



Analysis of Outpatient Registration System to Improve Health Services in Bhayangkara Hospital Semarang

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Abstract. To improve the healthcare services quality, the hospital has developed an outpatient registration system. The hospital always develops an outpatient registration system, so it is necessary to analyze the implementation of an outpatient registration system. This study analyzes the outpatient registration system to improve health services at Bhayangkara Semarang Hospital. The research is descriptive. Data collection methods using satisfaction questionnaires distribute to nine officers and 40 outpatient registration patients. The results showed that officers' performance was good. All officers are graduates of the Diploma-III Medical Records and Health Information program. The officers' performance complies with the applicable standard operating procedures. The average waiting time for offline outpatient registration patients was 14.1 minutes and 14 minutes for online registration. The average registration time was 16.6 minutes for new patients and 13.9 minutes for old patients. The level of satisfaction of the officers in using the outpatient registration system is 72%, and the level of satisfaction of the patients in using the online outpatient registration system is 71%. From the results, the hospital should evaluate the standard operating procedure for online registration, especially regarding patient waiting time, and update the patient registration application to improve the service quality.

Keywords: Application, Registration, Effort

1 Introduction

The rapid development of information systems technology has made almost all fields utilize information systems technology. The use of information system technology makes it easy for users to obtain data and information anytime and anywhere (1). The health sector is one of the fields that utilize information systems technology, in its application information systems technology is used as an effort to develop health (2).

The application of information system technology that supports health services is expected to increase the effectiveness and efficiency of officers in providing services. Almost all service units in hospitals use information system technology to connect. A health information system is a system that has the function of collecting, processing, analyzing, and presenting data in the form of useful information for hospital health services (3)

One of the units in a hospital that uses an information system is the medical records unit. In the medical records unit, there is an outpatient registration sub-unit which is the initial process for incoming patient information, such as patient identity and patient visit requirements (4). Outpatient registration is the first service a patient receives so the quality of hospital services can be seen through outpatient registration (5).

The outpatient registration unit benefits from an information system that facilitates and speeds up the service process for outpatients who have the most patients in the hospital every day. However, because the system will continue to develop and undergo updates at any time, it is necessary to carry out an analysis of the implementation of the outpatient registration system which is useful as evaluation material in improving health services in hospitals. The implementation of the outpatient registration system, can be examined from the aspects of the officers who use the system, the suitability of the policies or operational standards implemented with the current state of the system, the length of service time to patients, and the results of the service in the form of the level of patient satisfaction which is the benchmark. from the results of implementing the system. Based on the problems above, researchers are interested in researching analysis of the implementation of the outpatient registration system at Bhayangkara Hospital, Semarang.

2 Methods

The type of research used by researchers is quantitative descriptive research. Quantitative descriptive research is used to describe objects or subjects that are observed directly with the type of data used in the form of numbers. The data collection methods that researchers will use in the research are observation, interviews, and questionnaires.

There are 4 research variables studied, the first variable is the outpatient registration officer who examines the main duties and functions of outpatient registration officers, the officer's work experience, and the officer's latest education. The second variable is the Standard Operating Procedure (SOP) which examines the SOP flow for offline and online outpatient registration. The third variable is the length of patient waiting time which examines the waiting time for offline and online outpatient registration patients, as well as new and old outpatient registration patients. The third variable is the level of satisfaction of staff and patients which examines the level of satisfaction of staff and patients in using the outpatient registration system which is measured from the content dimension, accuracy dimension, format dimension, ease of use dimension, and timeliness dimension.

Sources of research data are primary data and secondary data, Primary data is data obtained from direct research results at the time the research was conducted in the form of staff observations, interviews with staff, and the results of distributing staff and patient satisfaction questionnaires. Secondary data is data obtained from documents or indirect research results by researchers, in the form of SOPs for outpatient registration. Data analysis uses descriptive statistical methods which are used to describe the variables that have been observed to make general conclusions to obtain useful information.

3 Results

3.1 Outpatient Registration Officer

Based on the results of interviews with 9 outpatient registration officers at Bhayangkara Hospital, Semarang, the officer's latest education, and the officer's work experience, the following results were obtained:

Based on Table 1, 4 officers have worked < 1 year, and 5 officers who have worked > 1 year already have experience in outpatient registration. All registration officers have also met the medical recorder education standard, namely D3 RMIK.

