


Acceptance of Implementation of Drug Management and Its' Barriers on Hospital Management Information Systems

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Article information	Abstract
<p>Article history: Received: October 22th, 2023 Revised: November 24th, 2023 Accepted: January 01st, 2024</p> <p>Corresponding author: Name: Agusdini B. Septianingsih Address: Jl. Arjuna Utara No.9, Duri Kapa, Kec. Kb. Jeruk, Kota Jakarta Barat, Daerah Khusus Ibukota Jakarta 11510 E-mail: dini_banun_dini@yahoo.com</p> <p>International Journal of Nursing and Health Services (IJNHS), Volume 7, Issue 5, October 20th, 2024 DOI: 10.35654/ijnhs.v7i5.797 E-ISSN: 2654-6310</p>	<p>Background: The acceptance of management information systems, particularly in the context of drug management. Objective: The study aimed to explore acceptance of the implementation of drug management and its' barriers on hospital management information systems in pharmaceutical facilities. Method: A qualitative study with a phenomenology approach was applied in this study. eight key informants in this study, consisting of one hospital director, four pharmaceutical officers, two hospital IT officers and one SIMRS vendor. A purposive sampling technique was used to recruited the informant. Result: The results of the study were described understanding of SIMRS such as 1) SIMRS application availability and ease of operation such as description of operating stages, 2) the utility of SIMRS in data calculation and reporting. Challenges of SIMRS application implementation on drug management include 1) unclear job description among pharmacy employee, 2) Restrictions on the return menu of the unit to the other unit on the distribution, 3) error on SIMRS application, and 4) the ability and interest of employees in managing SIMRS. Conclusion: the acceptance of implementation of drug management as a critical to solve the barriers of SIMRS implementation. Recommendation: Hospitals should focus on barriers and acceptance among nurses in order to implement the optimal SIMRS in drug management. Further study needs to develop the intervention to solve the barriers of SIMRS implementation in order to improve the quality of services.</p> <p>Keywords: acceptance, drug management, hospital management information system, barriers of SIMRS</p>
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BACKGROUND

The acceptance of management information systems, particularly in the context of drug management in pharmacy units, is a critical factor in the modernization of healthcare delivery. The impact of these systems is multifaceted, encompassing improvements in patient safety, efficiency, and cost management. However, the implementation of such systems is not without its challenges, which can act as barriers to their full potential.

The implementation of Hospital Management Information Systems (HMIS) with integrated drug management can significantly enhance patient safety by improving medication error reporting processes, developing risk-specific protocols for high-alert medications, and ensuring the correct medications and doses are delivered to patients (1).

The implementation of Hospital Management Information Systems (HMIS) with integrated drug management can significantly enhance patient safety. These systems can improve medication error reporting processes, develop risk-specific protocols for high-alert medications, and ensure the correct medications and doses are delivered to patients. However, current systems often lack real-time interfaces among hospital systems, which can lead to redundancy of effort and ineffective data integration, potentially compromising patient safety (2).

HMIS can streamline hospital operations by automating and optimizing drug inventory management, facilitating faster and more accurate medication dispensing, and improving the overall efficiency of pharmaceutical services. However, deficiencies such as a lack of electronic ordering of drugs and cumbersome order-entry processes can impede efficiency (3).

Effective drug cost management is crucial for hospitals, as medication costs comprise a significant portion of pharmacy budgets. HMIS can contribute to cost reduction by enabling strategic purchasing and inventory management, optimizing medication use

through formulary management, and reducing waste. Nevertheless, the lack of connection between pharmacy information systems and national drug information databases may result in reduced cost-effectiveness due to a lack of precise information about drug prices (4).

Even though this acceptance management information system is important. Few studies explore the understanding and its' barriers during implementation in pharmaceutical unit. Therefore, this study would focus on exploring the acceptance of the implementation of drug management and its' barriers on hospital management information systems in pharmaceutical facilities

OBJECTIVE

The study aimed to explore acceptance of the implementation of drug management and its' barriers on hospital management information systems in pharmaceutical facilities.

