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## Design of a Web-Based Daily Inpatient Census Information System Interface at the Kanjuruhan Regional General Hospital

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### ABSTRACT

**Keywords:** Daily Census of Hospitalization, Information Systems, Interface Design, Usability, Hospitals.

The Daily Census of Inpatients (*Sensus Harian Rawat Inap* [SHRI]) at Kanjuruhan Hospital is still carried out manually using spreadsheets, which has the potential to cause reporting delays, data input errors, and low accuracy of information needed for hospital management decision-making. This study aims to design a web-based SHRI information system interface that suits the needs of users and improves the efficiency, accuracy, and quality of recording and reporting of inpatient data. The research uses a descriptive method with a qualitative and quantitative approach. Data were collected through interviews, observations, and questionnaires distributed to inpatient and medical record officers. The evaluation of the interface design was carried out using a usability questionnaire with a Likert scale. The results of the study show that the interface design developed is able to simplify the process of recording and reporting SHRI, improve data accuracy, and speed up information access. The usability evaluation yielded an average score of 84.4%, categorized as satisfied, indicating that the system is well received by users. The web-based SHRI information system interface design is considered effective, easy to use, and in accordance with user needs, thus having the potential to improve the quality of inpatient data management and support hospital management decision-making more optimally.

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### INTRODUCTION

The main role of the health information system is in managing health data and information in terms of effectiveness and efficiency, for example, in improving decision-making and improving the quality of public health services (Pongtambing et al., 2023). One example of the health information system itself is the Electronic Medical Record (RME) which is used to store patient data that can always be accessed in real time. The existence of RME will facilitate the analysis of health data, for example, in decision-making by health service providers.

The hospital is one of the health service institutions that has the responsibility to provide individual health services in a comprehensive manner, providing several services such as hospitalization, outpatient, and emergency care for patients. Based on the Regulation of the Minister of Health of the Republic of Indonesia Number 6 of 2024 concerning Technical Standards for Fulfilling Minimum Health Service Standards, a hospital as one of the health service facilities is part of the health resources needed to support health efforts. A hospital is an organization staffed by professional and well-organized medical personnel; therefore, the hospital is obliged to provide good services for the community. The function of hospitals is not only in the treatment or cure of diseases, but also to improve health efforts, prevention, and health restoration efforts.

Each hospital will certainly record and report on all activities that have been regulated in the Regulation of the Minister of Health of the Republic of Indonesia Number

1171/Menkes/Per/VI/2011 concerning Hospital Information System (2011). Hospital reporting is the process of collecting and presenting data to the health office and the Ministry of Health, and this data can also be used by hospitals in decision-making in overcoming several problems (Pitoyo A.Z & Salisa, 2020).

The daily census of hospitalizations includes daily recording and calculation in an inpatient room whose purpose is to obtain information about the entry, exit, and transfer of patients for 24 hours from 00:00 to 24:00, which becomes the basis for decision-making and planning in hospital management (Agnes Jeane & Hao, 2022). In the daily census of hospitalizations, a form prepared by each hospital has been provided to send the daily census to the medical record unit. Each inpatient room has an officer who is responsible for filling out the census form every day and sending it to the medical record unit so that it can be processed into health information needed by the hospital (Yanuaris Numberi, 2020). Each month, the census will be recapitulated in each room, and the results of the data collected include Bed Occupancy Rate (BOR), Turnover Interval (TOI), Average Length of Stay (AvLOS), Bed Turnover (BTO), Net Death Rate (NDR), and Gross Death Rate (GDR).

However, manual Inpatient Daily Census (SHRI) recording, such as using paper forms or Microsoft Excel, has many limitations. These systems rely heavily on the accuracy of the officer and are prone to recording errors, duplicate data, lost data, or even delays in reporting to the medical records unit. This delay in reporting causes disruption in the recapitulation process and analysis of hospital quality indicators such as Bed Occupancy Rate (BOR), Average Length of Stay (AvLOS), and Turnover Interval (TOI), which are important in hospital management decision-making (Prisusasti et al., 2024). In addition, the manual recording process also makes it difficult to access and synchronize data between rooms due to the absence of an integrated system.

The SHRI information system is designed to be web-based because it offers a number of advantages over mobile systems. The web system allows access from a variety of devices without the need for special installation, making it more efficient to use in hospital environments that are generally equipped with computers in each care room. In addition, web-based systems are easier to develop, integrate with hospital databases, and support multi-user access at the same time. Web systems also have advantages in terms of maintenance and security because the system manager only needs to update from the server side without having to update the application on each user's device.

Kanjuruhan Regional General Hospital (RSUD) is a type B hospital owned by the Malang Regency Government, located at Jl. Panji No. 100 Panggungrejo Village, Kepanjen District, Malang Regency. Kanjuruhan Hospital provides advanced health services such as emergency, inpatient, and outpatient services. According to Latansya et al. (2022), Kanjuruhan Hospital has an important role in Malang Regency and its surroundings, and since 2020 this hospital has been officially designated as a teaching and research hospital, based on the decree of the Minister of Health Number HK.01.07/MENKES/240/2020.

