

IMPLEMENTATION OF HOSPITAL MANAGEMENT INFORMATION SYSTEM AND ITS IMPACT ON PATIENT DATA MANAGEMENT EFFICIENCY IN THE HOSPITAL ADMINISTRATION DEPARTMENT OF DR. HASRI AINUN HABIBIE HOSPITAL

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ABSTRAK

This study aims to analyze the implementation of the Hospital Management Information System (SIMRS) and its impact on the efficiency of patient data management at RSUD dr. Hasri Ainun Habibie, Gorontalo City. This research employed a descriptive quantitative method involving 30 administrative staff respondents. Data were collected through questionnaires and analyzed using descriptive analysis with a Chi-Square test. The results indicate that the implementation of SIMRS is categorized as good (89.25%), and the efficiency of patient data management is also high (87.75%). The Chi-Square test produced a significance value of 0.002 (<0.05), indicating a significant influence between SIMRS implementation and the efficiency of patient data management. SIMRS has been proven to improve the speed, accuracy, and integration of data across hospital service units.

Keywords: SIMRS, Patient Data Management, Administrasi Rumah Sakit

PENDAHULUAN

In the digital era, developments in information and communication technology have had a significant impact on various sectors of life, including the health sector. In the health sector, the use of information technology is seen as an opportunity to improve the quality, efficiency, and effectiveness of health services, as well as to support transparency and the availability of real-time information (Putra, 2023).

As the need for healthcare services increases, hospitals in Indonesia are beginning to adopt integrated information systems to improve service quality and operational management. One system that plays a crucial role in this is the Hospital Management Information System (SIMRS). SIMRS is designed to provide an integrated solution for hospital administration, from patient data recording

and doctor scheduling to medical record management and communication between service units (Athira et al., 2024).

The Hospital Management Information System (MIS) is a critical subsystem that processes information related to users according to their roles, including patients, healthcare workers, and administrative staff. The SIMRS helps address barriers to healthcare delivery and improve service quality by integrating service processes, from diagnosis and treatment to pharmacy and medical records, to accounting and HR management systems (Fadilla & Setyonugroho, 2021).

Its role is becoming increasingly important in line with government policy requiring all hospitals to implement digital-based information systems, as stipulated in Law No. 44 of 2009 concerning Hospitals and Minister of Health Regulation No. 82 of 2013 concerning Hospital Management

Information Systems. Therefore, every hospital is required to record and report all its activities in the form of a Hospital Management Information System (SIMRS) (Najib & Aniza Winanda, 2023).

Theoretically, a SIMRS encompasses several essential components: hardware, software, data, procedures, and human resources. The quality of the system's hardware and infrastructure will determine the smooth use of SIMRS. Procedures, particularly clear and documented Standard Operating Procedures (SOPs), play a significant role in creating a standardized workflow. Data quality in SIMRS significantly determines the accuracy of the information generated, while human resource competency is crucial for the success of system implementation (Rusli, 2022). In terms of performance, SIMRS is expected to produce accurate, timely, and integrated information, as well as minimize paper use, increase time efficiency, reduce manual errors, and support data-driven managerial decisions. (Fahrul Pratama & Purwanto, 2023).

SIMRS implementation is also heavily influenced by human, organizational, and technological factors. From a human perspective, user satisfaction, ease of use of the system, and training are key factors in determining the success of SIMRS. (Winarti et al., 2023).

From an organizational perspective, leadership support, organizational structure, planning, and inter-unit coordination are crucial. From a technological perspective, system quality, information quality, and technical service quality are key components that determine whether a SIMRS can be used optimally (Winarti et al., 2023). Therefore, the

success of a SIMRS depends not only on technology but also on human factors and organizational management.

In the context of patient data management, electronic medical records (EMR) and patient information systems (PIS) play a crucial role in providing complete, accurate, quickly accessible, and secure data. EMR digitally stores a patient's entire medical history, including diagnoses, therapies, laboratory results, and prescriptions, while PIS manages patient administrative data such as identity, scheduling, and insurance information (I Made Budi Andryana, 2023). Both systems integrate all patient information, resulting in faster, more accurate, and error-free service.

