service quality that meets or exceeds user expectations, plays a significant role in determining the effectiveness of healthcare systems 29.

Studies have shown that the implementation of EMR systems in hospitals can lead to increased user satisfaction, which in turn positively impacts individual work performance 30. The successful implementation of EMR systems has been associated with perceived positive impacts on user satisfaction, although further enhancements are often necessary for optimal success 30. Moreover, the benefits of EMRs extend beyond user satisfaction to impact nurse satisfaction, quality of care, and clinical decision-making processes 31. Enhancing user satisfaction with EMRs among healthcare professionals has been a subject of interest in various studies, aiming to identify

factors that influence user satisfaction and associated outcomes 14.

Proper documentation and timely provision of medical records are crucial for enhancing patient service processes and ensuring the timely distribution of medical records to service units 32. Additionally, the impact of organized patient information in comprehensive dashboards on information quality, effectiveness, and physician satisfaction in clinical decision-making processes has been explored 33,34. Additionally, the perceived usefulness and ease of use of systems have been shown to positively impact user satisfaction, highlighting the significance of these factors in determining user satisfaction levels 35.

In conclusion, the relationship between relevance and satisfaction of medical record users in hospitals is multifaceted, influenced by factors such as the implementation of EMR systems, user-cantered approaches, information quality, and system usability. Ensuring the relevance of information, meeting user expectations, and enhancing system usability are essential for improving user satisfaction and ultimately enhancing the quality of healthcare services provided in hospital settings.

The Correlation Between EMR Accuracy and User Satisfaction

Based on Table 2, majority users rated the EMR system as accurate, with a p-value of 0.001. This significant p-value suggests that there is a meaningful positive correlation between the accuracy of the EMR data and user satisfaction. Accurate data is essential for clinical decision-making and patient care. Efforts to ensure data accuracy, such as regular system updates and data validation processes, can further enhance user satisfaction.

This is in line with several studies which state that the accuracy of EMRs plays a pivotal role in ensuring the quality of patient care, enhancing communication among healthcare providers, and improving overall healthcare outcomes 36. Studies have indicated that the transition to electronic health records aimed at increasing accuracy, which is essential for providing safe and effective patient care 36. Furthermore, the usability and effectiveness of EMRs have been associated with user satisfaction among healthcare professionals, highlighting the importance of accurate and reliable electronic documentation systems 37.

Electronic records have been found to have higher completeness and accuracy compared to paper-based records, leading to improved information integrity and better patient care 37. This underscores the significance of accurate data entry and maintenance in EMRs to ensure optimal user satisfaction and healthcare delivery. Moreover, the implementation of EMRs has been linked to benefits such as enhanced service quality, increased patient satisfaction, and reduced clinical errors 38. Electronic medical records enable healthcare facilities to improve documentation accuracy, streamline processes, and enhance access to patient data, ultimately resulting in higher levels of user satisfaction 38.

The successful adoption of electronic prescription systems has also been shown to significantly impact user satisfaction in hospital settings, emphasizing the importance of accurate and efficient electronic record-keeping 39. Additionally, the use of Electronic Medication Administration Records (eMARs) has proven effective in reducing medication errors and enhancing patient safety, further underscoring the importance of accurate electronic documentation in healthcare 40. A systematic review of eMAR effectiveness demonstrated a notable reduction in patient mortality rates, highlighting the critical role of accurate medication administration records in improving patient outcomes 40.

In conclusion, the accuracy of Electronic Medical Records is closely tied to user satisfaction in healthcare settings. Accurate documentation not only enhances patient care and safety but also improves communication, efficiency, and overall user experience. By prioritizing accuracy in EMRs and electronic documentation systems, healthcare facilities can optimize user satisfaction, streamline processes, and ultimately enhance the quality of care provided to patients.

The Correlation Between EMR Timeliness and User Satisfaction

Based on table 2, the timeliness of the EMR system rated positively by majority of respondents, has a p-value of 0.404. This p-value is not statistically significant, indicating that the timeliness of the EMR system does not have a strong impact on user satisfaction in this study. Although timeliness is generally important, its lack of significant impact on user satisfaction suggests that other factors may play a more critical role. Ensuring real-time data access is still important, but additional focus should be placed on other areas.

This is contradictory with several studies which state that the timeliness of EMRs plays a significant role in user satisfaction, with studies indicating that timeliness is one of the key variables affecting satisfaction levels 7,41.

Timeliness in EMRs refers to the promptness and efficiency of recording and accessing patient information, which is essential for providing timely and effective care. Studies have shown that timely updates and access to information in EMRs are essential for enhancing user experience and satisfaction 42. The perception of users regarding the timeliness of EMR systems contributes significantly to their overall satisfaction and utilization of the systems 43.

Ensuring the timeliness of EMRs is crucial for various reasons, including improving the quality of patient care, reducing medical errors, and enhancing overall healthcare management 44. Studies have demonstrated that interventions aimed at improving discharge processes through EMR criteria checklists have been effective in enhancing discharge timeliness and addressing delays 45. Ensuring the efficiency and promptness of EMRs through quality improvement initiatives is essential for enhancing user satisfaction, improving care quality, and advancing healthcare delivery 14.

In conclusion, user satisfaction with EMRs, particularly concerning timeliness, is a critical factor in healthcare settings. Timeliness in EMRs influences not only healthcare professionals' satisfaction and work processes but also patient experiences and outcomes. Ensuring the efficiency and promptness of EMRs through continuous assessment, usability evaluations, and quality improvement initiatives is essential for optimizing user satisfaction, improving the quality of care, and enhancing overall healthcare delivery.

