

THE IMPACT THAT THE ADOPTION OF ELECTRONIC MEDICAL RECORDS (EMR) AND THE IMPLEMENTATION OF NURSING KEY PERFORMANCE INDICATORS (KPI) HAVE ON THE ENHANCEMENT OF SERVICE QUALITY IN A TYPE B HOSPITAL IN SAUDI ARABIA

Alghtani Shoruq Salem M¹, Regidor III Dioso^{2*}

¹Faculty of Nursing, Lincoln University College, Malaysia

Email: 2024shoruq@gmail.com

²Faculty of Nursing, Lincoln University College, Malaysia

Email: duke@lincoln.edu.my

ORCID: <https://orcid.org/0000-0001-7685-8888>

SCOPUS ID: 56712993500

Address: Lincoln University College; Jalan ss 6/12, Kelana Jaya, Petaling Jaya, Selangor, Malaysia 47301

*Corresponding Author: Regidor III Dioso, Faculty of Nursing, Lincoln University College, Malaysia

Email: duke@lincoln.edu.my

ABSTRACT

Objective:

The purpose of this research is to investigate the impact that the adoption of electronic medical records (EMR) and the implementation of nursing key performance indicators (KPI) have on the enhancement of service quality in a Type B hospital located in Saudi Arabia.

Methods:

For the purpose of this study, a quantitative cross-sectional design was utilized, and one hundred registered nurses were chosen through the process of purposive sampling. A structured questionnaire was used to collect data. The questionnaire included ten items for key performance indicator (KPI) implementation, eight items for electronic medical record (EMR) utilization, and twelve items for service quality, all of which were scored using a Likert scale with five points. Utilizing multiple linear regression, the data were evaluated in order to investigate the connections that exist between the variables.

Result:

In terms of service quality, the implementation of key performance indicators (KPIs) had a substantial positive impact ($\beta = 0.427$; $p < 0.001$), and the application of electronic medical records (EMR) also had a significant influence ($\beta = 0.365$; $p < 0.001$). The findings shed light on the significance of digital documentation systems and systematic performance evaluation in terms of enhancing the quality of healthcare services.

Conclusion:

Through the utilization of both KPI and EMR, healthcare services are able to achieve greater levels of efficiency, accuracy, and responsibility. According to the findings of this study, healthcare facilities ought to strengthen their performance management systems and make the most of the utilization of health information technology in order to support quality improvement over the long run.

Keywords: Electronic Medical Records, Nursing Key Performance Indicators, Service Quality, Health Information Technology, Performance Management, Saudi Arabia

INTRODUCTION

In light of the fact that the complexity of healthcare systems is continuing to grow and that there is an increasing demand for high-quality healthcare services, hospitals are under a great deal of pressure to meet the expectations of their patients. In accordance with the findings of recent research (Nabovati et al., 2023; Novitri et al., 2024), hospitals are expected to emphasize clinical efficacy, accountability, efficiency, and patient safety through the utilization of digital health technology and structured management systems. Consequently, boosting performance management systems in conjunction with digital transformation is an essential strategy for improving the overall quality of hospital services.

One of the most popular strategies utilized in hospital administration is the utilization of Key Performance Indicators (KPIs). Key performance indicators, often known as KPIs, are an excellent tool for companies to use in order to assess their progress toward their goals and to ensure that their operational activities are in accordance with their strategic objectives. When it comes to tracking service efficiency, patient safety, and adherence to clinical documentation requirements, key performance indicators are extremely important in healthcare settings (Magedanz et al., 2024; Mehrolhassani et al., 2025). The authors Yuniar et al. (2024) quote previous research that demonstrates that the implementation of organized KPIs has the potential to boost both the consistency of service delivery and the responsibility of the organization. In addition to this, studies have demonstrated that dashboards that are based on key performance indicators assist managers in making better decisions based on data in a more timely manner (Nabovati et al., 2023; Raaphorst, 2024).