By using a SIMRS, hospitals can improve the efficiency of patient data management, which was previously done manually using paper. Using a manual system tends to cause various problems such as data duplication, delays in file retrieval, data desynchronization between units, and the risk of loss or damage to physical files (Aisah & Maharani, 2024). Implementing a SIMRS reduces manual processes, increases service efficiency, speeds up data retrieval, and improves the quality and security of patient data. (Santosa et al., 2023).

Dr. Hasri Ainun Habibie Regional General Hospital, a government-owned hospital in Gorontalo Province, has implemented a Public Health Information System (SIMRS) since 2022 using the Generic Open Source (GOS) SIMRS developed by the Ministry of Health. This system is integrated with BPJS and the Ministry of Health and is used in outpatient and inpatient settings, the emergency

department, medical records, pharmacy, cashier, and BPJS claims departments. In the administrative department, SIMRS significantly assists with registration processes, medical record management, visit data recording, and payment management. This system facilitates data integration between units and ensures the accuracy of patient information.

However, in its implementation, Dr. Hasri Ainun Habibie Regional General Hospital still faces obstacles such as data input errors due to staff inaccuracy, a lack of understanding of system usage, limited training, and the perception among some employees that manual processes are faster because they are more accustomed to writing than typing. Furthermore, there is a shift in work culture from manual to digital systems that requires gradual adaptation.

Given the importance of SIMRS in improving the efficiency of patient data management, as well as the various implementation challenges at Dr. Hasri Ainun Habibie Regional General Hospital, this research is highly relevant. This study aims to analyze how SIMRS is implemented in the hospital administration department, its impact on the efficiency of patient data management, and the obstacles encountered during the implementation process. This understanding is expected to provide a comprehensive overview of SIMRS' effectiveness and serve as a basis for evaluation and improvement for the hospital to enhance the quality of administrative services.

RESEARCH METHODS

1. Population and Sample

a. Population

The population in this study was all administrative staff who use the

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Hospital Management Information System (SIMRS) at Dr. Hasri Ainun Habibie Regional General Hospital. This population includes employees who actively operate or have SIMRS users in units within the hospital administration, namely the outpatient department, inpatient department (admissions), cashiers, and medical records department.

b. Sample

Because the population is relatively small (30 people), the entire population was used as the research sample. In other words, this study used a saturated sampling technique (total sampling), which is a sampling technique where all members of the population are used as research respondents.

2. Data Collection Techniques

The basic information collected in this research will be processed through the following stages:

a. Observation

To implement this observation method, the researcher first submitted an official request letter from the university for permission to conduct initial data collection. After the letter was approved and received by the hospital, the researcher then proceeded with an in-person visit to the research site to collect the initial data needed to ensure the smooth and accurate progress of the research.

b. Questionnaire

The main instrument in this study was a questionnaire compiled based on research variable indicators. The questionnaire was given to respondents (administrative staff) to determine their

responses regarding the implementation of SIMRS (X) and the efficiency of patient data management (Y).

c. Documentation

Researchers collected secondary data in the form of documents such as hospital profiles, organizational structures, vision and mission, data on the number of employees, data on the use of SIMRS and the results of hospital administration activity reports..

3. Data Analysis

In the research process, the researcher used descriptive analysis methods and Spearman rank correlation to manage the data obtained.

a. Descriptive Analysis

Aims to describe and obtain an in-depth and objective picture of the implementation of SIMRS and the efficiency of patient data management at Dr. Hasri Ainun Habibie Regional General Hospital.

b. Univariate Analysis

Univariate analysis is a technique for analyzing data on a single variable independently, with each variable analyzed without any connection to the other variables. Univariate analysis is the most basic method for analyzing data. It can be displayed as data, or processed into percentages, ratios, or prevalences. The frequency distribution formula is (Eireine Maria Pandoh et al., 2025):

$$P = F/N \times 100\%$$

Information :

P : Presentation

F= Frequency/number of respondents' answers N= Number of respondents

c. Bivariate Analysis

Bivariate analysis was conducted to determine the influence between independent variables and dependent variables using the SPSS program with the Chi-Square statistical test. (Eireine Maria Pandoh et al., 2025).