Based on the results of a preliminary study at Kanjuruhan Hospital Malang, information was obtained that the Inpatient Daily Census (SHRI) information system is still carried out manually. Each inpatient room officer records the daily inpatient census using Microsoft Excel to process and present data. These census recording officers sometimes experience recording errors, resulting in delays in receiving the daily inpatient census report from each inpatient room

officer, which also has an impact on the reporting process. Inaccurate or late data can have an impact on the effectiveness of services, the efficiency of resource management, and the quality of decision-making in health institutions (Islami & Ramadhani, 2021).

This recording error can result in delays in daily census reporting in hospital management. This delay will slow down reporting and analysis results such as Bed Occupancy Rate (BOR), Average Length of Stay (AvLOS), and Bed Turnover (BTO) used for quick and accurate decision-making. With this problem, each officer must reprocess the daily census data in order to uncover potential recording errors.

Along with the development of information technology, the application of web-based information systems in SHRI management can be a solution to improve the efficiency and accuracy of reporting. This system can speed up the recording process, minimize input errors, and facilitate data access for health workers and hospital management (Listiawan et al., 2024). In addition, a user-friendly interface design is needed so that the system can be used optimally by health workers responsible for recording SHRI (Diniah & Dian Pratiwi, 2020).

In this final project, the author aims to design and develop a web-based Inpatient Daily Census (SHRI) information system interface to reduce errors in the process of entering inpatient daily census data at Kanjuruhan Hospital. It is hoped that the system display can provide convenience for health workers in inputting and accessing data in real time, as well as assist management in making accurate and reliable data-based decisions.

The theme of this final project was chosen because the recording of the Daily Census of Hospitalizations (SHRI) in hospitals is still done manually, so it often causes delays in reports, input errors, and the risk of data loss. Therefore, a web-based SHRI system was developed to improve the quality, security, and accuracy of patient data and support more effective management of hospital information. The project aims to analyze user needs, design the system interface, and evaluate its effectiveness. The expected benefits are to improve the efficiency of recording and reporting, make it easier for health workers to access data in real time, and assist hospital management in making more appropriate decisions.

## **RESEARCH METHODS**

This study used a descriptive method with a qualitative and quantitative approach. A qualitative approach was used to identify problems and user needs through interviews and observations of the Inpatient Daily Census (SHRI) recording process. Meanwhile, a quantitative approach was used to evaluate the interface design of a web-based SHRI system through the measurement of the level of usability using a questionnaire.

The population in this study was all officers involved in recording the Daily Census of Inpatients at the Kanjuruhan Regional General Hospital Malang. The research sample was determined using purposive sampling techniques, namely inpatient officers and medical record officers who were directly involved in the process of managing SHRI data and using the designed system.

Data collection techniques were carried out through interviews, observations, and questionnaires. Interviews and observations were used to obtain an overview of the work process and the obstacles faced by officers, while questionnaires were used to measure the level of ease of use, clarity of display, and suitability of the web-based SHRI system interface design features.

Data analysis techniques were carried out qualitatively and quantitatively. Interview and observation data were analyzed descriptively to draw conclusions about user needs, while questionnaire data were analyzed using the Likert scale to determine the level of acceptance and feasibility of the web-based SHRI system interface design.

## **RESULTS AND DISCUSSION**

Based on the results of the interview on April 29, 2025 and the results of the observation of the medical record unit during the implementation of Field Work Practice 2 which was carried out in November 2025, some information was obtained that is useful to support this project-based research at the Kanjuruhan Regional General Hospital

### **Observation Results**

The requirements observation stage is an initial process that is carried out to determine and analyze the needs needed in the design of an interface design. At this stage, data collection is carried out as a basis for design, identification of problems that occur, and determination of appropriate solutions to overcome the problems found. The following are the results of the observation activities that have been carried out:

**Table 1** Observations

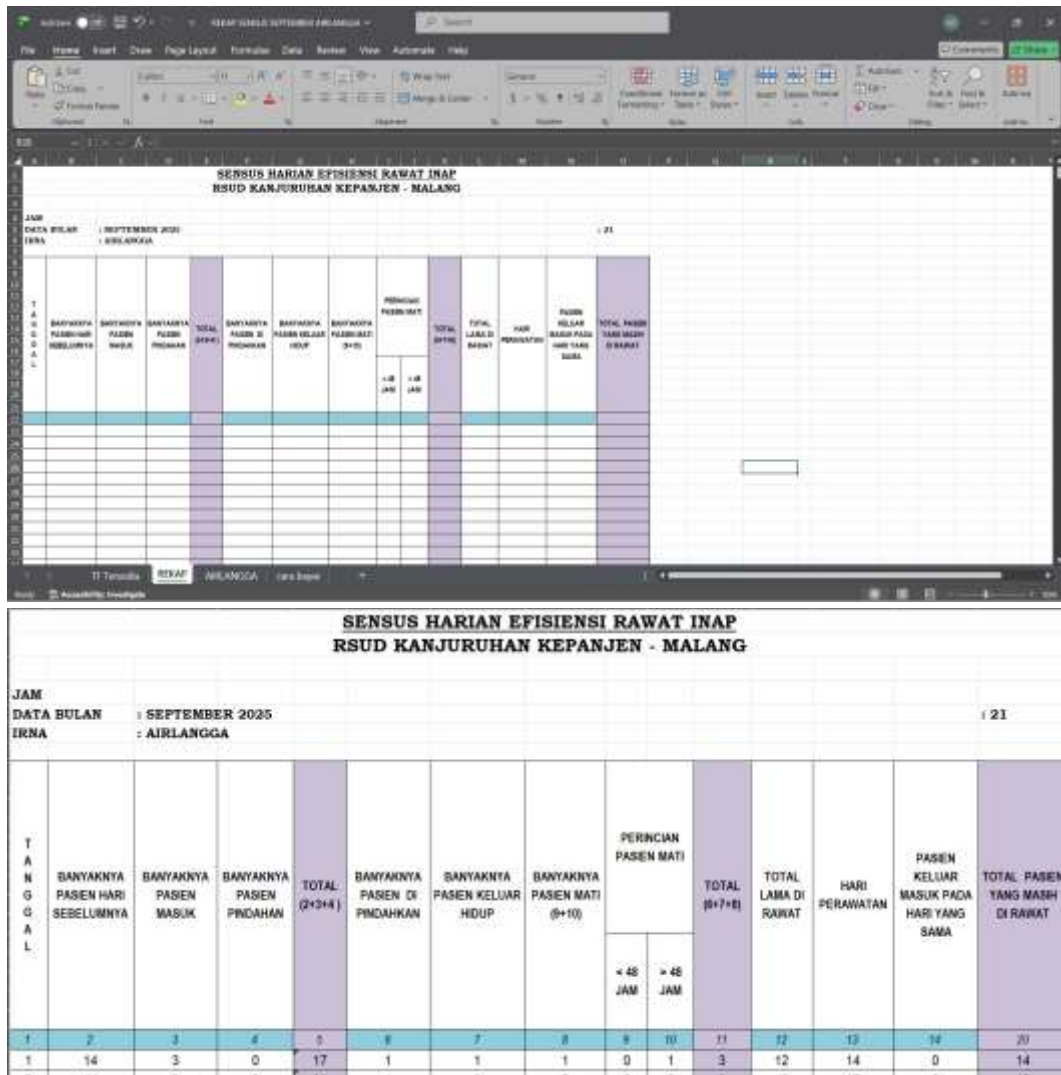
No	Observed Aspects	Yes	No	Remarks
1	Availability of written guidelines or procedures related to the implementation of the Inpatient Daily Census	V		The SOP for the Daily Census of Hospitalizations is available
2	Clarity of Procedures for the implementation of the Inpatient Daily Census	V		The Hospitalization Daily Census procedure is already available in the SOP
3	The implementation of the Daily Census of Inpatients is carried out manually	V		The SHRI data collection process is still carried out manually by the way the officer of each inpatient room sends the retained data to the medical record unit in the form of excel
4	Media or means used in recording daily Hospitalization Census data	V		Recording is done using Google Sheets as a data collection medium
5	Availability of special officers responsible for processing and recording SHRI data	V		SHRI data processing is carried out by Medical Record officers and nurses in each room on duty
6	Integration of Inpatient Daily Census data into Hospital Management Information System (SIMRS)		V	SHRI data has not been integrated into SIMRS
7	Barber Johnson Graphic Creation		V	None

Source: Observation Results Conducted by the Researcher at Kanjuruhan Regional General Hospital, Malang, 2025

### **Identification of Inpatient Daily Census Form**

The following is the form used in the Daily Census of Hospitalizations at the Kanjuruhan Regional General Hospital. This excel form is filled out by the nurse in each room by entering the data according to the excel and then sending it to the medical record unit to be recapped





**Figure 2 Daily Census Table of Hospitalizations**

**Identification of User Needs Related to Inpatient Daily Census Interface Design**

Based on the results of a preliminary study through observations and interviews at Kanjuruhan Hospital, the researcher identified a number of basic needs to design an effective Inpatient Daily Census (SHRI) information system interface. These needs are divided into two main categories, namely functional needs and interface needs, to overcome the manual reporting constraints that have occurred so far.

1. Functional Needs The system must be able to carry out the main functions that support the work efficiency of medical record officers and room nurses. These functional needs include:
  - a. Digital Recording Feature: The system provides input forms for incoming and outgoing, moving, and moving patient data to replace the use of Microsoft Excel or Google Sheets.
  - b. Automatic Data Validation: There is a validation feature to detect incomplete data and provide warning notifications so that all fields are filled in accurately before saving.
  - c. Real-time Statistics Dashboard: A visual display that presents an instant recapitulation of the number of patients and bed capacity to support management decision-making.

- d. Automation of Reports and Indicators: The system must be able to process input data directly into hospital quality reports that include BOR, AvLOS, TOI, BTO, NDR, and GDR indicators.
2. User Interface Requirements To ensure that the system is well received by users in a hospital environment, the interface design must meet the following criteria:
  - a. User-Friendly: The interface is designed intuitively so that officers can operate the system with minimal training, as well as speed up the recording process in between busy departments.
  - b. Web-Based Accessibility: The design should be responsive and accessible through a browser on a computer in each inpatient room without requiring additional app installation.
  - c. Clear Data Visualization: The use of design elements such as color, typography, and layout should assist users in quickly finding key information while conducting patient monitoring.