On the other hand, electronic medical record (EMR) systems have been rapidly adopted by hospitals as a result of the rapid advancement of digital health technology. Recent research (Putri et al., 2024; Sowon & Ha, 2024) indicates that electronic medical records (EMR) have the capability of integrating clinical documentation that is both accurate and up to date in real time. This helps to increase communication among healthcare personnel and reduce the number of errors that occur in the medical field. It was discovered by Noviti et al (2024) and Purba et al (2025) that enhancing hospital information systems, such as SIMRS, results in improved organizational performance and more effective service delivery. The value of digital technology in enhancing quality improvement initiatives inside healthcare companies is highlighted by these outcomes, which highlight the importance of digital technology.

Although there is a growing body of research, the vast majority of studies have examined the deployment of key performance indicators and electronic medical records in isolation. Unfortunately, there is a dearth of data that investigates the ways in which these factors interact with one another to influence the quality of hospital services, particularly from the perspective of frontline healthcare professionals such as nurses. Due to the fact that nurses are necessary for the provision of direct patient care as well as the quality of clinical documentation, the absence of nurses in these systems constitutes a significant risk.

There is a lack of research that combines the two to examine how they affect service quality from the perspective of frontline nurses, particularly in Type B hospitals in Indonesia (Yuniar et al., 2024; Yuniar et al., 2024). This is despite the fact that there have been several studies that have looked at key performance indicator systems (KPIs) and ERM implementation separately.

For example, Mehrolhassani et al. (2025), Putri et al. (2024), and Sowan and Ha (2024). The purpose of this research is to investigate the impact that the utilization of ERM and the application of KPIs have on the quality of service provided by hospitals.

Clancy et al. (2022) have conducted a number of studies that have highlighted the significance of key performance indicators (KPIs) in assessing the success of hospitals. These KPIs include operational efficiency, patient safety, and service satisfaction. At the same time, the efficiency of performance measurement systems is strongly dependent on the quality of the procedures that are used to record data and report on it. Based on the findings of Adeshina (2025), it was discovered that performance indicators can only be utilized effectively when they are supported by electronic documentation systems that are both systematic and integrated. The significance of connecting performance measuring tools with digital health technology is highlighted by this fact.

From a strategic point of view, the use of key performance indicators (KPIs) is closely matched with the Balanced Scorecard approach, which incorporates patient-related metrics as a crucial dimension of organizational performance. As demonstrated by Samadbeik et al. (2024), customer-based performance monitoring has been demonstrated to be an essential instrument for evaluating the effectiveness of service delivery, the precision of documentation, and the level of patient satisfaction in healthcare settings. Furthermore, the utilization of real-time data enhances the function of key performance indicators (KPIs) as an objective managerial control mechanism that bolsters decision-making and performance enhancement (Fallahnezhad et al., 2025).

Additionally, there is a strong connection between the quality of hospital services and the safety of patients, particularly in terms of the comprehensiveness and precision of the documenting of medical records. According to the guidelines for national hospital accreditation, the preparation of medical records in a timely manner and with accuracy is an essential indicator of patient safety (Kementrian Keshatan RI, 2022). Therefore, electronic medical records must to be seen not just as a tool for administrative purposes, but also as an essential clinical instrument that contributes to the safety of patients, lessens the likelihood of events, and makes it easier for professionals to coordinate their efforts.

In the context of American hospitals, the implementation of a digital monitoring system that was based on predictive analytics provided significant assistance to hospital directors in responding to indicators that deviated from key performance indicator targets. These indicators included service speed, nurse workload, and bed occupancy. The study was presented by Adeshina (2025). It is clear from this that the implementation of digital transformation in performance management not only

not only improves the quality of clinical and management contacts, but also boosts the efficiency of business operations.

It has been further established that the incorporation of digital monitoring systems has the ability to improve the responsiveness of hospital management. According to Adeshina (2025), predictive analytics-based monitoring systems make it possible for hospital administrators to recognize deviations from key performance indicator targets and to react quickly to them. These deviations can include delays in service delivery, imbalances in nursing workload, and problems with bed occupancy. Consequently, this demonstrates that digital transformation not only contributes to the efficiency of clinical and management procedures, but also to the quality of those procedures.