- 1) If the p-value <0.05, then H0 is rejected and H1 is accepted. This means that there is an influence between the implementation of SIMRS and the efficiency of patient data management.
- 2) If the p-value is >0.05, then H0 is accepted and H1 is rejected. This means there is no influence between the implementation of SIMRS and the efficiency of patient data management.

RESEARCH RESULT

Based on the research that has been conducted, the researcher targeted Dr. Hasri Ainun Habibie Regional General Hospital, Gorontalo Province as the study location to determine the implementation of the hospital management information system and its impact on the efficiency of patient data management in the hospital administration sectio.

1. Univariate Analysis

a. Implementation of SIMRS

Table 1.2 Average Results of Respondents' Responses to SIMRS Implementation

No	Size	Respondents'	Average
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	Respons	Indicato	res (%)	r (%)
Indicator: Hardware				
1 The hospital has adequate hardware (computers, servers, printers) for SIMRS.		93,3		
2 hardware performance supports smooth use of SIMRS		91,3	89,3	
Indicator: Procedure				
1 There are clear and documented standard procedures for using SIMRS.		89,3		
2 The procedure for using SIMRS is easy for administrative staff to understand.		88,65	88	
Indicator: Data				
1 SIMRS provides complete and structured patient data that is easy to access for patients and their families.		86,6		
2 The data entered into SIMRS is accurate and reliable.		90,2	92	
3 Patient data can be quickly accessed again when needed.		92		
Indicator : HR (Human Resources)				
1 Administrative staff have basic skills in operating SIMRS		89,3		
2 There is support from management in developing human resources related to SIMRS		86,87	85,3	

3 Officers have received training in the use of SIMRS	86
Average	89,25

Source: Processed data 2025

Based on table 1.2, the average response of respondents regarding the implementation of SIMRS in the hospital administration section at Dr. Hasri Ainun Habibie Regional General Hospital was 89.31%. Therefore, it can be concluded that the implementation of SIMRS at Dr. Hasri Ainun Habibie Regional General Hospital is running well. This can be shown by the large number of strongly agree responses from respondents regarding statements on the hardware, procedures, data, and human resources indicators. The average response of respondents per indicator shows the highest value is in the hardware indicator at 91.3 with the size of the hospital having adequate hardware (computers, servers, printers) for SIMRS at 93.3%, and the lowest is in the human resources indicator at 86.87% with the lowest value in the statement that there is support from management in developing human resources related to SIMRS and officers have received training in using SIMRS each at 86%.

b. Bivariate Analysis

Table 1.3 Frequency of Hospital Management Information System (SIMRS) Implementation with Patient Data Management Efficiency

No	Size	Respon	Avera
		dents'	ge
		Respon	ndicat
		ses (%)	or

Indicator : Patient Medical Record (PMR)		
1 Patient medical records can be accessed quickly through electronic systems.	88	
2 Medical record data stored in the system is complete and accurate.	92	
3 The RME system makes it easier to track patient visit history.	93,3	90,58
4 Patient medical information is stored securely in the system	91,3	
5 The RME system supports continuity of patient care (no need to repeat data at each visit)	89,3	
Indicator: Patient Data Management Efficiency		
1 SIP is easy to use by administrative staff without special training.	79,3	
2 The SIP system simplifies the patient registration and scheduling process.	88	84,92
3 Patient data in SIP is always updated and accurate	90	
4 Technical issues with SIP are rare and quick to access	79,3	
5 SIP supports the smooth process of patient registration and data search.	88	
Average		87,75