The Correlation Between EMR Completeness and User Satisfaction

Based on table 2, majority of respondents found the EMR system to be complete, with a p-value of 0.053. This p-value approaches statistical significance, suggesting that completeness of the EMR system has a potential impact on user satisfaction, but the evidence is not strong enough to confirm a significant correlation. Comprehensive documentation within the EMR system is important for holistic patient care. Continuous improvements to enhance completeness should be considered, even though the direct impact on user satisfaction is marginally significant.

This is contradictory with several studies which state that the completeness of patient information within EMRs plays a pivotal role in enhancing the efficiency and effectiveness of healthcare services 46. Research has shown that the implementation of EMRs with greater completeness leads to improved documentation quality, reduced clinical errors, and enhanced patient care outcomes 47. Additionally, the usability of EMRs, including the ease of data entry and retrieval, significantly influences user satisfaction 48.

Studies have indicated that the implementation of electronic systems, such as medication history sharing programs, can positively impact the care process and enduser experience in hospitals 49. By efficiently collecting and displaying nationwide medication histories, these programs contribute to the completeness of patient records, which can subsequently enhance user satisfaction with the system 37.

Furthermore, the implementation of electronic nursing documentation systems has been linked to greater completeness, quality, and patient-centered care compared to manual documentation methods 50. Enhancements in patient care resulting from electronic systems can expedite the delivery of services and contribute to higher levels of user satisfaction among healthcare providers 31. Additionally, the use of electronic systems for medication administration has been demonstrated to improve the completeness of documentation processes and enhance treatment outcomes, emphasizing the significance of data completeness in healthcare settings 7.

Regarding user satisfaction, studies have underscored the importance of electronic systems in enhancing service quality, increasing patient satisfaction, and reducing clinical errors 51. The adoption of electronic systems, such as electronic prescriptions and patient access portals, has been associated with greater efficiency, availability, satisfaction, and privacy compared to paper-based systems 52. Moreover, the integration of electronic health records with patient portals can improve communication between patients and providers, leading to enhanced medication management and overall user satisfaction 39.

In conclusion, the completeness of electronic medical records in hospitals is closely tied to user satisfaction, influencing the quality of care, service efficiency, and overall user experiences. By focusing on data completeness, system usability, and the integration of electronic systems, healthcare facilities can enhance user satisfaction, improve patient outcomes, and optimize healthcare service delivery.

The Correlation Between EMR Support System and User Satisfaction

Based on table 2, the support system category received the lowest positive response with a p-value of 0.670.

This high p-value indicates no statistically significant relationship between the support system and user satisfaction in this study. While support is important, its lack of significant impact on user satisfaction in this context suggests that other factors are more critical. However, improving support services can still contribute to overall better user experience and should not be neglected.

The support system of EMRs encompasses various aspects such as documentation, workflow management, and user interface design, all of which can influence user satisfaction 53. This is contradictory with several studies which state that factors influencing user satisfaction with information systems, including hospital information systems (HISs), should be taken into account during the design and implementation phases to enhance user experiences 54. The usability of electronic health records (EHRs) and their support for clinical tasks play a critical role in user satisfaction among hospital physicians 55. Efficient documentation of diagnostic investigations, medical treatments, clinical decision support, and communication functionalities within EHRs can significantly impact user satisfaction and workflow efficiency 55.

Electronic medical records systems are designed to support healthcare professionals in delivering optimal patient care and providing complete information to support organizational decision making 56. The transition from manual medical records to electronic systems can improve data completeness, accuracy, and accessibility, ultimately enhancing user satisfaction and the quality of care provided 57. Moreover, the availability of supporting facilities and the selection of appropriate service platforms are essential for the successful implementation of EMRs and ensuring user satisfaction 58.

In conclusion, the support system of electronic medical records in hospitals plays a vital role in influencing user satisfaction by improving data completeness, workflow efficiency, and system usability. By considering factors such as system design, usability, and supporting infrastructure, healthcare facilities can enhance user satisfaction, optimize patient care delivery, and improve overall healthcare outcomes.

5. Conclusion and Recommendation

The study's findings the positive attitude towards technology among younger users and those with higher education levels plays a crucial role in the effective adoption and utilization of the EMR system. These users are more likely to recognize and value the benefits of EMRs, such as improved accuracy, up-to-date information, and enhanced healthcare service delivery. However, the study also highlights the need for continuous training and support to ensure that all users, regardless of age or education level, can effectively use the EMR system. This finding will help in maximizing the system's potential and improving overall healthcare outcomes.

To enhance the adoption and utilization of the EMR system at Siti Khodijah Muhammadiyah Hospital, the recommendation is implementing continuous and comprehensive training programs tailored to different user groups, along with establishing regular feedback mechanisms to gather user input for ongoing improvements. Providing robust technical support and regularly updating the system based on technological advancements and user feedback will help maintain user engagement. Promoting digital literacy among healthcare staff through workshops and integrating digital health education into professional development programs is essential. Additionally, further research should be conducted to explore the long-term impacts of EMR adoption on healthcare delivery and patient outcomes, ensuring the system's effectiveness and guiding future enhancements.

This study's strengths include a comprehensive analysis of user characteristics and system utilization, providing valuable insights into the factors influencing EMR adoption. The generalizability of the findings. However, limitations include potential self-report bias and the study's cross-sectional design, which restricts the ability to infer causality. Future research should employ longitudinal designs to better understand the long-term impacts of EMR adoption.

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AUTHORS CONTRIBUTION

ALK contributed to the conceptualization and design, analysis and interpretation of the data, drafting of the article, final approval of the article, provision of study materials, and collection and assembly of the data. MA contributed to the critical revision of the article for important intellectual content, and final approval of the article.

CONFLICT OF INTEREST

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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