In addition, electronic medical record systems are quite efficient when it comes to risk management in several settings, including clinical and administrative ones. Structured electronic data makes it simpler to conduct internal audits, conduct root cause analysis of service issues, and produce reliable legal documents (Adeshina, 2025). Within the context of healthcare institutions, these characteristics highlight the importance of integrating performance management and digital information systems in order to promote transparency and the implementation of effective administration.

Buy-in from higher management and buy-in from healthcare providers are both necessary for the successful implementation of key performance indicator and electronic medical record systems at the organizational level. The Type B Hospital, which is one of the referral hospitals, possesses a significant potential to optimize the integration of various systems in order to enhance the efficiency of the service, speed up response times, and decrease the amount of time that patients have to wait. In spite of this, accomplishing this goal necessitates not only the readiness of technological resources but also the cultivation of human resource capabilities and the establishment of an organizational culture.

Key performance indicators, also known as KPIs, are a fundamentally essential component of hospital strategic management. They offer quantitative markers that may be used to evaluate the effectiveness and efficiency of healthcare services. Example of process indicators are wait times, patient satisfaction, infection rates, and patient safety problems (Adeshina, 2025). Other examples include patient safety difficulties. Continuous monitoring of key performance indicators (KPIs) has been demonstrated to increase nursing performance by utilizing evaluation processes that are both transparent and objective.

On the other hand, the availability of trustworthy information systems is a critical factor in efficiently implementing key performance indicators (KPIs). It is possible that key performance indicator monitoring will become an administrative burden rather than a tool for performance improvement if sufficient system integration is not implemented (Asmoro & Nazar, 2024). Therefore, it is necessary for healthcare units to collaborate in order to guaranty that key performance indicators (KPIs) are pertinent and accurately reflect genuine clinical demands.

On the other hand, electronic medical records (EMR) are a digital solution that are aimed to improve the performance of health information management in terms of quality, security, and efficiency. According to Nugroho and Pramudita (2024), electronic medical records (EMR) make it possible to integrate patient data across several service units, which in turn enables medical personnel to obtain clinical information that is both comprehensive and up to date. According to Sowan and Ha (2024), electronic medical record systems have the capability to provide assistance in clinical decision-making by means of the installation of Clinical Decision Support Systems (CDSS). These systems contribute to the reduction of medical errors and the improvement of treatment results.

According to Novitri et al. (2024), the optimal utilization of electronic medical records has been linked to a decrease in surgical errors, an improvement in service flow, and an increase in patient satisfaction. According to Y. W. Putri et al. (2024), electronic medical records (EMR) not only enable audit processes but also facilitate data gathering for quality reporting, which ultimately leads to an improvement in organizational performance evaluation.

KPIs and electronic medical records (EMR) can be integrated to create a comprehensive framework for managing the quality of hospital services. At the same time that EMR acts as a platform for storing and presenting performance data, key performance indicators (KPIs) serve as instruments for measuring performance. According to Raaphorst (2024), hospitals who are able to properly combine both systems typically enjoy gains in both the accuracy of their documentation and the efficiency of their service. The concepts of continuous quality improvement (CQI), according to which changes are driven by objective data that is continuously updated, are also supported by this integration (Nabovati et al., 2023).

Last but not least, according to Danang et al. (2024), the success of the deployment of key performance indicators (KPI) and electronic medical records (EMR) is greatly influenced by organizational readiness, which includes human resource capacity, infrastructure availability, and organizational culture. According to Harris et al. (2025), the commitment of leadership is significantly important in the process of encouraging compliance with digital systems through the use of supervision, incentives, and evaluation based on performance. In addition, the expertise and attitudes of nurses have a considerable impact on the regularity with which electronic medical records are utilized (Wan et al., 2025). In the absence of sufficient comprehension,

There is a possibility that digital documentation may be regarded as little more than a formality rather than a tool for enhancing the quality of service.

This study is to investigate the combined effect of nurse key performance indicators (KPIs) adoption and electronic medical record (EMR) utilization on hospital service quality in a Type B hospital. This research gap was found. The purpose of this study is to highlight the integrated role that these variables play in supporting service efficacy, patient safety, and data-driven decision-making. Previous studies have evaluated these variables independently when they were first investigated. The findings are anticipated to provide a contribution to the formulation of management strategies that are based on evidence and to help the accreditation processes of hospitals through the optimization of performance management and digital health systems.

