Design Of Medical Resume Information System For Covid-19 Patients

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Abstract
The goal of this research is to create an information system for filling up medical resumes for Covid-19 patients at RSIA Limijati Bandung. A qualitative research method with a descriptive approach was use in this study. Observation, interviews, and literature review are examples of data collection techniques. The waterfall method is utilize in the software development process. The following issues were discovered as a result of the investigation conducted: (1). Many medical records are returned to the treatment room because to incomplete medical resumes. (2). The process of checking for completeness and generating reports is still done by hand, which means that patient data is retyped into a computer.

Keywords—Information Systems Design, Medical Resume, COVID-19, Microsoft Visual Studio, Waterfall

1. INTRODUCTION

In the current period of globalization, one of the technologies that is quickly increasing is information technology. All areas of life must evolve, including changes in the fields of health information, health technology, and people's attitudes toward the value of health, among other things. The health element is one aspect that is essential to experience these advancements.
According to PERMENKES No.1045/Menkes/Per/2006 concerning the Ministry of Health's Guidelines for Hospital Organization. A hospital is an individual health service facility that provides inpatient and outpatient services that provide short-term and long-term health services consisting of observation, diagnostics, therapeutic, and rehabilitative for people who suffer from illness, injury, and childbirth as well as health facilities that carry out health service activities, for health workers and research [1].

A hospital is a facility that provides health services to people who require them. Outpatient, inpatient, and emergency services are all possible options for these services. Given the importance of hospitals and their role in the community, hospital services must be upgrade in terms of quality and smoothness in order to provide orderly administration and convenience for service users. As stated in the PERMENKES No. 269/2008 concerning medical records in its consideration, "improving the quality of health services must be accompanied by suitable supporting facilities for the application of medical records in every health service facility"[2].

Medical records are "information both written and recorded regarding identity, history taking, physical laboratory determination, diagnosis of all medical services and actions provided to patients and treatment both inpatients, outpatients, and those receiving medical treatment and emergency services," according to the Director General of Yannmed [3]. Organizing medical records is a process that begins when a patient registers and continues until the patient leaves the facility. The medical record must include accurate and full information regarding the patient's identity, social data, history taking, physical examination, supporting examination, diagnosis, prognosis, therapy, medical activities, and other hospital services. This has a significant impact on hospital service quality and data management systems. As a result, as soon as the patient is discharged from the hospital, a medical resume should be prepared. Only significant information regarding the ailment, the examination, and the course of therapy should be included in the medical resume. Because the completeness of a medical resume is one sign of a medical record's quality, a medical record can have quality value if the data is loaded.

COVID-19 is an illness caused by the SARS-CoV-2 coronavirus, which is a novel coronavirus. Following reports of a cluster of cases of 'viral pneumonia' in Wuhan, People's Republic of China [4]. WHO first became aware of this novel virus on December 31, 2019. Corona virus infection is an illness caused by the corona virus, with respiratory issues as the primary symptom.

Finance for patients being treated for certain emerging infectious diseases, including COVID-19, can be claimed to the Ministry of Health under Minister of Health Regulation Number 59 of 2016 about Exemption of Fees for Certain Emerging Infection Patients. According to the Minister's list of referral hospitals this claim is made by a referral hospital that provides services and care for these emerging infection patients [5]. Instructions and technical treatment claims are required to enable the implementation of payments for patients treated for emerging infectious illnesses (PIE), including COVID-19, so that they can serve as a reference for hospitals that provide COVID-19 services. This is done to ensure that COVID-19 patients receive high-quality, cost-effective, and consistent health treatments. Dr. Terawan Agus Putranto, Minister of Health, issued Decree No. HK.01.07/MENKES/238/2020 on April 6, 2020, covering Technical Instructions for Claims for Reimbursement for Treatment of Certain Emerging Infectious Disease Patients for Hospitals that provide COVID-19 services [6].