METHOD Design

A qualitative study with a phenomenology approach was applied in this study.

Informants

There are eight key informants in this study, consisting of one hospital director, four pharmaceutical officers, two hospital IT officers and one SIMRS vendor. A purposive sampling technique was used to recruited the informant. This strategy based on the inclusion criteria.

Position	Inclusion criteria
Director	1) serves in the management department and is the highest decision maker in the hospital 2) has worked for over 1 (one) year 3) has experienced conditions on previous and current SIMRS applications.
Pharmacy Installation Employee	1) has served in a pharmaceutical facility 2) has been serving in the operational part of the drug management at a pharmacy facility; 3) has worked for more

	than 1 (one) year; 4) has experienced conditions on previous and current SIMRS applications. 5) engage in the process of selection, planning, acquisition, storage and distribution
IT officer	1) the hospital IT officer is the person responsible and should have concerns about the process of implementation of SIMRS; 2) his period of work over 1 (one) years; 3) has experienced the condition on the previous and current SIMRS application
SIMRS Vendor	1) SIMRS application owners and developers 2) decision makers in SIMRS development

Instrument

The instrument used in this study is an interview guide that has been prepared to suit the purpose of the study. To test the level of validity of the instrument, the researcher will conduct consultations related to the contents of the instruments to the experts. The comments of the experts will be used as a basis in improving the content of the interview guide.

Data Collection process

The first technique of data collection is an interview, in which two phases of the study are conducted. For the initial phase, information is first collected through a pilot interview and for the next phase in-depth interview is carried out.

- a) The objectives of this pilot interview include:
 - 1) to know the relevance of the variables to be used in the analysis; 2) to formulate questions to reflect the content of the study; 3) to check whether the questions are focused and understandable; 4) to help build a case study protocol; and 5) to introduce research and gain access to informants.
- b) In-depth interviews are conducted through interviews with informants who are competent and potentially able to provide accurate and relevant information to give meaning to the research.

- c) Observations were conducted several times during the period of 1 (one) year of implementation of SIMRS previously with current implementation SIMRS. The observations were located in the pharmacy installation service unit, director of the hospital, IT officers and vendor of the SIMRS application in hospital X. Then the results of these observations will be matched in accordance with the information obtained from the interview results and the outcome of the documentation in order to obtain valid data.
- d) The third data gathering technique is document checking. Inspection and evaluation have been carried out of documents such as: i) the management of medicines in the pharmaceutical facility at the hospital SIMRS; ii) the reporting of drug procurement results in the hospital facility. Both documents obtained from the hospital X pharmacy facility section are documents valid before the month of November 2019. Subsequently, the completeness and compatibility of documents valid after November 2019.

All respondents who willing to participate in this study are required to sign the inform consent. This study also had been approved by IRB Universitas Esa Unggul Jakarta

Analysis data

The data in this study would be analyzed using thematic analysis techniques. The data that has been recorded will be transcribed in the form of text. Then the data collected is then categorized and sorted. The classification and categorization of such data is aimed at finding key themes and sub-themes. Two researchers make a consensus and agree for each theme. if there are themes that are not appropriate, they try to discuss again and decide the results of the discussion

RESULT

The results of the study were described through the themes and sub themes. Details of the explanation of understanding of SIMRS application below

1) SIMRS application availability and ease of operation such as description of operating stages

The SIMRS application is a comprehensive tool designed to enhance hospital management through the integration and efficient management of information across various hospital operations. Three respondents said that easy-to-access operations are on every hospital computer. One respondent mentioned that the computers of every service unit has a SIMRS application that can be operated.

The results of the observations concluded that there is still an unclear division of work between employees in the department of drug and alcohol management and still there is a calculation of the receipt data carried out by the procurement authority.