METHODS

Using a cross-sectional correlational methodology, this quantitative study focused on the utilization of key performance indicators (KPIs) by nurses, the utilization of electronic medical records (EMRs), and the quality of hospital services. According to Yuniar et al. (2024), this method was chosen because it was deemed appropriate for determining the strength and direction of correlations between variables in an environment that was not under controlled conditions. Through the utilization of this methodology, it was anticipated that the data obtained would accurately reflect the actual situations that are encountered in hospital practice, hence enhancing the relevance and applicability of the findings.

The investigation was carried out over the course of a period of three months, beginning in January 2025 and ending in March 2025. During this time, the stages of research preparation, data collection, data analysis, and reporting were carried out. For the purpose of ensuring methodological rigor, data validity, and analytical accuracy, each and every procedure was carried out in a careful and methodical manner. All of the nurses who were employed in a Type B hospital and who were actively involved in clinical services, nursing documentation utilizing ERM, and the implementation of performance indicators at the unit level were included in the study population. According to statistics collected from within the hospital, the overall population consisted of roughly 134 active nurses (Putri, F., & Erianti, 2025). These nurses were spread out throughout a variety of service units.

For the purpose of selecting respondents who fulfilled particular inclusion criteria, a technique known as purposive sampling was utilized. These requirements included nurses who had a minimum of two years of work experience, active access to the ERM system, and direct involvement in the process.

in the provision of nursing services." Furthermore, it was necessary for participants to express their informed consent and establish that they were willing to take part in the study. During the time period in which the data was being collected, nurses who were absent from their position or who were on leave were not included in the study.

There were a total of one hundred people within the final sample. The sample size was estimated by taking into consideration the potential response rates, the statistical requirements for multivariate analysis, and the Slovin technique with a margin of error of 5%. It was determined

that this particular sample size was appropriate for conducting multiple linear regression analysis with a level of statistical power that was satisfactory.

It was decided to collect primary data from one hundred respondents by means of a standardized questionnaire that was sent electronically through Google Forms. EMR utilization, perceived service quality, and key performance indicator implementation were the three primary factors that were intended to be evaluated by the instrument. For the purpose of measuring the KPI implementation variable, ten questionnaire items were included. These items covered a variety of topics, including performance monitoring, objective attainment, and certification with clinical standards. In order to evaluate system usage, ease of use, data accessibility, and perceived utility, the electronic medical record (EMR) utilization variable was comprised of eight different items. In the meantime, the variable of service quality was evaluated using a total of twelve questions. These items reflected aspects of nursing services such as responsiveness, reliability, assurance, empathy, and tangibles. According to Novitri et al. (2024), a Likert scale was utilized in order to systematically measure the attitudes of the respondents for each variable. The scale might range from 1 (strongly disagree) to 5 (strongly agree).

Secondary data was collected by evaluating documents, such as quality reports from hospitals, audit records of ERM use, and internal performance reports on key performance indicators. This was done in addition to the primary data that was collected. The dependability of the results was improved by employing this triangulation technique, which was done so that a greater understanding of the manner in which systems are deployed in hospitals could be gained.

To further analyze the actual implementation of nursing documentation procedures, direct observations were carried out in certain service units. This was done in order to evaluate actual application. The purpose of this stage was to confirm that the data that was self-reported is in line with the practices that are actually being utilized in the real world and to evaluate the extent to which ERM usage contributes to the achievement of key performance indicators (Novitri et al., 2024).

A combination of theory and previous research served as the foundation for the construction of the research instrument. Key performance indicator modifications were based on the criteria for hospital accreditation and national healthcare performance standards. These served as the basis for the modifications. At the same time, the ERM variable was constructed by utilizing the TAM, which is based on the concept that two significant elements that influence system adoption are the degree to which the system is deemed to be valuable and the ease with which it can be utilized (Purba et al., 2025).