### **Design Interface Design Results**

1. Login View



**Figure 3 Login View**

The bar above shows the login menu, officers are required to enter a username and password to access the dashboard menu. This display is the main interface that has been equipped with the Kanjuruhan Hospital logo and the SIMRS logo. The placement of the two logos has been adjusted to make it clearly visible without interfering with the functionality of the other buttons.

2. Quality indicator display



Figure 4 Quality Indicator Display

After logging in, an image will appear as above, namely a quality indicator display menu designed to monitor the operational efficiency of the hospital. At the top there is a period selection feature that regulates the time range that you want to display, and for the upper right corner there is the identity of the officer who will access. In it there is a chart of bed usage to find out the number of beds that have been used in the hospital. On the right side of the graph is the Hospital Efficiency Indicator panel which presents important parameters in a concise manner, including BOR (bed occupancy rate), LOS (average length of treatment), TOI (empty bed time interval), BTO (frequency of bed use), and NDR and GDR mortality rates. And below it is a recap table of daily inpatient census data where the data is grouped based on room names such as Airlangga, North Diponegoro, and Pattimura. This table presents information on bed capacity (TT), occupancy rate, and performance of each room based on the same efficiency indicators as the panel above. In addition, there is a navigation button on the left side to switch menus and the "Export Excel" feature on each row of room data makes it easier for management to download physical reports for the purpose of archiving peer count and census data from the room in each room.



Figure 5 Side Menu Display

The image above shows the sidebar interface or side menu of the Inpatient Daily Census system design. This side menu consists of four main features, namely: the Inpatient Daily Census menu as the main page, the Quality Indicator menu to display service quality parameters, the Patient Data Input menu to enter new patient data, and the Recapitulation menu to display the daily inpatient census table that has been filled in automatically.

### 3. SHRI Data Input Display

No. RM	Nama	Tgl. Lahir	Pengamin	Ruangan	Kelas	Tgl & Jam Masuk	Status	Aksi
041236	Muhammad Rhyi	03-Mai-2005	BPUS Kesehatan	Arlangga	1	1 Mei 2025 08:30	Pasien Baru	<span>Save</span> <span>Cancel</span>
041240	Nuhalda Irena	17-Januari-1997	BPUS Kesehatan	Arlangga	1	1 Mei 2025 08:20	Pasien Transfer	<span>Save</span> <span>Cancel</span>
041568	Meyani	19-Desember-2004	BPUS Kesehatan	Arlangga	1	1 Mei 2025 08:35	Pasien Baru	<span>Save</span> <span>Cancel</span>
048823	Lila Nur Fria	20-Juni-1999	BPUS Kesehatan	Arlangga	1	1 Mei 2025 08:30	Pasien Baru	<span>Save</span> <span>Cancel</span>
048766	Fathulhaki	01-Agustus-2008	BPUS Kesehatan	Arlangga	1	1 Mei 2025 08:20	Pasien Baru	<span>Save</span> <span>Cancel</span>
041558	Samsul Kadir	18-Jul-2004	BPUS Kesehatan	Arlangga	1	1 Mei 2025 08:20	Pasien Baru	<span>Save</span> <span>Cancel</span>

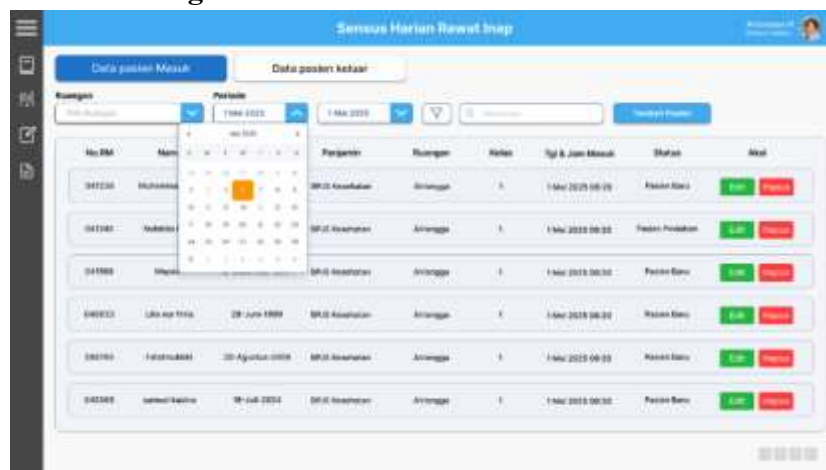
**Figure 6 Incoming Patient Data Display**

