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Original Article

# Digital Transformation Of Hospital Pharmacy Management Through Electronic Medical Records: Operational Efficiency, Service Quality, HR Competence, And Patient Satisfaction

# Transformasi Digital Manajemen Farmasi Rumah Sakit melalui Rekam Medis Elektronik: Efisiensi Operasional, Kualitas Layanan, Kompetensi SDM, dan Kepuasan Pasien

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**Abstract**

This study aimed to examine the implementation of Electronic Medical Records (EMR) in hospital pharmacy service management at ABC Hospital, a private hospital in North Jakarta, Indonesia. A mixed-methods approach was employed by comparing operational and satisfaction data from 2023 and 2024 and analyzing interview findings from staff, managers, and patients. The results showed a reduction in outpatient prescription waiting time from 45.2 to 32.6 minutes (27.9%) and inpatient waiting time from 38.5 to 28.1 minutes (27.0%). Monthly prescription volume increased from 4,250 to 5,380 prescriptions (26.6%), while documentation time per prescription decreased from 6.8 to 3.2 minutes (52.9%). Prescription accuracy increased from 93.4% to 98.1%, representing a 4.7 percentage-point improvement, while satisfaction scores increased numerically from 4.12 to 4.25 on a 1–5 scale. Interview findings indicated that EMR implementation facilitated faster access to information and reduced administrative workload, although adaptation through training was required and patients experienced some inconvenience during system interruptions. Overall, EMR implementation was associated with favorable trends in service efficiency, documentation, and prescription accuracy in the pharmacy unit. However, the single-site uncontrolled design, limited information regarding sampling and measurement procedures, and limited qualitative reporting restrict the ability to draw definitive causal conclusions.

**Abstrak**

Penelitian ini bertujuan untuk mengkaji implementasi Rekam Medis Elektronik (RME) dalam pengelolaan pelayanan farmasi rumah sakit di ABC Hospital, sebuah rumah sakit swasta di Jakarta Utara, Indonesia. Penelitian menggunakan pendekatan *mixed-methods* dengan membandingkan data operasional dan kepuasan tahun 2023 dan 2024 serta menganalisis hasil wawancara dengan staf, manajer, dan pasien. Hasil menunjukkan adanya penurunan waktu tunggu pelayanan resep rawat jalan dari 45,2 menjadi 32,6 menit (27,9%) dan rawat inap dari 38,5 menjadi 28,1 menit (27,0%). Volume resep bulanan meningkat dari 4.250 menjadi 5.380 resep (26,6%), sedangkan waktu dokumentasi per resep menurun dari 6,8 menjadi 3,2 menit (52,9%). Akurasi resep meningkat dari 93,4% menjadi 98,1%, atau sebesar 4,7 poin persentase, sementara tingkat kepuasan meningkat secara numerik dari 4,12 menjadi 4,25 pada skala 1–5. Hasil wawancara menunjukkan bahwa implementasi RME membantu mempercepat akses informasi dan mengurangi pekerjaan administratif, meskipun diperlukan adaptasi melalui pelatihan dan masih terdapat ketidaknyamanan pasien ketika terjadi gangguan sistem. Secara keseluruhan, implementasi RME menunjukkan kecenderungan positif terhadap efisiensi pelayanan, dokumentasi, dan akurasi resep di unit

| | |
|---|---|
| | farmasi. Namun, desain penelitian satu lokasi tanpa kelompok kontrol, keterbatasan informasi mengenai sampel dan pengukuran, serta pelaporan kualitatif yang terbatas menyebabkan hasil belum dapat digunakan untuk menyimpulkan hubungan kausal secara pasti. |

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## INTRODUCTION

Digital transformation has become a key strategic agenda in global healthcare systems, including in Indonesia, along with increasing demands for service efficiency, patient safety, and quality clinical governance. The World Health Organization (WHO) states that digitalization of healthcare systems plays a crucial role in improving operational efficiency, strengthening data-driven clinical decision-making, and reducing preventable medical errors[1]. At the national level, healthcare digitalization policies are being accelerated through various regulations, one of which is the commitment to Electronic Medical Records (RME) standards as specified in Minister of Health Regulation Number 24 of 2022, which targets all healthcare facilities to transition from manual medical record systems to integrated digital systems[2][3]. In the hospital context, the pharmacy unit is one of the service subsystems significantly impacted by the implementation of Electronic Medical Records. Pharmacy management plays a crucial role in ensuring medication availability, therapy quality, patient safety, and the cost efficiency of healthcare services [4].