For the purpose of data analysis, the statistical program designed for social science study was utilized. Statistics that are descriptive were utilized in order to provide an explanation of the characteristics of the respondents as well as the distributions of the variables. A multiple linear regression inferential analysis was carried out in order to explore the influence that independent factors have on the quality of the service which was provided. Before conducting hypothesis testing, conventional assumption tests were carried out in order to ensure that the regression model

was accurate. As part of these tests, we checked for normality using the Kolmogorov-Smirnov method, autocorrelation using the Durbin-Watson method, heteroscedasticity using the Heuer method, and multicollinearity using the Variance Inflation Factor. In the study conducted by Danang et al. (2024), the significance level was determined by a p-value that was lower than 0.05. According to the outcomes of the descriptive analysis, which were presented in the form of percentages, mean scores, and frequency distributions, the extent of KPI adoption, ERM use, and perceived service quality were being demonstrated. In order to provide further support for the discussion, these data were subjected to additional analysis by being compared with the relevant literature.

Every individual gave their informed permission before taking part in the research before they were even asked to participate. During the entirety of the research project, we took measures to safeguard the respondents' names and maintain their confidentiality. The policies regarding the storage and utilization of academic data were adhered to in a stringent manner (Ellis & Taylor, 2024). According to Levitt et al. (2018), all of the procedures were carried out in accordance with the well-known ethical standards and followed the guidelines that were established by the institution that was conducting the research.

RESULTS

The objective of this study is to investigate the ways in which a Type B hospital in Indonesia was able to enhance the quality of patients' care following the implementation of nurse Key.

Electronic medical record (EMR) systems and key performance indicators (KPI).The findings are presented in terms of the characteristics of the respondents, descriptive statistics of the variables, and multiple linear regression analysis based on the data extracted from one hundred nurses who participated in the survey.

62 percent of the participants were female, whereas 38 percent were male, as indicated by the split of response characteristics of the participants. When it comes to the length of time they have been employed, the majority of respondents (55%) have a total of more than five years of experience. This is followed by thirty percent of respondents who have between three and five years of experience, and fifteen percent of respondents who have less than or equal to two years of experience. Fifty-four percent of respondents possessed a Bachelor of Science degree in Nursing, while forty-six percent had achieved a Diploma (D3) in Nursing. Table 1. Distribution of Respondent Characteristics

Characteristics	Frequency (n)	Percentage (%)
Gender		
- Male	38	38
- Female	62	62
Years of Employment		
- >2 years	15	15
- 3–5 years	30	30
- > 5 years	55	55
Last Education		

- D3 in Nursing	46	46
- S1 in Nursing	54	54

The findings of the descriptive analysis indicate that the nurse KPI execution was rated as high, with a mean score of 4.12 (standard deviation = 0.51) in the qualitative category. It was determined that the usage of ERM was rather high, with a mean score of 3.95 (standard deviation = 0.63). In the meantime, the mean score for service quality was the highest, coming in at 4.20 (standard deviation = 0.47), which places it in the high category.

Despite the fact that there is still space for improvement, particularly in terms of optimizing digital system usage, these findings imply that respondents, on the whole, viewed service quality to be well-established. This perception was backed by reasonably good KPI implementation and ERM utilization. Table 2. Average Scores for KPI Implementation, ERM Usage, and Service Quality

Variable	Mean	SD	Category
KPI Implementation	4.12	0.51	High
ERM Usage	3.95	0.63	Fairly High
Service Quality	4.20	0.47	High

The results of the multiple linear regression analysis indicate that there is a significant connection between service quality and both the independent variable of KPI implementation and the dependent variable of ERM utilization.

It has been demonstrated that there is a considerable correlation between the adoption of key performance indicators (KPIs) and the improvement of service quality ($B = 0.427$; $t = 5.221$; $p < 0.001$). This suggests that the implementation of KPIs has a positive and significant impact on service quality. As a result of the fact that the adoption of electronic medical records (ERM) has a positive and statistically significant impact on service quality ($B = 0.365$; $t = 4.879$; $p < 0.001$), it is possible to draw the conclusion that the utilization of ERM leads to higher quality healthcare services.