No. RM	Nama	Tgl. Lahir	Pengamin	Ruangan	Kelas	Tgl & Jam Masuk	Status	Aksi
00-Mai-2000		00-Mai-2000	BPUS Kesehatan	Arlangga	1	1 Mei 2025 08:20	Pasien Baru	<span>Save</span> <span>Cancel</span>
041240	Nuhalda Irena	17-Januari-1997	BPUS Kesehatan	Arlangga	1	1 Mei 2025 08:20	Pasien Transfer	<span>Save</span> <span>Cancel</span>
041568	Meyani	19-Desember-2004	BPUS Kesehatan	Arlangga	1	1 Mei 2025 08:20	Pasien Baru	<span>Save</span> <span>Cancel</span>
048823	Lila Nur Fria	20-Juni-1999	BPUS Kesehatan	Arlangga	1	1 Mei 2025 08:20	Pasien Baru	<span>Save</span> <span>Cancel</span>
048766	Fathulhaki	01-Agustus-2008	BPUS Kesehatan	Arlangga	1	1 Mei 2025 08:20	Pasien Baru	<span>Save</span> <span>Cancel</span>
041558	Samsul Kadir	18-Jul-2004	BPUS Kesehatan	Arlangga	1	1 Mei 2025 08:20	Pasien Baru	<span>Save</span> <span>Cancel</span>

**Figure 7 Room Selection Feature Display**

Soekarno Hatta
Ahmad Yani
Hasanuddin
Gajahmada Utara
Gajahmada Selatan
Brawijaya
Fatahillah
Diponegoro Atas
Diponegoro Bawah
Airlangga
Patimura
Cut Nya' Dien
Imam Bonjol
Soedirman Lantai 2
Soedirman Lantai 3
Kaber (HCU)
ICU
ICCU

**Figure 8 Scroll the Room Selection Bar**



**Figure 9 Period Selection Feature View**

The image above is a display of incoming patient data that functions to view and search for patient data that has been input by the officer. At the top of the display there is a room selection menu that is used to select rooms according to needs, as well as a reference in adding incoming patient data.

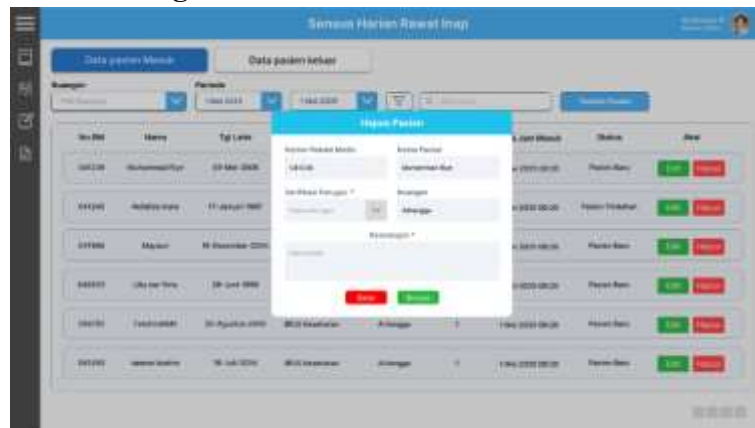
To the right of the room menu, there is a period selection feature that functions to set the time range of patient data you want to display. Furthermore, there is a filter feature and a search field that can be used to search for patients based on medical record numbers or patient names.



**Figure 10 Patient Add Feature Display**



**Figure 11 Patient Edit Feature View**



**Figure 12 Delete Feature View**

There is also an Add Patient button that is used to add new patient data and transfer patients. In the action column, there is an Edit feature that is used to update the patient's status, such as the patient was discharged, transferred, referred, forced home, escaped, or died. In addition, there is a Delete feature that functions to delete patient data if there is an error in the input process.

**Figure 13 Patient Add Form View**

The image above is the Add Patient form used to record data on patients admitted to the Inpatient Daily Census (SHRI) system. The officer fills in the Medical Record Number and Patient's Name as the patient's primary identity. In the Admission Status section, there are two options, namely New Patient for patients who are admitted for the first time, and Transferred Patient for patients who are transferred from other rooms. Furthermore, the Guarantors column is used to record the type of patient guarantor, DPJP for the doctor in charge of services, and the MRS Date as the start date the patient is treated. The Room and Treatment Class columns are used to determine the location and class of patient care. At the bottom of the form there is a Cancel button to unfill the data and Save to save the patient data to the system.

**Figure 14 Patient Edit Form View**

The image above is the Patient Edit form used to update or complete patient data that will be discharged from treatment in the Inpatient Daily Census (SHRI) system. For the patient's name and medical record number, it will be filled in automatically. In the Discharge Status section, there are various choices of patient return categories, namely discharged, referred, transferred, forced home, escape, and death in less than or more than 48 hours. Furthermore, this Description column can only be filled in if the officer selects the Transferred or Referred exit status option to provide additional information about the patient's destination. The KRS

Date and KRS Time columns are used to accurately record the time of discharge or when the patient is discharged from the hospital.

**Figure 15 Delete Patient Form View**

The image above is the Delete Patient form used to delete patient data from the Inpatient Daily Census (SHRI) system in the event of input errors or service cancellations. Officers can ensure that the data to be deleted through the fields of Medical Record Number, Patient Name, and Room that has been filled in automatically according to the selected data. In the Officer Verification section, there is a choice of the name of the officer who is responsible for deletion to maintain data accountability. Furthermore, the Statement column must be filled in by the officer to provide a reason or special note related to the deletion of the data.