Services that can be funded adhere to service standards outlined in patient management guidelines based on the patient's medical needs. Service administration, accommodation (rooms and services in the emergency room, inpatient room, intensive care room, and isolation room), doctor services, in-room procedures, use of ventilators, consumable medical materials, diagnostic support examinations (laboratory and radiology according to medical indications), medicines, and medical devices are all covered by outpatient and inpatient services funding.
This shows that the completeness of the medical record file for COVID-19 patients is very important, one of which is to claim the cost of treating certain emerging infectious disease patients. Studio 2010 at Rsia Limijati Bandung.

2. METHODOLOGY

A. Techniques of Collection

1) Interview
   A type of spoken conversation used to gather information [7]. In this scenario, the writers gather data through direct interviews with the authorities who are in charge of the research problem.

2) Observasi
   Observation is to collect the right data by observing and directly researching the spaciousness to obtain the desired data in accordance with the needs of the researchers [8], so as to give a clear picture of the activities at RSIA Limijati Bandung.

3) Library Research
   Library Research or Literature Studies is one of the techniques of data collection by studying books, documents, and notes that support as material in the writing of reports [9].

B. Design Methods

Waterfall method is a software development method that allows system creation to be carried out in a regular and systematic (sequential) manner in accordance with the existing development cycle. Starting from the Requirements, Design, Implementation, Verification and Maintenance [10] stages as in Figure 1.

![Figure 1. Waterfall Method Stages](image)

3. RESULTS AND DISCUSSIONS

A. Analysis of running systems

Checking medical resumes is still done manually, first the room officer will submit the medical resume file to the medical records section, then checked the completeness by the medical record staff, then the data is processed and only sampled to be input by the officer into the HCM application. Then reprocessed by the officer to make a completeness report and then submitted to the head of medical records.
B. The system that will run

The system that will run in this study consists of flowmap design, context diagram, data flow diagram (DFD) level 0, entity relationship diagram (ERD), database specifications.
Figure 2. Shows the flowmap of the system that will run. Flowmap is a combination of maps and flow charts that show the movement of objects from one location to another, such as the number of people in migration, the number of goods traded, or the number of packets in the network [11]. This research explains the flowmap of the system that will run, starting from the room officer delivering medical record files, then the medical record will be checked through the system that has been made, then made a report based on the collected data, after which it is submitted to the head of medical records.

Figure 3. Context Diagram That Will Run
The Context Diagram is a level part of the Data Flow Diagram (DFD) used to assign context and system limitations to a system modeling designed [12]. Figure 3 is a Context Diagram on this study.

![Data Flow Diagram](image)

**Figure 4. Data Flow Diagram (DFD) that will run**

A data flow diagram or DFD is a description of the flow of information processed from an input to a particular output. DFDs focus on the flow of information, the origin and purpose of the data to how it is stored [12]. And Figure 4 is DFD Level 0 on the system that will run in this study.
Figure 5. Entity Relationship Diagram (ERD) System That Will Run

ERD is a diagram to describe the conceptual design of the conceptual model of a relational database. ERD is also a picture that realizes between one object and another object of
an object in the real world that often known as the relationship between entities[12]. And Figure 5 is the ERD in the system that will run in this study.

The database is a collection of information stored in the computer systematically so that it can be checked using a computer program to obtain information from the database. A database is a representation of a collection of interconnected facts stored together in such a way and without unnecessary repetition [12]. In this case the database used is with Microsoft Access. Here are the database specifications on the system that will run consisting of (5) tables used in creating databases for this system, namely: Admin Table, Patient Table, Room Table, Doctor's Table and Covid-19 Patient Medical Resume Filling Table.