The ease of use to learn SIMRS applications and to accelerate SIMRS application operation is quite easy because it is available on every hospital computer

"easy-to-access operations are on every hospital computer"
(Man, 45 years old)

"It's already available on the computer of the pharmacy unit"

"Accessible on the computers of every service unit in the hospital according to the unit's respective portion"

"On the computers of every service unit at the hospital now there is a SIMRS application that can be operated"

2) The utility of SIMRS in data calculation and reporting

One of the functions of SIMRS is data calculation and reporting. One of respondent described the function of SIMRS to help in financing, registration on drug management. Other respondents confirmed that it could be used for report recapitulation, PBF registration

The observations show that there are still barriers to inter-unit features while SIMRS application operations can give a quick process for work. While from the employee side there is still a low ability and interest in operating SIMRS applications.

Documents checking showed that the services required hospitals in the operation and the process is fast thus providing a huge benefit compared to manual operation.

"which clearly helps in the planning and receipt reporting because it helps in financial reporting. For registration on drug management can be described on the availability of master calculation data"

"At the time of the recapitulation report of the procurement report, the data can be retrieved directly from the SIMRS, this is very helpful"

"To set up PBF helps for new PBF registration and fixed previous PBF lists"

"There's a setup of drugs and alchemy, set up of PBF, setup principle on reception"

2) Really satisfy SIMRS application to use SIMRS applications in work

Challenges of SIMRS application implementation on drug management could be explained as below:

1) Unclear job description among pharmacy employee

Based on interviews with respondents, it was found that the division of work between the unit department and the individual employees of the drug management unit is still unclear. Several times inputs of drug receipt data are still carried out by the procurement officer because of the unclear division of job description. In addition, there is still a shortage of manpower in the reception and invoicing of reception data.

"If the job description is shared by each employee, the operation and SIMRS are easy to understand by the employee because they are clear and brief. (vendor application of SIMRS)"

The observations of the current researchers revealed that there was still a collection of reception data carried out by the drug and alcohol procurement officers.

Based on the document checking also shows that there is still less clarity in the division of employee job descriptions and still a shortage of officers who work at the reception department and still high level of

workload tasks to be performed by the recruitment officers

2) Restrictions on the return menu of the unit to the other unit on the distribution

The results of the interview revealed that there were still obstacles to the application of SIMRS in drug management, especially at the distribution stage of drugs and alcohols.

The results of the observations show that the operation of the SIMRS application on drug management at the distribution stage is still not so sufficient. While the features for returning to other units are already available but the application must be returned to the main pharmaceutical warehouse unit and then redistributed to another unit.

After observing and issuing documents on the return submodule between the warehouse units the service is still done by returning first to the main warehouse unit of the pharmacy hospital. Then after that the request is made from the service unit in need and the distribution officer will distribute according to the item of the request of the unit of service.

"The menu is pretty good, just the lack of the distribution module, at the time of returning from unit to other unit there are still obstacles"

3) Error on SIMRS application

Based on the results of interviews with respondents obtained that there were still errors in the SIMRS application at the time of operation in the workplace. This happened in a pharmacy unit at the time of checking the stock availability data at the hospital's main pharmacy warehouse.

Observations from the current research found that there were still errors in the application of SIMRS in pharmaceutical units that affected delays in the work of hospital pharmacist in doing work. This happened several times during the hospital's operating hours. SIMRS vendor officials said these incidents were due to the high usage rate of the unit and the lack of

maintenance level on the part of the vendor SIMRS.

"So far there are still obstacles like error, when not carried out maintenance by the SIMRS vendor"

4) The ability and interest of employees in managing SIMRS

Based on the results of interviews with respondents to the assessment of SIMRS application whether it has already provided a fast process in the job obtained that to provide a fast procedure on SIMRS application in the work depends on the ability and interest of employees to learn how SIMRS applications operate

SIMRS application vendors say that to operate SIMRS applications is not so difficult to understand but still found some employees have not so mastered the way of operation of the application SIMRS it is due to the level of ability and interest of the employees in understanding the way the operation of applications SIMRS has been described by the SIMRS vendor.