Source: Processed data 2025

Based on table 1.3, the average results of respondents' responses obtained regarding the efficiency of patient data management were 87.75. So it can be concluded that the efficiency of patient data management in the hospital administration section is good. This can be shown by the number of strongly agree responses from respondents regarding statements on the patient medical record (RME) and patient information system (SIP) indicators. The average results of respondents' responses per indicator show that the highest value is in the patient medical record (RME) indicator of 90.58 with the size of the RME system making it easier to track patient visit history at 93.3%, and the lowest is in the patient data management efficiency (SIP) indicator of 84.92% with the lowest value in the statement that SIP is easy to use by administrative staff without special training and technical problems in SIP rarely occur and are quickly accessed at 79.3% respectively.

2. Bivariate Analysis

Average Implementation of SIMRS	Average Efficiency of Patient Data Management	Pearson's Sig Chi-Square	Ket
Strongly agree	Strongly agree	0,002	There is an influence

Source: Data Processing 2025

Based on Table 4.31, the Chi-Square value is 0.002 (<0.05), indicating

that the implementation of SIMRS has an impact on the efficiency of patient data management at Dr. Hasri Ainun Habibie Regional General Hospital. This means that the more respondents agree with the implementation of the Hospital Management Information System (SIMRS), the higher the efficiency of patient data management.

DISCUSSION

1. Implementation of Hospital Management Information System (SIMRS)

To determine how the Hospital Management Information System (SIMRS) is implemented at Dr. Hasri Ainun Habibie Regional General Hospital, researchers used four indicators: hardware, procedures, data, and Human Resources (HR). Of the four indicators, the hardware indicator has the highest percentage value, at 91.3%. This indicates that the hospital has adequate hardware such as computers, servers, and printers to support the use of SIMRS. The availability of adequate devices helps streamline the process of inputting, storing, and accessing patient data so that administrative work can be carried out quickly and without obstacles. This finding is in line with research by Syafira et al. (2024) which states that the success of SIMRS implementation is greatly influenced by the availability of adequate technological infrastructure, including well-functioning computers, servers, and printers, because good infrastructure can improve system smoothness and reduce operational disruptions. The lowest percentage value is found in the

Human Resources (HR) indicator, specifically the statement that there is support from management in HR development with a value of 85.3%.

This indicates that management support for employee competency development, such as training and mentoring on SIMRS usage, still needs to be improved to optimize system utilization. This finding is supported by research by Najib Aniza Winanda, who revealed that one of the main obstacles to SIMRS implementation is suboptimal human resource readiness and a lack of managerial support for developing the capabilities of system users.

Furthermore, overall, from the four indicators, the average response of respondents to the implementation of SIMRS was 89.25%, which indicates that the majority of respondents strongly agree that the implementation of the Hospital Management Information System (SIMRS) at Dr. Hasri Ainun Habibie Regional General Hospital has been running quite optimally. This means that the system has been supported by adequate hardware, clear operational procedures, good data quality, and human resource capabilities that are generally able to operate SIMRS effectively.

In assessing the effectiveness of the SIMRS implementation at Dr. Hasri Ainun Habibie Regional General Hospital, it is important to examine various aspects that demonstrate the system's success in supporting the service process. SIMRS's success can be seen in how the system accelerates service flow, ensures accurate patient data recording, facilitates access to information between

units, and generates accurate data for reporting and management decision-making. These aspects illustrate the extent to which SIMRS truly functions well within the hospital environment and has a tangible impact on improving service quality and the efficiency of patient data management.

After observing how the successful implementation of SIMRS at Dr. Hasri Ainun Habibie Regional General Hospital was also influenced by the active role of hospital management in providing direction, supervision, and resource support. The role of hospital management in the implementation of SIMRS at Dr. Hasri Ainun Habibie Regional General Hospital is seen comprehensively through support for various aspects of implementation, namely hardware, procedures, data, and human resources. This includes hardware, management, and other supporting infrastructure required for SIMRS to run smoothly, including a budget allocated specifically for system maintenance and development. From a procedural perspective, management establishes policies and standard operating procedures that refer to Minister of Health Regulation Number 24 of 2022 concerning Medical Records and the hospital director's decision. Therefore, SIMRS implementation becomes mandatory for all units and provides clear guidelines regarding the flow of patient data recording, electronic medical record procedures, and BPJS claims submission procedures.