Table 1. Results of Interview with Outpatient Registration Officers

Question	How long have you worked at Bhayangkara Hospital Semarang?		Have you ever worked in any other subunit besides outpatient registration?		What is your last education?			
	<1 years	>1 years	Yes	No	SMA/SMK	D3 RMIK	D4 MIK	S1 MIK
Number of Officers	4	5	1	8	0	9	0	0
Conclusion	4 officers have worked <1 year and 5 officers who have worked >1 year		8 outpatient registration officers have never worked in other sub-units other than outpatient registration officers, and 1 officer has worked in other sub-units, namely GD and RI registration.		All outpatient registration officers have a D3 RMIK education from the University/STIKES/Poltekkes			

Source: Primary Data, 2023

3.2 Standar Operasional Prosedur (SOP) Pendaftaran Rawat Jalan

Based on the results of interviews with 9 outpatient registration officers at Bhayangkara Hospital Semarang regarding the SOP for outpatient registration, the following results were obtained:

Table 2. SOP Interview Results

Question	Is there an SOP regarding outpatient registration, including online registration?	Do the existing outpatient registration SOPs have any shortcomings?	In what year was the outpatient registration SOP last revised?
Conclusion	All officers are aware of the SOP for offline and online outpatient registration at Bhayangkara Hospital, Semarang	According to officers, the existing SOP is good and has no shortcomings	The SOP for outpatient registration, including online registration, was last revised in 2021

Source: Primary Data, 2023

Based on table 2, all officers know that there are SOPs for outpatient registration, all SOPs related to outpatient registration so that they can carry out their registration duties and functions well. The latest SOP was revised in 2021 and its implementation is good.

3.3 Long Patient Waiting Time

Based on the results of observations, the average waiting time for outpatient registration at Bhayangkara Hospital Semarang is 40 patients (20 offline registration patients and 20 online registration patients) and 40 patients (20 new patients and 20 old patients), which starts when the patient comes to pick up their number. queue until the patient has completed registration with the officer, with detailed results as follows:

Table 3 Categories of Patient Waiting Time

Registration Type	Average Waiting Time	Time Category	
		Quick Categories ≤10 minutes	Old Category ≥10 minutes
Offline patient registration	14,1 minutes		Long
Online patient registration	14 minutes		Long
New patient registration	16,6 minutes		Long

Old patient registration	13,9 minutes	Long
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Source: Primary Data, 2023

Based on table 3, all types of registration fall into the long category because the average patient waiting time is > 10 minutes, one of the reasons being the large number of patients and the implementation of outpatient registration SOPs, which are less effective in reducing patient queues. Based on table 3, all types of registration fall into the long category because the average patient waiting time is > 10 minutes, one of the reasons being the large number of patients and the implementation of outpatient registration SOPs, which are less effective in reducing patient queues.

3.4 Level of Staff and Patient Satisfaction

3.4.1 Level of Staff Satisfaction

Based on the results of distributing questionnaires to 9 outpatient registration officers regarding officer satisfaction with the use of the outpatient registration system, the following results were obtained:

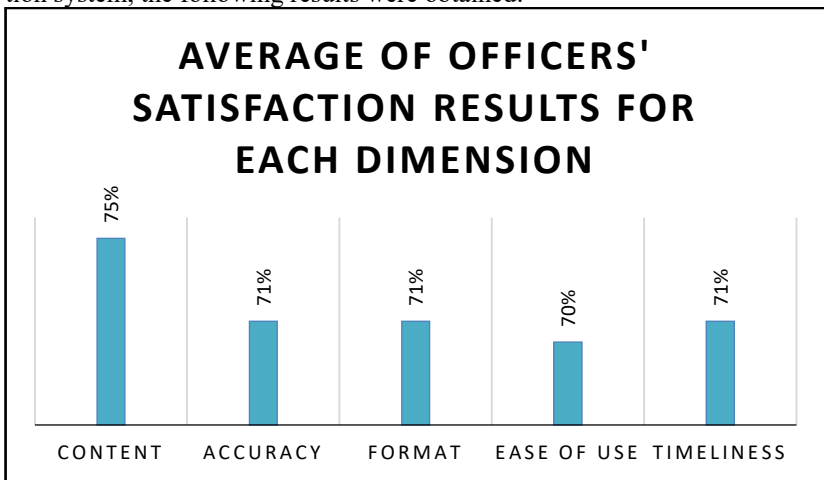


Figure 1 Diagram of Average Officer Satisfaction Results

Based on Figure 1, the results of officer satisfaction for each dimension, namely content, accuracy, format, ease of use, and timeliness, show that all dimensions fall into the satisfaction category with an index value range of 60% -79.99%. The results of officer satisfaction for each dimension showed that the content dimension was the dimension with the highest level of satisfaction, with a result of 75%. Meanwhile, the ease of use dimension is the dimension with the lowest officer satisfaction results, namely 70%.

3.4.2 Level of Patient Satisfaction

Based on the results of distributing questionnaires to 40 online outpatient registration patients regarding patient satisfaction with the use of the online outpatient registration system, the following results were obtained:

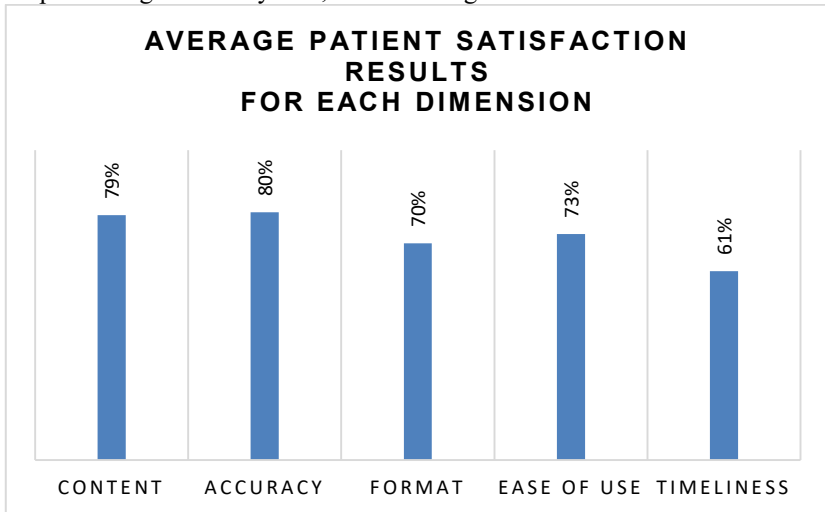


Figure 2 Diagram of Average Patient Satisfaction Results

Based on Figure 2, the results of patient satisfaction for each dimension, namely content, format, ease of use, and timeliness, show that the four dimensions fall into the satisfaction category with an index value range of 60% - 79.99%. Meanwhile, the accuracy dimension falls into the very satisfying category with an index value range of 80% - 89.99%. The results of officer satisfaction for each dimension showed that the accuracy dimension was the dimension with the highest level of satisfaction, with a result of 80%. Meanwhile, the timeliness dimension is the dimension with the lowest officer satisfaction results, namely 61%.

4 Discussion

4.1 Outpatient Registration Officer

Based on the results of observations, officers have carried out the main duties and functions of outpatient registration officers by the outpatient registration SOP flow which applies to offline and online registration patients as well as new and existing patients. In carrying out the main duties and functions in the field of health services to the community, they must be based on awareness of their duties and feel satisfied with the work they are doing. (6) Officers who have carried out the main duties and functions of outpatient registration correctly, there will be no irregularities or errors in carrying out duties and responsibilities by the sub-unit. From the results of research by interviewing 9 outpatient registration officers at Bhayangkara Hospital, Semarang,

all officers were graduates of D3 Medical Records and Health Information who graduated from university or polytechnic or high school of health sciences. All outpatient registration officers at Bhayangkara Hospital Semarang have met educational standards by Minister of Health Regulation Number 55 of 2013 concerning the Implementation of Medical Recorder Work (7). If there is a lack of appropriate education for medical record officers, this will have an influence on the basic competencies and supporting competencies which will affect the quality of medical record services (8). All registration officers at Bhayangkara Hospital Semarang have D3 RMIK education, which means they already have basic competencies and supporting competencies, such as disease classification and coding, professional law and ethics, medical records and health information management, maintaining the quality of medical records, health statistics, information management, work unit management. health, and professional partnerships