No. RM	Nama	Tgl Lahir	Ruangan	Kelas	Tgl & Jam Masuk	Tgl & Jam Keluar	Status Keluar	Detail Status
041238	Muhammad Riyn	09-Mar-2000	Airangga	I	1 Mar 2023 08:30	1 Mar 2023 08:30	Selesai	> 48 jam
040000	Haji Aida	24-Mar-2001	Airangga	I	1 Mar 2023 08:30	1 Mar 2023 08:30	Spesialistik	Intensitas 80%
041807	Rasmita	10-Februari-2000	Airangga	I	1 Mar 2023 08:30	1 Mar 2023 08:30	Transk	RI...
040347	Erika	05-Desember-1997	Airangga	I	1 Mar 2023 08:30	1 Mar 2023 08:30	Spesialistik	>
040376	Muhaimin	23-Jan-1987	Airangga	I	1 Mar 2023 08:30	1 Mar 2023 08:30	Spesialistik	>
040977	Fitria Nurul	18-Agustus-1993	Airangga	I	1 Mar 2023 08:30	1 Mar 2023 08:30	Spesialistik	>

**Figure 16 Outgoing Patient Data Display**

The image above is a view of the Discharge Patient Data page in the Hospitalization Daily Census (SHRI) system. This page is used to view, monitor, and manage data on patients who have been discharged from the hospital, whether they have been discharged, transferred, referred or died.

At the top of the page there is a room selection menu that functions to display outpatient data based on a specific inpatient room. Next to it is a period selection feature that is used to set the date range of patient discharge data you want to display. In addition, there is a search feature that allows officers to quickly search for patient data using the Medical Record Number (No. RM) or the patient's name.

The discharge patient data table displays important information, including Medical Record Number, Patient Name, Date of Birth, Room, Class, Date and Time of Admission, Date and Time of Discharge, Discharge Status, and Status Details. The Discharge Status column serves to show the patient's condition when discharged, such as discharged, transferred, referred, or died, while the Status Details column is used to provide additional information, such as length of time of death (<48 hours) or the purpose of referral/transfer.

#### 4. SHRI recapitulation view



The screenshot shows a web interface titled "Tabel Sensus Harian Rawat Inap". It features a table with columns for patient status (e.g., Pasien Baru, Pasien Masuk, Pasien Pindah, Subit, Pasien Discharge), room numbers, and dates. The table contains multiple rows of data, likely representing daily census information for different rooms or patient groups.

**Figure 17 SHRI recapitulation view**

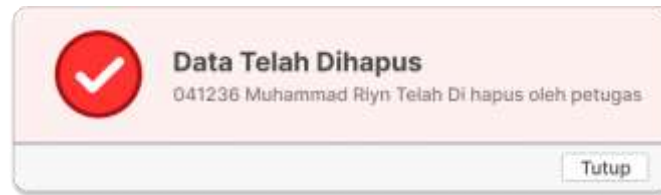
The image above is a recapitulation menu that displays the overall data table from the Daily Census of Inpatients (SHRI) at Kanjuruhan Hospital. This menu is used to see a summary of the inpatient activity in a given period based on the room selected. At the top of the page, there is a room selection feature that functions to display census data according to a specific inpatient room. In addition, there is a period selection feature that is used to determine the range of daily census dates that want to be displayed, making it easier for officers to evaluate data at a certain time.

The daily census table of hospitalizations displays detailed data by date, which includes the number of initial patients, admitted patients, transfer patients, total patients, transferred patients, patients discharged, patients discharged, as well as details of patients who died based on less than 48 hours and more than 48 hours. In addition, this table also presents information on the length of treatment, treatment days, one-day care patients, and total patients treated. With this recapitulation menu, medical record officers can monitor the movement of inpatients in a comprehensive and structured manner, as well as facilitate the process of data processing, reporting, and calculation of hospital service indicators.

#### 5. Notification Bar Display



**Figure 18 Saved Data Notifications**



**Figure 19 Deleted Data Notifications**

The color used in the overall interface design of the Inpatient Daily Census (SHRI) is adjusted to the SIMRS display of Kanjuruhan Hospital to keep it looking familiar to officers. This color adjustment aims to minimize user confusion, so that officers do not need much adaptation when using the system.

In addition, the display is designed with a simpler, neat, and easy-to-read layout, so that information can be understood quickly. Consistent color selection also helps improve visual comfort, reduce eye fatigue, and support the process of recording and searching data more efficiently.

**Table 2 Colors and Color Codes**

Color	Color Coding
Light Blue	40ABF1
Dark Blue	07407B
Blue	EEF2F8
White	FFFFFF
Grey	464646

Source: System Interface Design Developed by the Researcher (SHRI Interface Design), 2025

### Evaluation Results

In this evaluation stage, this is the last stage, namely changing the appearance that is not suitable for the officer or adding features that are lacking. This evaluation stage was carried out for 1 day, on December 31, 2025 by presenting the design results to 5 informants and conducting interviews and providing evaluation questionnaires to get input and evaluation of the design results that have been completed by the researcher.