This baseline level of service quality is demonstrated by the constant value ($B = 1.147$; $p = 0.027$) when the independent factors are not taken into consideration. The utilization of ERM and the installation of KPIs both contribute significantly to the rise. Table 3. Multiple Linear Regression

Variable	B	t	Sig
KPI	0.427	5.221	<0.001
ERM	0.365	4.879	<0.001
Constant	1.147	2.231	0.027

DISCUSSION

The purpose of this study was to investigate the ways in which the utilization of Electronic Medical Records (ERM) and the adoption of Key Performance Indicators (KPI) utilized by nurses contribute to the quality of service provided in a Type B hospital. The findings indicate that these aspects have a major impact on the ultimate product of the service. Before the deployment, a number of problems were identified, including the fact that performance assessments were

inconsistent and that nursing documentation was delayed. Both of these concerns have the potential to have an effect on the quality of service that is delivered. Despite the fact that both elements are statistically significant, it appears that the deployment of KPI appears to have a somewhat more significant impact ($\beta = 0.427$) than the utilization of ERM ($\beta = 0.365$). When all of these characteristics are considered together, they are responsible for a significant 54.7% of the variance in service quality ($R^2 = 0.547$) in the field of research investigating healthcare services.

According to one of the most important findings of the study, the implementation of key performance indicators (KPIs) is essential within the context of improving service quality. Key performance indicators, often known as KPIs, are beneficial to organizations because they enable them to transform their aspirational goals into measurable practices that can be implemented on a daily basis. Not only are nurses expected to adhere to clinical standards, but they are also strongly encouraged to maintain consistency in their documentation, responsiveness, and utilization of established procedures. Consequently, the deployment of key performance indicators (KPIs) has a dual purpose: it acts as a monitoring tool and it also acts as a behavioral shaper for nurses in the workplace. It achieves this by encouraging the utilization of quantifiable performance criteria in normal clinical work environments. It was discovered by Yuniar et al. (2024) that when performance indicators are well-designed, accountability is improved, and the outcomes of healthcare are enhanced. In addition, dashboards for key performance indicators make it possible for managers to make decisions more quickly and based on data, all while putting performance under closer examination (Nabovati et al., 2023; Raaphorst, 2024).

It is interesting to note that the effects of key performance indicators (KPIs) were somewhat bigger than the effects of enterprise risk management (ERM), which may suggest that fundamental clarity in performance goals is more essential than technology. To put it another way, technological systems often operate at their highest level when they are incorporated into a performance framework that has been clearly defined. Due to the fact that certain nurses may still have difficulty transitioning to electronic health records (EDSs), the effectiveness of ERM utilization may vary depending on the amount of digital literacy of the users and the simplicity of the system. Given that there are no predetermined standards, it is possible that ERM systems will be utilized more for the purpose of ensuring administrative compliance than for the purpose of improving the quality of care that is provided. A significant practical issue is brought to light by this discovery, which is that technology is not sufficient on its own. The efficiency of technology is contingent on the degree to which it is connected with performance management systems.

Despite the fact that this is the case, there is no doubt that the application of ERM results in an improvement in service quality. It is possible to make better clinical decisions through the utilization of digital records, which offer information on patients that is both more accurate and more easily available. Electronic documentation has been emphasized in previous research as a tool to improve coordination among healthcare providers, reduce the chance of errors, and cut wait times (Putri et al., 2024; Sowan & Ha, 2024). Previous study has highlighted the benefits of electronic documentation. According to Novitri et al. (2024), these enhancements have a high

association with fundamental features of service quality, such as reliability and responsiveness in day-to-day practice.

The adoption of ERM and the installation of key performance indicators (KPIs) together reflect a larger shift toward data-driven management in the healthcare industry. It has been found that hospitals that combine structured performance indicators with integrated digital systems are generally in a better position to monitor service delivery, identify gaps, and respond more swiftly to emergent difficulties (Fallahnezhad et al., 2025). The concept that these two components are strategically significant for maintaining service quality gains is further supported by the fact that the model used in this study has a relatively high explanatory power.