Based on the results of interviews with 9 outpatient registration officers at Bhayangkara Hospital, Semarang, they were categorized as officers who had worked for 1 year. An officer's length of service influences the officer's work experience so each officer's knowledge will be different. Of course, this affects the work experience and work abilities of each officer (9). The longer someone works, the better they are at solving a problem because they have adapted to their work. Work experience is an important factor because, with sufficient work experience, someone who lacks knowledge about their work can build their skills (10). The officer's work experience influences the officer's skills and knowledge of using the system. For officers who have worked for a long time, they are used to using the system so that the registration service can run quickly. Based on the results of interviews and observations of outpatient registration officers at Bhayangkara Hospital Semarang, there were 4 officers whose work period was < 1 year, but in registering outpatients there were no obstacles because the officers already understood how to use the system. The officers' skills and knowledge of using the outpatient registration system. are also good. However, there is a need for monitoring by the head of medical records or an officer who is responsible for supervising registration officers whose work period is < 1 year so that in carrying out their duties there are no errors that could harm the patient or the hospital.

4.2 Standard Operating Procedures (SP) for Outpatient Registration

Based on the results of interviews with 9 registration officers at Bhayangkara Hospital, Semarang, all officers were aware of the SOP for outpatient registration, including online registration. From the results of observations that have been made, officers carry out their duties by the existing outpatient registration SOP. The SOPs that exist for outpatient registration can make health services a reality so that they can improve the quality of good quality. Implementing good quality will provide patient satisfaction because the service meets the patient's needs and expectations (11).

The difference between the offline and online outpatient registration flow is only at the time the patient first prints the queue number. After that, there is no difference between offline and online registration. Patients must wait to be called by an officer first to be registered directly to SIMRS. With an online registration system, patients

should be able to get benefits, such as patients not having to take a queue number, shortening the time to get. line, practical and can be done by everyone, time-efficient and effective in queuing (12).

The suitability of the SOP flow with the performance of outpatient registration of officers is appropriate, however, the SOP flow for online outpatients needs to be evaluated again because the flow is almost the same as for patients who come directly to register with the officer, so the advantages of online registration are about efficiency and time effectiveness. There were no online outpatients at Bhayangkara Hospital, Semarang. So it can affect the length of patient waiting time because there are a lot of patient queues.

4.3 Long Patient Waiting Time

The patient's waiting time for service at outpatient registration is one of the important things in determining the initial image of hospital services. Patient waiting time is one aspect that has the potential to cause patient dissatisfaction (13). Like the results of research on waiting times in the outpatient registration section in previous studies, patients were categorized as slow if the waiting time was ≥ 10 minutes and patients were categorized as fast if the waiting time was ≤ 10 minutes for both old and new patients (14). All types of registration fall into the long category because the average patient waiting time is > 10 minutes, one of the reasons being the large number of patients and the implementation of outpatient registration SOPs, which are less effective in reducing patient queues.

The length of patient waiting time is related to the implementation of, SOP. When implementing the SOP for outpatient registration, especially for online patients, they are required to continue registering with officers so that the patient queue becomes larger. This is not in line with the advantages or benefits of registering online, which can save time and reduce queues. So there is a need to evaluate the SOP for outpatient registration, especially for online patients.

4.4 Level of Staff and Patient Satisfaction

4.4.1 Level of Staff Satisfaction

Based on the research results, the average level of officer satisfaction with the use of the outpatient registration system is 72%, which means that officers are satisfied with the system that currently exists. Each dimension that has been studied has advantages and disadvantages. The content dimension is used to measure user satisfaction with the completeness of system content, the availability of functions that support the service process, and the uniformity of the information system (15). The content dimension has the advantage of displaying icons that represent each menu and grouping menus according to user needs. The accuracy dimension is used to measure the accuracy of data produced by the system, such as providing accurate information on the system, the integrity and completeness of the data produced, and limited access rights