The following are the results of the evaluation interview:

1. What is the current process for collecting daily inpatient census data? Are there any obstacles that are often experienced?

<i>"Recording the daily census of hospitalizations is still done manually, namely using Excel"</i>	<i>(Informant 1, 2025)</i>
<i>"The recording is still using excel"</i>	<i>(Informant 2, 2025)</i>
<i>"The reporting is manual"</i>	<i>(Update, 2025)</i>
<i>"The collection is still manual"</i>	<i>(Update, 2025)</i>
<i>"The recording process is still manual and has not been connected to Simrs"</i>	<i>(Anna 5, 2025)</i>

Based on the results of interviews with 5 informants, it is known that the average obstacles experienced are caused by the process of reporting and recording the daily census of hospitalizations which are still carried out manually using Excel media. This condition results

in existing data not being automatically synchronized with the Hospital Management Information System (SIMRS).

2. How do you feel the system will look like for medical record needs?

"Enough and easy to use"	(Informant 1, 2025)
"Visually easier"	(Informant 2, 2025)
"Simple"	(Update, 2025)
"Very easy to read"	(Update, 2025)
"Very easy to understand"	(Anna 5, 2025)

3. What features do you think are important to have in this system to support work?

"Enough"	(Informant 1, 2025)
"It is enough as long as the recapitulation is correct"	(Informant 2, 2025)
"Enough"	(Update, 2025)
"Enough"	(Update, 2025)
"Enough"	(Anna 5, 2025)

4. Are there any additional ideas or feedback that are not yet but important?

"None"	(Informant 1, 2025)
"Enough"	(Informant 2, 2025)
"It's enough and if possible, PX data is unified so that there are not many clicks"	(Update, 2025)
"Enough"	(Update, 2025)
"Nothing more to add"	(Anna 5, 2025)

Based on the results of the evaluation with five informants, in general, the system display is considered to be quite good, simple, and easy to understand by users. The informants stated that the current system interface is quite easy to read, thus supporting the ease of medical record operations. In terms of functionality, the available features are considered adequate to support the work, with the main note that the accuracy of data recapitulation must be maintained correctly. Although most informants feel that there is no need for more features, there is an important input related to the efficiency of data input, namely the need to unify patient data in one view so that the navigation process is more practical without having to do too many clicks. The results of the respondents' assessment from the evaluation questionnaire

**Table 1** Kitchen Results

Respondents	Questions										Total
	1	2	3	4	5	6	7	8	9	10	
<b>1</b>	4	4	3	4	3	3	4	4	3	4	36
<b>2</b>	4	4	5	5	4	5	5	5	5	5	47
<b>3</b>	4	4	4	3	4	4	3	4	4	4	38
<b>4</b>	4	4	4	4	4	4	4	4	4	4	40

5	5	5	5	5	5	5	5	5	5	5	50
<b>Total Score</b>											211

Source: Questionnaire Data from the SHRI System Usability Evaluation Respondents, 2025

**Table 2 Score**

Score	
<b>Strongly Disagree</b>	1
<b>Disagree</b>	2
<b>Neutral</b>	3
<b>Agreed</b>	4
<b>Strongly agree</b>	5

Source: Likert Scale Assessment Used by the Researcher for System Evaluation, 2025

- a. Maximum Score 1 Question = 25
- b. Maximum Score of 10 Questions = 250
- c. Acquisition Score = 211
- d. Lowest score 1
- e. Highest score 5
- f. Minimum Score = 20%

$$\text{Minimum Score} = \left(\frac{1}{5}\right) \times 100\%$$

- g. Maximum Value = 100%

$$\text{Maximum Score} = \left(\frac{5}{5}\right) \times 100\%$$

- h. Interval = 16%

$$\text{Interval} = \left(\frac{\text{Maximum} - \text{Minimum Score}}{\text{Class Total}}\right)$$

$$\text{Interval} = \left(\frac{100 - 20}{5}\right) = 16$$

**Table 3 Likert Scale Interpretation Criteria**

Criteria Table	
<b>20% - 36%</b>	Very dissatisfied
<b>37%-52%</b>	Dissatisfied
<b>53% - 68%</b>	Quite satisfied
<b>69% - 84%</b>	Satisfied
<b>85% - 100%</b>	Very satisfied

Source: Likert Scale Interpretation Criteria Adapted and Processed by the Researcher, 2025

$$\text{Percentage} = \left(\frac{\text{Total Score}}{\text{Maximal Score}}\right) \times 100\%$$

$$\text{Percentage} = \left(\frac{211}{250}\right) \times 100\% = 84.4\%$$

The evaluation of the interface design of the Inpatient Daily Census (SHRI) system was carried out using a questionnaire with a five-level Likert scale, namely 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree. The questionnaire consisted of

10 questions filled in by 5 respondents. Each question item is assessed based on the respondent's answers, then the score obtained is summed and compared with the maximum score to obtain the percentage and category value of the assessment.

Based on the results of questionnaire data processing, an overall average score of 84.4% was obtained, which was included in the satisfied category. These results show that most respondents give a score of agree to strongly agree with the design of the SHRI system interface. Thus, the designed interface design is considered easy to understand, informative, and able to support the process of recording the daily census of inpatients more effectively compared to manual recording.