In terms of data, management conducts regular monitoring and evaluation through SIMRS usage

indicators, such as patient visit reports at registration, patient lists in the laboratory, and the use of medical record data for BPJS claims, so that the resulting data is accurate and can be used for strategic decision-making, and utilized to improve service quality, including unit performance evaluation, resource planning, and continuous improvement. From the HR side, management ensures the availability of competent IT, administration, and service staff and provides training and mentoring so that staff can run SIMRS well and minimize data recording errors. In addition, management plays a role in bridging coordination between units so that the system can run in an integrated and efficient manner, conducts continuous evaluations to adjust procedures, and ensures that all SIMRS implementation indicators run optimally. With comprehensive support in these four aspects, SIMRS implementation at RSUD dr. Hasri Ainun Habibie can run effectively, integratedly and provide maximum benefits for the hospital and patients, demonstrating that active management involvement in policy, supervision, data source support, and coordination is a key factor in SIMRS success.

Most respondents stated that the implementation of SIMRS helps streamline administrative work, speed up service processes, and minimize data input errors. This system also supports information integration between service units, resulting in more efficient, effective, and transparent administrative activities.

2. Impact of SIMRS Implementation on Patient Data Management Efficiency

To determine the efficiency of patient data management at Dr. Hasri Ainun Habibie Regional General Hospital, researchers used two indicators: Electronic Medical Records (EMDR) and Patient Information Systems (SIP). The highest score was found in the EMR indicator with a percentage of 93.3%, indicating that the EMR system facilitates tracking patient visit history. This indicates that the EMR significantly assists staff in tracking service histories quickly and accurately. This finding aligns with Siregar et al. (2024) who stated that the use of electronic medical records in the SIMRS increases work time efficiency and reduces administrative errors. Meanwhile, the lowest score was found in the SIP indicator at 79.3%, specifically related to ease of use without training and ongoing technical challenges. This condition indicates that the SIP is not yet as efficient as the EMR because some staff still require additional training and the system still experiences technical problems. This finding is supported by Najib & Aniza (2023) who explained that a lack of human resource readiness and technical challenges can hinder smooth administration in the implementation of SIMRS.

Overall, from the two indicators obtained an average response of 87.52% of respondents, that the implementation of SIMRS has had a positive impact on the efficiency of patient data management at RSUD dr. Hasri Ainun

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Habibie. This value reflects that SIMRS has generally run well in supporting the acceleration of access and management of patient information. This is evident from the high value of the RME indicator, which indicates that this system is very helpful in accelerating the search and tracing of patient history accurately. However, the SIP indicator obtained a lower value, indicating that there is still a need for improvement, especially in ease of use and system stability. Thus, it can be concluded that SIMRS has been able to improve the efficiency of patient data management, but optimization of SIP through increased training and technical improvements is still needed to achieve overall efficiency.

The interrelationship between management roles, SIMRS integration, data utilization, and the successful implementation of the system significantly determines the efficiency of patient data management at RSUD. dr. Hasri Ainun Habibie. When management provides strong support in terms of policy, supervision, resources, and coordination, SIMRS implementation can be consistent across all units. System integration between units also simplifies the flow of information so that patient data does not need to be recorded repeatedly, reducing service time and minimizing input errors. Furthermore, the accurate use of SIMRS data allows the hospital to automatically generate reports that previously required more time and effort. SIMRS's success in providing complete, real-time, and easily

accessible data is a crucial factor in helping the hospital achieve optimal service outcomes with more efficient use of resources. Thus, these four aspects directly increase the efficiency of patient data management by speeding up service, reducing administrative workloads, and minimizing resource requirements without compromising health services.