The use of Electronic Medical Records in pharmacy management is expected to address these challenges by electronically integrating prescription data, medication history, laboratory results, and patient clinical records. Operationally, the RME system accelerates the pharmacy service flow, reduces patient waiting times, and improves the accuracy of dispensing and monitoring drug therapy [5,6]. Human resources are a critical factor in the success of digital transformation in pharmacy management. Previous research indicates that low digital literacy, resistance to change, and limited training are the main causes of failure or suboptimal utilization of RME systems [7,8].

Several studies report that although RME has the potential to improve service quality in the medium to long term, the initial implementation phase is often followed by a temporary decline in patient satisfaction, primarily due to increased waiting times and disruptions to service flow during the system transition. Patient satisfaction surveys in several hospitals indicate that up to 40–50% of patients experience discomfort during the initial implementation of RME, before the system reaches optimal operational stability[9,10]. Based on this description, this study aims to comprehensively analyze the role of Electronic Medical Records as a digital transformation instrument in hospital pharmacy management. The analysis focuses on four main dimensions: operational efficiency, service quality, human resource competency, and patient satisfaction[11,12].

## METHODS

This study employed a mixed methods approach with an explanatory sequential design, combining quantitative and qualitative methods to gain a comprehensive understanding of the impact of Electronic Medical Records (RME) implementation on the digital transformation of hospital pharmacy management. This approach was chosen because RME implementation is a complex phenomenon that impacts not only quantitatively measurable performance indicators but is also influenced by the perceptions, experiences, and adaptation of human resources in daily service

practices. Quantitative data were used to measure changes in operational performance, service quality, and patient satisfaction, while qualitative data served to deepen the interpretation of the results and explain the dynamics of RME implementation from the perspective of healthcare workers and management.

**Research Procedure**

This study employed a mixed methods approach with an explanatory sequential design, integrating quantitative and qualitative methods to obtain a comprehensive understanding of the impact of Electronic Medical Records (RME) implementation on the digital transformation of hospital pharmacy management. This design was selected because RME implementation represents a complex organizational intervention that influences measurable performance outcomes as well as human factors, including perceptions, adaptation processes, and changes in professional practices. The quantitative phase was conducted first to evaluate changes in operational performance, service quality, and patient satisfaction before and after RME implementation. The qualitative phase was subsequently conducted to provide deeper explanations regarding the observed quantitative findings and to explore the experiences of healthcare professionals and management during RME adoption. The study was conducted at a private hospital (ABC Hospital) in North Jakarta, which has progressively implemented RME in accordance with Ministry of Health Regulation No. 24 of 2022. The primary unit of analysis was hospital pharmacy management, including clinical and non-clinical pharmacy service processes, pharmacist involvement, pharmacy workflow integration, and interactions between healthcare personnel and the RME system. The study participants consisted of Pharmaceutical Technical Personnel (pharmacists and pharmacy technicians), healthcare professionals involved in medication-related services and RME utilization, hospital management representatives, and patients receiving pharmaceutical services during the study period [13].

Qualitative data were collected through semi-structured interviews with selected participants who had direct experience with RME implementation. The interviews were conducted individually in a private and quiet setting within the hospital environment to ensure participant comfort and confidentiality. Each interview lasted approximately 30–60 minutes, depending on the depth of participant responses and the complexity of their experiences. The interview guide was developed based on previous literature regarding health information system implementation, digital transformation in healthcare, and technology acceptance in clinical practice. The guide was reviewed by experts in hospital management and health informatics to ensure content relevance and alignment with the research objectives. The interview questions explored participants' experiences with RME implementation, perceived benefits and challenges, workflow changes, system usability, organizational support, and factors influencing successful adoption [13].