### **Identify Needs**

Based on the results of the needs analysis that has been carried out, it is obtained that Kanjuruhan Hospital needs an Inpatient Daily Census system that already has guidelines or standard operating procedures (SOP). However, in its implementation, the system has not been integrated with the existing Hospital Management Information System (SIMRS). So far, the recording of daily census of hospitalizations is still carried out manually using Microsoft Excel, so it has the potential to cause delays in reporting, data inconsistencies, and errors in the data input and recapitulation process.

Based on the results of observations made by researchers, the process of recording the daily census still depends on manual input from each room, then recapped by the medical record officer. This condition causes the recording flow to be less efficient, especially when there is a delay in sending data from the room or there is incomplete data. In addition, the recording format used is not completely uniform, so it requires adjustment and re-checking before the data can be further processed.

The results of interviews with relevant officers also show that officers need a system that has a clear census recording flow and an easy-to-understand interface. The officer conveyed the need for input forms that are in accordance with the needs of the daily census of hospitalizations, as well as report outputs that can be used directly without having to be reprocessed. In addition, officers also need a data editing feature to correct input errors that may occur.

Another need identified is the availability of inpatient service quality indicator calculation features, such as BOR, LOS, TOI, and BTO, which can be calculated automatically based on the census data that has been inputted. With this feature, it is hoped that the inpatient service evaluation process can be carried out more quickly, accurately, and to support hospital management decision-making.

### **Inpatient Daily Census Information Interface Design Design**

The design of a web-based Inpatient Daily Census (SHRI) information interface design was carried out to answer the problem of census recording which is still carried out manually and separately in each inpatient room. The design of the interface is focused on the ease of recording patient data in, moving, and exiting, as well as the presentation of census data in a structured and easy-to-understand manner by medical record officers and room officers.

In the design of this SHRI Design, the census recording flow has been adjusted to the daily inpatient census process that applies in hospitals. Incoming patient data is recorded based on the status of new patients or moving patients, while outpatient data is grouped based on

patient conditions, such as discharged alive, dead, or transferred to another room. This grouping aims to ensure that all patient movements can be clearly recorded and support the calculation of hospital service indicators, such as BOR, LOS, TOI, and BTO.

The SHRI interface design is also designed with a recapitulation feature of the daily inpatient census that displays overall patient data based on specific rooms and periods. With this recapitulation, officers can monitor the hospitalization conditions of each room quickly without having to do manual calculations. In addition, the interface design is made simple and consistent with the SIMRS display that has been used in hospitals to facilitate user adaptation and reduce the risk of data input errors.

Overall, the design of the SHRI Information Interface Design is expected to facilitate the development of the system in the future and this is in line with the journal (Sugiarsi et al., 2024) because it can save time, improve performance, increase the efficiency and accuracy of recording daily inpatient censuses, simplify the reporting process, and support hospital management decision-making based on more structured and real-time data.

### **Evaluation of the Design of the Inpatient Daily Census Information Interface**

The evaluation of the design of the Inpatient Daily Census (SHRI) information system interface design was carried out through a Likert scale questionnaire and interviews with officers directly involved in the process of recording the inpatient daily census. This evaluation aims to find out whether the resulting design is in accordance with the needs of the user. This evaluation is in line with (Aziz et al., 2023) who stated that evaluation in information system design is an important stage to assess the level of suitability between user needs, clarity of appearance, and suitability of system features before the system is further implemented.

Based on the results of the questionnaire processing, an average score of 84.4% was obtained, which was included in the satisfied category. These results show that the majority of respondents gave an assessment of agreeing to strongly agree with the aspects of ease of use, clarity of information, and the convenience of the appearance of the SHRI system interface design. The results were supported by findings from the interview, where the officers said that the system display was considered simpler, easier to understand, and less confusing than manual recording or the use of separate spreadsheet files. Incoming and outgoing patient menus, and daily census recapitulations help clarify the data logging flow and reduce the risk of input errors and also for color and layout compatibility with previously used SIMRS displays for easier adaptation.

### **CONCLUSION**

This study concluded that the interface design of the web-based Inpatient Daily Census (SHRI) information system was developed in accordance with the functional and usability needs of its users. User needs identification revealed requirements for patient data input forms covering admission, discharge, and transfer; data validation to minimize recording errors; and a clear, structured display aligned with the inpatient daily census workflow. The resulting interface design incorporated key features including a login page, information dashboard, census input forms, data editing functions, and recapitulation displays of inpatient service quality indicators such as BOR, LOS, TOI, and BTO. Usability evaluation using a Likert-scale questionnaire administered to five respondents yielded an average satisfaction score of 84.4%, categorized as satisfied, with most respondents finding the interface easy to understand,

informative, and convenient to use, indicating that the design was well received by officers in the field. For future research, it is recommended that the system be developed to full implementation and integrated with the hospital's Hospital Management Information System (SIMRS) to enable real-time and centralized data recording, while usability testing should be expanded to a larger and more diverse sample across multiple inpatient rooms to produce more comprehensive and generalizable evaluation results.

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