1) Admin Table: is a table in the database that will serve to store the user officer data of the system. Table 1 name: admin, Fill in: Admin data, Primary Key: No_id.
2) Patient Table: It is a table in the database that serves to store all patient data that is treated in the hospital. Table 2 Table name: patient, Fill in: patient data, Primary Key: No_rm.
3) Room table: Is a table in the database that serves to store room data in the hospital. Table 3 Table name: room, contents: room data, Primary Key: No_urut.
4) Doctor's table: Is a table in the database that serves to store the data of doctors who serve in the hospital. Table 4 Table name: room, Fill in: doctor data, Primary Key: Nik.
5) The completeness table of medical resumes is a table in the database that serves to store data on the completeness of medical resumes of covid-19 patients in hospitals. Table 5 Table name: completeness, fill in: completeness data, Primary Key: No_analisis.

C. Implementation

Patient Medical Resume Filling Information System that I designed still does not have a deficiency that there is still some data that must be check manually and the system still cannot fill the completeness of the resume directly so that the process of checking the completeness of the medical resume inhibits the process of fast, precise and accurate processing.

D. System Interface View
1) Login Form view and Main Menu

![Login Form view and Main Menu](image1.png)

Figure 6. Login Form view and Main Menu

2) User Data Form View

![User Data Form View](image2.png)

Figure 7. User Data Form View
3) Patient Data Form View

![Figure 8. Patient Data Form View](image)

4) Room Data Form View

![Figure 9. Room Data Form View](image)
5) Doctor’s Data Form View

Figure 10. Doctor’s Data Form View

6) Medical Resume Completeness Form View

Figure 11. Medical Resume Completeness Form View
7) Patient Data Report Form View

![Patient Data Report Form View](image1.png)

Figure 12. Patient Data Report Form View

8) Medical Resume Completeness Report Form View

![Medical Resume Completeness Report Form View](image2.png)

Figure 13. Medical Resume Completeness Report Form View
9) View of Medical Resume Completeness Analysis Report By Period

![Figure 14. Dated Medical Resume Completeness Report View](image)

10) View of Medical Resume Completeness Analysis Report By Period

![Figure 15. View of Medical Resume Completeness Report of the month](image)
11) View of Medical Resume Completeness Analysis Report By Room

![Figure 16](image1.png)

Figure 16. View of Medical Resume Completeness Analysis Report By Room

12) Display of Medical Resume Completeness Analysis Report Based on Doctor

![Figure 17](image2.png)

Figure 17. Display of Medical Resume Completeness Analysis Report Based on Doctor
13) View of Medical Resume Completeness Analysis Report Based on How to Pay

![Figure 18. View of Medical Resume Completeness Analysis Report Based on How to Pay](image)

14) Daily Patient Data Report View

![Figure 19. Daily Patient Data Report View](image)
4. CONCLUSION

Based on research conducted by the author at RSIA Limijati, the author took some conclusions as follows: (1) The Completeness Information System of Filling out Inpatient Medical Resumes at RSIA Limijati Bandung is still not running well so that the process of checking the completeness of medical resumes inhibits the processing quickly, precisely and accurately. (2) The design designed by the author is a Medical Resume Completeness Information System that is useful to facilitate the process of checking the completeness of medical resume forms using Microsoft Visual Studio 2010 and using Data Flow Diagram (DFD) for the system process. (3) The problem that occurs in the examination section completeness of filling out an inpatient medical resume is still the existence of a medical resume that is not complete, so that many medical records are returned to the treatment room. It occurs due to lack of thoroughness, busyenss and awareness of other doctors / health workers to fill out medical record files, especially medical resume forms.

5. SUGGESTION

Following their awareness and knowledge of the difficulties that occur, the authors have various recommendations for the Limijati Mother and Child Hospital in Bandung, including the following:
1) All health care employees need to be educated about the importance of filling out an inpatient medical resume form.
2) The author hopes that the Design of Information Systems for Completing Inpatient Medical Resume Filling will be useful to those in need, particularly medical record clerks,
who will be able to add applications that will make it easier to process the information required at the Limijati Mother and Child Hospital Bandung.

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REFERENCES


Blessyanica, et., al [Design of Medical Resume Information System for Covid-19 Patients]