**Data Analysis**

Quantitative data were analyzed using descriptive and comparative statistical methods to evaluate differences between pre- and post-RME implementation conditions. The analysis focused on identifying changes in operational efficiency, service quality indicators, and patient satisfaction outcomes. Quantitative findings were summarized using tables and graphical representations to facilitate interpretation and strengthen empirical conclusions. Qualitative data were analyzed using thematic analysis. To improve the credibility of qualitative findings, the coding process was reviewed through researcher discussions and consensus verification. Differences in interpretation were discussed until agreement was reached among researchers. The integration of quantitative and

qualitative findings was performed during the interpretation stage, where qualitative themes were used to explain, contextualize, and elaborate on quantitative results discussion. The validity and reliability of the study were strengthened through methodological and source triangulation by comparing quantitative survey results, operational performance data, and qualitative interview findings. The entire data collection and analysis process was documented systematically to ensure transparency, auditability, and potential replication. Ethical approval principles were applied throughout the research process. All participants received information regarding the research objectives, procedures, potential risks, and confidentiality measures before providing informed consent. Participant identities were anonymized, and all collected data were used exclusively for academic and healthcare management improvement purposes.

## RESULT AND DISCUSSION

This study integrated quantitative and qualitative findings to describe changes following the implementation of Electronic Medical Records (RME) in hospital pharmacy management. Quantitative analysis compared operational performance indicators, service quality indicators, and patient satisfaction before and after RME implementation, while qualitative interviews explored experiences of healthcare workers, management, and patients regarding the implementation process..[14]

### 1. System Implementation Indicators

Quantitative results are presented through a comparison of performance indicators before and after system implementation, while qualitative findings from officer interviews are used to clarify the dynamics of workflow changes and perceptions of efficiency in daily pharmaceutical service practices.[15,16]

**Table 1. Changes in Prescription Service Waiting Time before and after RME Implementation**

| Type of Service | Average Wait Time 2023 (minutes) | Average Wait Time 2024 (minutes) | Change (%) |
|---|---|---|---|
| Outpatient | 45.2 ± 8.1 | 32.6 ± 6.4 | ↓ 27.9% |
| Inpatient | 38.5 ± 7.3 | 28.1 ± 5.9 | ↓ 27.0% |

Following RME implementation, prescription waiting time decreased in both outpatient and inpatient pharmacy services. The average outpatient waiting time decreased from 45.2 ± 8.1 minutes in 2023 to 32.6 ± 6.4 minutes in 2024 (27.9% reduction). Similarly, inpatient waiting time decreased from 38.5 ± 7.3 minutes to 28.1 ± 5.9 minutes (27.0% reduction). Pharmacy productivity also increased after RME implementation. The number of prescriptions processed per month increased from 4,250 in 2023 to 5,380 in 2024 (26.6% increase), while clinical pharmacy services increased from 620 to 810 services per month (30.6% increase). The service ratio per pharmacist increased from 1.00 to 1.28. Duplication of medication records and dependence on paper-based documentation were also reduced.[17,18].

Table 2. Productivity of Pharmaceutical Units before and after RME Implementation

| Productivity Indicators | 2023 | 2024 | Change (%) |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Number of prescriptions served per month | 4,250 | 5,380 | 26.6% |
| Number of clinical pharmacy services/month | 620 | 810 | 30.6% |
| Ratio of services per pharmacist | 1.00 | 1.28 | 28.0% |

In line with the reduction in prescription waiting times, the implementation of Electronic Medical Records (RME) has also been accompanied by an increase in the productivity of hospital pharmacy units. Table 2 shows that the number of prescriptions filled per month increased from 4,250 in 2023 to 5,380 in 2024, a 26.6% increase. This increase indicates that the accelerated service flow following the implementation of RME contributed to an increase in pharmacy service capacity over the same time period. Clinical pharmacy service productivity also experienced a significant increase, from 620 services per month in the pre-implementation period to 810 services per month after the RME system was implemented, representing a 30.6% increase.[19,20]. This increase occurred without significant changes in the number of pharmacists, as reflected in the increase in the ratio of services per pharmacist from 1.00 to 1.28, a 28.0% increase. This finding indicates that the implementation of RME contributes to optimizing human resource utilization through work process efficiency and reducing non-clinical activities in pharmaceutical services.[21,22]

**Table 3. Efficiency of Pharmacy Documentation and Administrative Activities**

| Administrative Activities | 2023 (Manual Doc) | 2024 (RME) | Conclusion |
|---|---|---|---|
| Documentation time per prescription (minutes) | 6.8 | 3.2 | 52.9% |
| Duplication of medication records | High | Low | Significant |
| Dependence on paper forms | Very high | Minimum | Significant |