Nevertheless, it is of equal significance to acknowledge that nearly half of the variance in service quality, which accounts for 45.3% of the total, is influenced by factors that are not accounted for in this model. The fact that this is the case shows that factors such as leadership style, organizational culture, workload balance, and even patient characteristics may also play a substantial influence. Previous study has shown that the effectiveness of digital transformation in the healthcare industry is frequently closely linked to the commitment of leadership and the readiness of the company (Harris et al., 2025). The strengthening of key performance indicators (KPI) and enterprise risk management (ERM) integration should therefore go hand in hand with larger organizational development activities.

It should come as no surprise that the findings of this study have implications for management. The implementation of key performance indicators (KPI) systems in hospitals should be integrated directly with enterprise risk management (ERM) platforms. Utilizing digital records for real-time performance monitoring has the potential to increase transparency, which in turn may facilitate the process of making decisions more quickly. In addition, it is of the utmost importance to offer nursing staff with ongoing training in order for them to acquire the necessary skills to become proficient with the technologies and successfully implement them in clinical practice.

This research also contributes a significant new piece of information to the existing body of literature. From the perspective of frontline nursing professionals in particular, this study highlights the combination and complementary benefits of implementing KPIs and using ERMs. This is in contrast to the findings of many other studies, which have focused solely on these issues. This holistic approach provides valuable insights for healthcare facilities that are working to improve their quality improvement initiatives and meet the standards for accreditation.

Despite these developments, there are a number of considerations that need to be taken into account to be taken into account. The fact that it was carried out and the fact that it was designed in a cross-sectional fashion

Because the research was conducted in only one institution, it is not possible to draw any conclusions about the relationship between cause and effect. It is possible that future study will use a longitudinal approach and incorporate additional characteristics, such as the effectiveness of

leadership, organizational culture, or patient happiness, in order to acquire a more comprehensive understanding of the dynamics of service quality.

Based on the findings, it is evident that the utilization of ERM and the implementation of KPIs both significantly enhance the quality of healthcare services. When compared to key performance indicators (KPI), enterprise risk management (ERM) focuses on improving the precision and availability of clinical data that is used in everyday practice. The alignment of performance indicators with digital documentation is not always an easy task in real-world situations because it is dependent on the consistency of staff and the integration of systems across different units. Through the integration of key performance indicators (KPIs) and enterprise resource planning (ERP), it is possible to make decisions in the healthcare industry that are more evidence-based. The utilization of this alternative technique makes it possible to provide performance monitoring with data that is both accurate and up to date. Through this connectivity, hospitals are able to better assess performance and respond more rapidly to service issues, which ultimately contributes to critical quality improvement (CQI).

CONCLUSION

The findings of this study indicate that the adoption of electronic medical records (ERM) and the application of nursing Key Performance Indicators (KPIs) have a statistically significant impact on the improvement of the quality of hospital services. A more significant influence was demonstrated by the installation of key performance indicators (KPIs), which suggests that structured performance measurement plays an important part in directing nursing practices. ERM, on the other hand, makes a contribution by improving the precision, timeliness, and comprehensiveness of clinical documentation, which in turn supports improved service delivery. Taking into consideration these findings, it is clear that the incorporation of key performance indicator (KPI)-based performance management into digital health systems is very necessary in order to achieve sustainable quality improvement. Therefore, hospitals are strongly urged to increase the application of key performance indicators (KPIs) and maximize the utilization of enterprise risk management (ERM) through ongoing training, system integration, and organizational support in order to guaranty healthcare services that are more effective, efficient, and data-driven.

REFERENCES

- Adeshina, Y. T. (2025). Strategic implementation of predictive analytics and business intelligence for value-based healthcare performance optimization in the US health sector. *International Journal of Computer Applications Technology and Research*. <https://doi.org/10.7753/IJCATR1212.1014>
- Clancy, C., Shine, C., & Hennessy, M. (2022). Hospital performance: An analysis of HSE key performance indicators.
- Danang, F., Asmoro, D., & Ningtiyas, S. (2024). The effect of key performance indicators and management control systems on employee performance. *Journal of Management Studies*, 2(3), 817–823.