for each user (15). The accuracy dimension has advantages in the security system in the form of officer entry access using a different username and password for each officer. Format dimensions are used to measure user satisfaction with the appearance of the system, which includes an orderly layout, and aesthetic requirements in the form of a uniform combination of colors and shapes (15). The format dimensions have advantages in the appearance of the system by using attractive colors but do not hinder the readability of the letters by officers. Disadvantages in the format dimensions are that the type of font used is not varied and the screen display cannot be enlarged and reduced according to the officer's needs. The ease of use dimension is used to measure the ease of use of an information system, such as consistent use, availability of assistive tools, informative error messages, and use of an information system that does not confuse users (15). The ease of use dimension has the advantage of a warning system that appears if the officer incorrectly enters patient data that does not match the system format. The timeliness dimension is used to measure user satisfaction with the system's accuracy in providing the required data and information (15). The timeliness dimension has the advantage of patient data stored in the system so that it can be connected with other user units that use SIMRS. Weaknesses in the timeliness dimension are that the system rarely updates and loading often occurs during busy hospital hours due to the simultaneous use of SIMRS.

4.4.2 Level of Patient Satisfaction

Based on the research results, the average level of patient satisfaction with the use of the outpatient registration system is 71%, which means that patients are satisfied with the system that currently exists.

Each dimension that has been studied has advantages and disadvantages. The content dimension is used to measure the completeness of system content, the availability of functions that support the service process, and the uniformity of the information system (15). The content dimension has the advantage of displaying icons that represent each menu and grouping menus according to user needs. The accuracy dimension is used to measure the accuracy of data produced by the system, such as providing accurate information, the integrity and completeness of the data produced, as well as limited access rights for each user (15). The accuracy dimension has advantages in the security system in the form of patient entry using a different username and password. Another advantage is that patients can easily access menus other than outpatient registration on the system, such as the service schedule menu, medical record menu, and hospital profile menu. Format dimensions are used to measure user satisfaction with the appearance of the system which includes an orderly layout, and aesthetic requirements in the form of a uniform combination of colors and shapes (15). The format dimension has advantages in the appearance of the system with the use of attractive colors but does not hinder the readability of the letters by the patient, The display of the menu layout is easy to remember and makes it easier for the patient, the size of the letters is appropriate to the

patient's needs, and the layout of each menu is consistent or does not change. Disadvantages in the format dimensions include the display of the type of letters used is not diverse, the color combination display is less attractive, there is no color change when the menu is selected, and the screen display cannot be enlarged and reduced according to the patient's needs. The ease of use dimension is used to measure the ease of use of an information system such as the availability of assistive tools, informative error messages, and the use of an information system that does not confuse users (15). The ease of use dimension has the advantage of a warning system that appears if the officer incorrectly enters patient data that does not match the system format. The timeliness dimension is used to measure user satisfaction with the system's accuracy in providing the required data and information (15). The timeliness dimension has the advantage of quickly moving each menu. The disadvantage of the timeliness dimension is that loading often occurs when inputting data and the online outpatient registration system is rarely updated.

5 Conclusion

5.1 Conclusions

Based on the research results of the four variables, it can be concluded that officers have carried out their main duties and functions properly and correctly. Education meets the standard, namely D3 RMIK. The officer's work experience influences performance, for officers with < 1 year of service and > 1 year of service is good. Officers have carried out their duties by the applicable SOP. The average patient waiting time is 12 minutes, including a long time because it is > 10 minutes. The level of officer satisfaction is 72%, which means that officers are satisfied with the existing system. The patient satisfaction level is 71%, which means that patients are satisfied with the existing system.

5.2 Suggestions

The implementation of the SOP flow for online outpatient registration should be given more attention to increase the efficiency and effectiveness of patient registration times. There is a need for Minimum Service Standards (SPM) for the outpatient registration section to maintain service quality. The length of patient waiting time is related to the implementation of SOPs, so it is necessary to evaluate the online outpatient registration flow again so that it can reduce patient queues. For the satisfaction of officers in using the outpatient registration system, system display problems can be corrected if one day the system is updated again. For patient satisfaction in using the outpatient registration system, especially system display problems, this can be corrected if one day the system is updated again because the system was last updated in 2021.

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