The increase in operational efficiency and productivity of pharmacy units following the implementation of Electronic Medical Records (RME) is also reflected in significant improvements in the documentation process and administrative activities of pharmaceutical services. As presented in Table 3, the average time required to document each prescription decreased from 6.8 minutes in 2023 to 3.2 minutes in 2024, a 52.9% reduction. This decrease indicates that digitizing documentation through RME substantially reduces the administrative workload previously performed manually.[23,24]. This finding indicates a shift in the focus of pharmacists' work from non-clinical administrative activities to more patient-oriented pharmacy services, in line with the goals of digital transformation in hospital pharmacy management.[25]

**2. Quality of Service and Clinical Pharmacy**

After identifying improvements in operational efficiency and productivity in pharmacy units following the implementation of Electronic Medical Records (RME), the next analysis focused on the system's impact on the quality of pharmaceutical services and clinical pharmacy practice. Process efficiencies achieved through digitalization not only accelerate service delivery but also potentially impact the accuracy, safety, and quality of drug therapy documentation[26]

Table 4. Changes in Pharmaceutical Service Quality Indicators and Accuracy of Drug Therapy Documentation and Patient History Tracking Post-ERM Implementation

| Pharmaceutical Service Quality Indicators | 2023 (%) | 2024 (%) | Efficiency Impact |
|---|---|---|---|
| Accuracy of prescription service | 93.4 | 98.1 | ↑ 4.7% |
| Completeness of drug therapy documentation | 89.2 | 97.5 | ↑ 8.3% |
| Documented medication error reporting | 65.0 | 92.0 | ↑ 27.0% |
| Complete documented medication history (%) | 70.5 | 95.8 | ↑ 25.3% |

The study results show that the implementation of Electronic Medical Records (RME) contributed to improved quality of pharmaceutical services, accompanied by improvements in the accuracy of drug therapy documentation and the traceability of patient histories. Implementation of RME was associated with improvements in pharmaceutical service quality indicators. Prescription accuracy increased from 93.4% to 98.1%, completeness of drug therapy documentation increased from 89.2% to 97.5%, documented medication error reporting increased from 65.0% to 92.0%, and complete medication history documentation increased from 70.5% to 95.8%.[27,28].

3. Patient Satisfaction

Table 5. Changes in Patient Satisfaction Levels with Pharmaceutical Services

| Year | Patient Satisfaction Score (Scale 1–5) | Category |
|---|---|---|
| 2023 | 4.12 ± 0.46 | Good |
| 2024 | 4.25 ± 0.41 | Good–Very Good |

The study results showed that the implementation of Electronic Medical Records (RME) was accompanied by a moderate increase in overall patient satisfaction with pharmacy services. The increase in post-implementation satisfaction scores reflected more positive patient perceptions of the speed of service, clarity of drug information, and perceived safety in receiving therapy. These findings indicate that the digitization of the pharmacy system contributes to a more structured and transparent service experience for patients.

Table 6. Dimensions of Patient Satisfaction that Have Changed

| Dimensions of Satisfaction | Change | Information |
|---|---|---|
| Speed of service | Increase | In line with the decrease in waiting times |
| Clarity of drug information | Increase | Supported RME data access |
| Security and trust | Increase | More transparent documentation |
| Comfort during transition | Decrease | Initial implementation hiccups |

| | | |
|---|---|---|
| Ease of initial service flow | Decrease | System and HR adaptation |

To deepen our understanding of changes in patient satisfaction following the implementation of Electronic Medical Records (RME), the analysis focused on specific dimensions of pharmaceutical services that experienced changes. Results indicate that satisfaction increases primarily occurred in the dimensions of speed of service, clarity of drug information, and safety and trust in pharmaceutical services. Access to more accurate and integrated data through RME contributed to perceptions of more efficient and professional service. Patient satisfaction scores increased from 4.12 ± 0.46 in 2023 to 4.25 ± 0.41 in 2024. Improvements were reported in service speed, clarity of drug information, and perceived safety of pharmaceutical services. However, some patients reported temporary difficulties related to system adaptation and technical interruptions during the transition period.

**4. Interview Results**

Interview results were analyzed thematically to identify informants' perceptions, experiences, and responses to the implementation of Electronic Medical Records (RME) in hospital pharmacy management. These qualitative findings provide operational context and firsthand experiences that explain the dynamics of changes in operational efficiency, pharmacy service quality, human resource competency, and patient satisfaction during the digital transformation process.