The findings of this study are consistent with the results of research (Siregar et al. (2024) which stated that the use of SIMRS can improve the accuracy of patient data, speed up the recording process, and facilitate information retrieval. Research by Santosa et al. (2023) also confirmed that SIMRS can optimize administrative efficiency through a more integrated workflow and minimize errors. The similarity of the results of this study with previous research shows that SIMRS at Dr. Hasri Ainun Habibie Regional General Hospital has had a positive impact on the efficiency of patient data management, both in terms of speed, accuracy, and ease of access to information.

To determine the efficiency of patient data management, the Chi-Square test results show a significance value of 0.002 (<0.05), which means that the implementation of SIMRS has a significant effect on the efficiency of patient data management. This finding indicates that the better the SIMRS implementation—including ease of use, completeness of features, and device support—the higher the efficiency in patient data processing. In other words,

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the quality of SIMRS implementation directly affects the speed, accuracy, and neatness of patient administration in hospitals. This finding supports the results of the previous univariate analysis, where the RME indicator showed the highest value in contributing to efficiency.

3. Obstacles to SIMRS Implementation on Efficient Patient Data Management

Based on the results of the questionnaire distributed to respondents, there were respondents who chose to disagree with two statements in the SIP indicators, namely the statement that SIP is easy to use by administrative staff without special training, and technical problems with SIP are rare and fast to access. The presence of these disagree answers indicates that some officers still experience difficulties in operating SIP without additional training, and there are still technical problems such as slow systems or errors, which impact the efficiency of patient data management. These conditions can slow down the process of searching, recording, and inputting data, so that the implementation of SIMRS through SIP has not been able to provide efficiency equivalent to RME.

Additionally, when researchers distributed questionnaires, they obtained direct information from several staff that frequent problems were related to unstable internet connections and server disruptions. These conditions cause system errors, making it impossible to access or input patient data properly. In

situations like this, administrative staff typically delay the data input process or manually record data until the system returns to normal. This situation certainly hinders the smooth running of the administration process and impacts the efficiency of patient data management.

In addition to technical challenges, there are also human resource (HR) challenges. Some employees are not optimally operating the system, particularly when inputting patient data, due to a lack of accuracy and understanding of the SIMRS. Errors include incomplete data, typos, or errors in selecting system menus. This indicates the need to improve employee competency and skills to ensure more accurate and efficient patient data management.

These obstacles require attention from hospital management to ensure optimal SIMRS implementation. The SIMRS implementation obstacles identified in this study align with Nazib & Aniza's (2023) research, which states that the main obstacles to SIMRS use stem from limited user capabilities, lack of training, and technical issues such as network and hardware issues. Furthermore, Winarti et al. (2023) also revealed that human resource readiness is a crucial factor influencing the smooth implementation of SIMRS. Therefore, the obstacles identified in this study are common to other healthcare institutions, necessitating increased human resource capacity and infrastructure strengthening to optimize SIMRS.

CONCLUSION

Based on the results of research on the implementation of the Hospital Management Information System (SIMRS) and its impact on the efficiency of patient data management in the administration section of Dr. Hasri Ainun Habibie Regional General Hospital, it can be concluded that the implementation of SIMRS in this hospital is already in the good category. This is evident from the analysis results which show a percentage of 89.25%, which illustrates that the system has been implemented according to standards and is able to support the smoothness of the administrative process. Patient data management also shows a good category with a value of 87.75%, which means that the system is able to increase the speed, accuracy, and regularity of the managed data. The results of the Chi-Square test show a significance value of 0.002, so it can be concluded that there is a significant influence between the implementation of SIMRS and the efficiency of patient data management. Thus, the use of SIMRS is proven to be able to improve the administrative process, accelerate the service flow, improve data quality, and support the integration of information between units at Dr. Hasri Ainun Habibie Regional General Hospital.

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