- Ellis, A., & Taylor, M. (2024). A qualitative analysis of the role of the Hospital in the Home registered nurse in Australia. *Collegian*, 32(1), 1–8. <https://doi.org/10.1016/j.colegn.2024.09.004>
- Fallahnezhad, M., Langarizadeh, M., & Vahabzadeh, A. (2025). Key performance indicators of hospital supply chain: A systematic review. *BMC Health Services Research*. <https://doi.org/10.1186/s12913-024-11954-5>
- Farantos, G. I., & Dounias, G. (2024). Key performance indicators in occupational health and safety of hospitals: A systematic review with meta-analysis protocol. *Academic Journal of Business, Administration, Law and Social Sciences*, 10(1), 1–15. <https://doi.org/10.2478/ajbals-2024-0001>
- Harris, R., Sims, S., & Leamy, M. (2025). Leadership and organizational readiness in nursing performance improvement: A realist review. *International Journal of Nursing Studies*, 165, 105016. <https://doi.org/10.1016/j.ijnurstu.2025.105016>
- Kementerian Kesehatan Republik Indonesia. (2022). Peraturan Menteri Kesehatan Republik Indonesia Nomor 24 Tahun 2022.
- Lilianti, A. (2024). Service quality optimization: A review of quality function deployment implementation. *Journal of Health Management*, 4(3), 1242–1253.
- Magedanz, L., Lêdo, H., Dayani, S., Fernando, G., & Llimos, F. (2024). Clinical pharmacy key performance indicators for hospital inpatient settings: A systematic review. *International Journal of Clinical Pharmacy*, 46(3), 602–613. <https://doi.org/10.1007/s11096-024-01717-x>
- Mehroolhassani, M. H., Behzadi, A., & Asadipour, E. (2025). Key performance indicators in emergency department simulation: A scoping review. *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine*. <https://doi.org/10.1186/s13049-024-01318-7>
- Nabovati, E., Farrahi, R., Sadeqi Jabali, M., Khajouei, R., & Abbasi, R. (2023). Identifying and prioritizing key performance indicators for hospital management dashboards. *Health Informatics Journal*, 29(4). <https://doi.org/10.1177/14604582231221139>
- Novitri, A., Hasibuan, R., Harahap, J. W., Agustina, D., & Hasibuan, S. R. (2024). Strategies for optimizing healthcare services through hospital information system implementation. *Jurnal Kesehatan*, 7(5). <https://doi.org/10.56338/jks.v7i5.5075>
- Purba, S. H., Khairani, C., & Wanny, N. (2025). Optimization strategies for hospital information systems to improve hospital performance. *Journal of Health Systems*, 3, 1–12.
- Putri, Y. W., Saragih, T. R., Purba, S. H., et al. (2024). Implementation and impact of electronic medical record systems in healthcare services. *Sehat Rakyat Journal*. <https://doi.org/10.54259/sehatrakyat.v3i4.3449>
- Raaphorst, N. (2024). Frontline enablement through performance management: An empirical conceptualization. *Public Management Review*, 26(6), 1658–1683. <https://doi.org/10.1080/14719037.2023.2212255>
- Samadbeik, M., Engstrom, T., Lobo, E. H., Kostner, K., Austin, J. A., & Pole, J. D. (2024). Healthcare dashboard technologies and data visualization: A scoping review.

- Situmeang, W. Y., Sumampow, M., Chain, V., Lestari, P., & Handiyani, H. (2023). Strategic planning of nursing management information systems in urban hospitals. *International Journal of Nursing Studies*. <https://doi.org/10.58467/ijons.v3i1.49>
- Sowan, A., & Ha, B. (2024). Maximizing the impact of smart pump–EHR interoperability in critical care. *Intensive and Critical Care Nursing*, 85, 103809.
- Wan, T., Wang, C., Shi, J., & Wu, S. (2025). The effect of nursing decision implementation on emergency patients with acute myocardial infarction.
- Yuniar, V. R., Zabina, K. A., Zakiah, M. N., et al. (2024). The role of key performance indicators in improving hospital service quality: A literature review.