Interviews with pharmacy staff and hospital management revealed that the implementation of Electronic Medical Records (RME) was perceived to improve the operational efficiency of pharmaceutical services by accelerating workflows, reducing reliance on physical documents, and improving coordination between service units. This efficiency was felt to be even more optimal after the initial system adaptation phase. Informants also assessed that more integrated data access supports improved service accuracy and patient safety, particularly in detecting duplication of therapy and potential medication errors.

Patient interviews were conducted to complement the staff's findings and capture the direct experiences of service recipients with pharmaceutical services following the implementation of Electronic Medical Records (RME). The interviews revealed that most patients perceived improved service efficiency, particularly in terms of prescription wait times and clarity of service flow, both in outpatient and inpatient settings. The results of this study indicate that the implementation of RME not only impacts operational efficiency and productivity of pharmaceutical services but also contributes to improving service quality, strengthening the role of clinical pharmacy, and enhancing patient experience and satisfaction. Quantitative findings showing improvements in performance indicators are supported by the results of interviews with staff and patients that describe the dynamics of system adaptation, changes in workflow, and perceptions of benefits and challenges during the implementation process. Therefore, this discussion focuses on interpreting the findings in an integrative manner to explain how RME functions as a managerial and clinical instrument in driving sustainable improvement in pharmaceutical service performance.

## DISCUSSION

### 1. The Impact of Electronic Medical Records Implementation on the Operational Efficiency of Pharmacy Management

The results of this study confirm that Electronic Medical Records (RME) play a key role in improving the operational efficiency of hospital pharmacy management. Quantitatively, the implementation of RME was followed by a reduction in prescription waiting times for both outpatient and inpatient services by almost 28%, reflecting a substantial acceleration in the pharmaceutical service flow. This decrease occurred in line with an increase in the productivity of the pharmacy unit, as indicated by an increase in the number of services per period and the ratio of services per pharmacist, without a significant increase in human resources. This finding indicates that the efficiency achieved was not the result of an expansion of workforce capacity, but rather the optimization of work processes.[28,29]. The real-time integration of prescription data, clinical information, and service documentation through the RME enables faster and more coordinated pharmacy service processes, reducing delays previously caused by manual processes and reliance on physical documents. This quantitative finding is reinforced by statements from pharmacists who stated that “prescription flow has become much faster because they no longer have to wait for files from the clinic,” illustrating a significant change in daily operational practices.

From a process management perspective, digitalization through RME has been shown to directly contribute to the reduction of non-value-added activities in pharmacy services. This finding aligns with the results of interviews with staff who stated that "paper forms have been significantly reduced, allowing us to focus more on patient care," indicating that RME plays a role in shifting the work focus from administration to clinical care[30,31]. This phenomenon aligns with the theory of technology adoption and the learning curve, which explains that the benefits of new technology tend to increase gradually with increasing user experience, increasing system stability, and increasing training effectiveness. Therefore, suboptimal efficiency during the initial implementation phase can be understood as part of a normal transition process in organizational-wide system changes.[26.32]. The digital health information systems improve healthcare efficiency by strengthening data integration, reducing documentation burden, and supporting clinical decision-making. However, unlike studies focusing primarily on technological performance, this study highlights that operational improvement depends on the interaction between system capability and user adaptation.[11,12].

### 2. Managerial implications for workload management and pharmaceutical human resource planning Electronic Medical Records, Pharmacy Service Quality, and Human Resource Competence

The findings of this study confirm that Electronic Medical Records (RME) play a strategic role in improving the quality of pharmaceutical services through the use of integrated clinical data. Quantitatively, the improvement in prescription accuracy and completeness of drug therapy documentation following the implementation of RME demonstrates that the integration of clinical and pharmaceutical data can strengthen the consistency and accuracy of services. Furthermore, the improved ability to trace patient medication histories to near-complete documentation demonstrates that RME enables more evidence-based and patient safety-oriented clinical pharmacy practices. These findings are reinforced by statements from pharmacists who stated that "patient medication histories can now be checked directly without having to open old files," resulting in a faster and more accurate therapy evaluation process.[8,11,12].