"Depends on the ability and interest of employees to study SIMRS to provide benefits and a fast process" (Vendor SIMRS).

DISCUSSION

Through our findings, we can identify some barriers and how those barriers undermine the efforts of patients to implement SIMRS application. The theme of understanding of SIMRS application including SIMRS application availability and ease of operation such as description of operating stages; The utility of SIMRS in data calculation and reporting

Regarding the challenges of SIMRS application implementation such as unclear job description among pharmacy employee; restrictions on the return menu of the unit to the other unit on the distribution; error on SIMRS application; the ability and interest of employees in managing SIMRS.

The availability and ease of operation of the Hospital Management Information System (SIMRS) in drug management are crucial for enhancing the efficiency and effectiveness of healthcare services. SIMRS is designed to

integrate various hospital information systems, including pharmaceutical information systems, to support the management of drug inventory, prescription processing, and monitoring of drug distribution within healthcare facilities (5). A study conducted at RSPAU dr. S. Hardjolukito showed a positive influence of SIMRS implementation on employee performance, indicating that a well-implemented SIMRS can lead to better drug management practices and financial savings for the hospital (6).

The second theme is the utility of SIMRS in data calculation and reporting. SIMRS significantly improves the efficiency and effectiveness of hospital operations. It facilitates the rapid input of data for health services, with the average time required for inputting data into SIMRS being less than 5 minutes. Additionally, SIMRS includes error notification features that alert users to input errors, thereby enhancing data accuracy and reliability (7).

Another study described that User satisfaction with SIMRS is linked to its impact on improving the performance of hospital staff, particularly in outpatient units. The system has been credited with enhancing efficiency, effectiveness, satisfaction, and pride among hospital officers (8). However, satisfaction levels can vary, and there is a need for continuous evaluation and improvement of the system to ensure it meets the evolving needs of its users (9).

Regarding the challenges of SIMRS application implementation such as unclear job description among pharmacy employee. A previous study mentioned that Pharmacy professionals' roles are influenced by several factors, including lack of physical access, poor initiatives, poor communication skills, and poor administrative support (10). These roles are not only about dispensing medications but also include providing pharmaceutical care, managing medication safety, and coordinating care transitions.

Second theme found in this study such as restrictions on the return menu of the unit to the other unit on the distribution. The challenges of drug management in healthcare

settings, particularly those related to the restrictions on the return menu of units to other units in the distribution process, can significantly impact the efficiency and effectiveness of healthcare delivery. These challenges are multifaceted, involving logistical, regulatory, and safety considerations (11).

Another challenge of SIMRS implementation such as any error on SIMRS application during input the data. These errors can significantly impact the quality and reliability of medical records and patient information within the system. Understanding the specific types of data input errors that can occur in SIMRS is crucial for addressing and mitigating these issues effectively.

Previous study mentions that the most common type of error involves entering incorrect information into the system. This could range from mistyping patient names to incorrect diagnostic codes, which can lead to misdiagnoses or inappropriate treatment plans (12). Therefore, providing comprehensive training and ongoing support can minimize errors due to unfamiliarity with the system (13).

The strength of study showed that management supported the use of SIMRS, which is crucial for the successful implementation of such systems. The study employed a qualitative research method, which allowed for in-depth analysis of the implementation process and user perceptions. However, some limitation also found such as the quality of information provided by the system was noted to be crucial, but there were instances where it did not meet expectations

CONCLUSION

Our finding helps to determine the acceptance of the implementation of drug management and its' barriers on hospital management information systems in pharmaceutical facilities. We collected information from different perspectives of healthcare providers. Data were obtained by in-depth interviews, document review, and observation.

IMPLICATION

The healthcare providers should consider how to provide support to those using the SIMRS. the comprehensive system-wide initiatives involving performance enhancement steps in health information systems are crucial for improving patient identification and safety, as they help in ensuring that the right medication is administered to the right patient. The efficiency of these systems is further highlighted by their ability to manage large volumes of data and integrate with other hospital systems, ensuring that medication management is both accurate and timely.

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