Interview results also revealed that the success of RME utilization is heavily influenced by human resource competency. In the initial implementation phase, some officers experienced adaptation difficulties due to limited digital literacy and unfamiliarity with the new workflow. This condition was reflected in fluctuations in operational efficiency and perceived workload during the initial stages of system implementation. An informant's statement that "it was quite difficult at first, especially for staff who were not yet familiar with digital systems" indicates that human resource competency is a determining factor in realizing the benefits of RME. With training and experience, perceptions of the system's ease of use and usefulness increased, which resulted in gradual improvements in performance and service quality.[18,22]. By utilizing post-implementation performance data and feedback from staff and patients, hospital management can develop more adaptive, quality-oriented, and patient safety-focused HR strategies in the long term.[16,17]. The temporary adaptation challenges observed in this study are consistent with previous research indicating that resistance to change and insufficient digital competency are major barriers to successful electronic medical record implementation.[33]

**3. Strategic implications for sustainable development of pharmaceutical human resource capacity Patient Satisfaction and Pharmaceutical Service Performance in the Context of Digital Transformation**

Internal performance indicators showed relatively rapid improvements after the implementation of RME, such as a nearly 28% reduction in prescription waiting times and a more than 25% increase in pharmacy unit productivity without significant workforce additions. However, the aggregate increase in patient satisfaction was more moderate, with variations across satisfaction dimensions. This pattern indicates that the operational benefits of digital transformation may be realized earlier than the perceived benefits of patients, which are heavily influenced by system stability and the quality of service interactions during the transition phase [29.34]. An important finding of this study was that improvements in internal operational performance were greater than improvements in patient satisfaction. Although waiting time and service transparency improved, patient satisfaction increased only moderately. This suggests that patient experience is influenced not only by efficiency outcomes but also by service continuity, communication quality, and system stability. This finding was reinforced by patient interviews, which stated that "it felt longer at the beginning because the system had problems" or "the process felt more complicated than before." This phenomenon demonstrates that patient experience is not solely determined by the final outcome of service, but also by the smoothness of the process and the perception of control during the service [35,36]. Thus, the decline in satisfaction in the initial phase of RME implementation can be understood as an adaptive consequence of complex system changes, rather than an indicator of digital transformation failure.

## Limitation

The results of this study highlight the importance of integrating patient satisfaction as a strategic performance indicator in hospital pharmacy management. Quantitatively measured improvements in operational efficiency and quality of pharmaceutical services do not automatically translate into uniform improvements in patient experience. Therefore, patient satisfaction needs to be positioned as a leading indicator that complements internal performance indicators, allowing pharmacy management to more holistically capture the impact of digital transformation. Integrating patient satisfaction indicators allows for early identification of service aspects requiring intervention, particularly during the system transition phase, before they impact patient trust and loyalty [31.37]. Therefore, RME

needs to be positioned as part of a holistic managerial strategy that supports continuous and quality-oriented improvement of pharmaceutical service performance.

## CONCLUSION

This study concludes that the implementation of Electronic Medical Records (RME) plays a significant role as a digital transformation tool in hospital pharmacy management. The results show that the implementation of RME significantly improves operational efficiency, as indicated by a reduction in prescription waiting times of nearly 28%, an increase in pharmacy service productivity of more than 25%, and a reduction in administrative burden through documentation efficiency of more than 50%. Furthermore, RME contributes to improving the quality of pharmacy services and clinical pharmacy practices by improving service accuracy, completeness of drug therapy documentation, and traceability of patient medication histories. From a human resources perspective, the success of RME implementation is strongly influenced by the competence and digital literacy of pharmacists, with the system's benefits becoming more optimal through adaptation and organizational learning. Although the increase in patient satisfaction was moderate and experienced a temporary decline during the initial implementation phase, findings show positive trends in the dimensions of service speed, clarity of drug information, and patient safety after the system achieved stability. Overall, this study confirms that RME not only improves the internal performance of pharmacy units but also adds value to service quality and patient experience. It is noteworthy that long-term success requires change management, strengthening human resource capacity, and ongoing system evaluation.

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## AUTHOR CONTRIBUTION STATEMENT

**FSR**: Conceptualization, Methodology, Software; **KP**: Data curation, Writing original draft preparation; **RS**: Visualization, Investigation; **FSR**: Supervision; **KP**: Software, Validation; **RS**: Writing- Reviewing and Editing.

## CONFLICT OF INTEREST DECLARATION

The researcher stated that there was no conflict of interest during the process of compiling and writing the article

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