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Web-Based Sukaraja Puskesmas Services Governance Information System

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Abstract

The Community Health Center is a functional health organization which is a center for community health development which also fosters community participation in addition to providing comprehensive services to the community in its working area in the form of main activities. Currently, at the Sukaraja Community Health Center, all data recording is still done manually using paper media. Because increasingly modern technology requires Puskesmas as one of the health service providers to always improve the quality of its services. The use of computers to process data is very necessary because it can provide benefits and convenience in patient care. In this case, community health centers are required to always improve the professionalism of their employees and improve their health facilities or facilities to provide satisfaction to the community using health services. The objectives to be achieved are: Designing a website-based health center management information system, Improving the conventional health center service system with a computerized system. And makes it easier to process patient data for outpatient, inpatient, pharmacy, counter registration, administration (printing certificates/referrals & health center reports) and general clinics using the waterfall method. The stages of the waterfall method are Requirements, design, implementation, integration, Maintenance. The website-based governance information system that has been produced in this design can process patient data from outpatient, inpatient, emergency health centers and pharmacy services. With this website-based community health center management information system application, data at the Sukaraja Community Health Center is now integrated through a database so that it can process data effectively and efficiently and help provide good services.

I. INTRODUCTION

Puskesmas is a health facility that provides important basic health services in Indonesia. Community Health Centers are one of the strategic units in supporting the realization of changes in community health status towards increasing optimal health status. To improve optimal health services, techniques for developing a health service system based on meeting community needs will be needed. Regulation of the Minister of Health (Pemenkes) Number 4 of 2019 concerning technical standards for fulfilling basic service quality in minimum service standards in the health sector [1]. Currently, at the Sukaraja Community Health Center, all data recording is still done manually using paper media. Because increasingly modern technology requires Puskesmas as one of the health service providers to always improve the quality of its services. The use of computers to process data is very necessary because it can provide benefits and convenience in patient care. In this case, community health centers are required to always improve the professionalism of their employees and improve their health facilities or facilities to provide satisfaction to the community using health services.

According to research by Henny Hendarti, et al (2008), medical management and health services in clinics use analysis and design methods, interviews, literature studies, and field studies such as conducting observations. The research results show that a clinic needs a new system that can make it easier for doctors and nurses to process operational data, for example, medical records and other data related to outpatient care [2]. Research conducted by Mohamad Topan, et al (2015). In research entitled Web-based hospital management information system, it is stated that the design of a web-based management information system can be used to

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process hospital data [3]. From this study it is known that the management information system functions to record (input), process (process), and report (output) all data at the community health center. Then, according to research conducted by Rizky Ramadhan, et al (2015), in the research design of the medical partner information system at the Sukajadi health center, an architectural design was produced. The computers used by each user connect to the server via a switch with a local area network (LAN). These will be connected via IP Address, and user requests to the server will go through a firewall to limit the access rights of each user [4]. From this study, it is known that the method used to build this system is the RUP (Rational Unified Process) methodology.

Based on the results of previous research, the system used is the RUP (Rational Unified Process) methodology system. Meanwhile, in this research, the system used is a website-based information system. so that it can simplify the health service system at the Sukaraja Community Health Center. A website-based information system will help simplify the processing of patient data for outpatient, inpatient, pharmacy, counter registration, and administration services. and applying the waterfall method, the stages in the waterfall methodology are planning, modeling, construction, and delivery of the system to customers/users (deployment). By applying the waterfall method to this research, a system will be obtained that can be used to understand the quality of health services at community health centers, facilitate the processing of patient data for outpatient services, inpatient services, pharmacies, registration counters, administration (printing certificates/referrals & reports health centers) and general polyclinics. Which will later be useful for improving the health center service system which is carried out in writing using a computerized system.

The problem to date is that there is still minimal use of computers at the Sukaraja Health Center. so that all patient data is still written manually and not using a computer. With manual writing, errors will often occur, for example, due to loss of data due to slippage or loss, therefore it is necessary to design a system that can overcome existing problems. The system in question is creating a website-based information system that can help and make things easier for nurses and patients.

With this research, the website-based Sukaraja Public Health Center management information system can be used to facilitate data management effectively and efficiently, to minimize errors that arise. and can make it easier for patients to find out information from the health center. With this information system, it is hoped that there will be no more loss of patient data and simplify the performance of community health centers.

From the background above, the problem formulation that can be obtained is: How to design a website-based health center management information system at the Sukaraja Community Health Center, Semaka District, Tanggamus Regency. The aims of this research are: 1. Design a website-based health center management information system at the Sukaraja Community Health Center, Semaka District, Tanggamus Regency. 2. Facilitate the processing of patient data for outpatient services, inpatient services, pharmacies, registration counters, administration (printing certificates/referrals & health center reports), and general clinics. The benefits of this research are: 1. Make it easier for Puskesmas staff to serve patients. 2. Make services more effective and efficient

II. Related Works/Literature Review (Optional)

A. Understanding the System

According to Jogianto Hartono (2000:683), a system is a network of procedures that are interconnected and gathered together to carry out an activity or to complete a certain target [5]. According to Jacob (2012), a system is a group of elements that are integrated with the same goal to achieve goals [6]. A system is a network of procedures that are interconnected and structured to achieve a goal.

B. Understanding Information

Information is a message (speech or expression) or a collection of messages consisting of a sequence of symbols, or meaning that can be interpreted from the message or collection of messages.

According to Mohamad Subhan (2012) information
is a collection of computer hardware and software as well as human devices that will process data using hardware that plays an important role in an information system [7].

C. Understanding Information Systems

According to Tata Sutabri (2012), an information system (SI) is a system within an organization that brings together daily transaction processing needs that support managerial organizational operational functions with organizational strategic activities such as making necessary reports [8].

D. Understanding Governance

A series of customary processes, policies, rules, and institutions that influence the direction of management and control of a company or corporation to achieve goals.

E. Definition of Community Health Center

Community Health Centers (Puskesmas) are appropriate as first-level health service facilities in the community by prioritizing promotive and preventive efforts. The aim is to achieve the highest level of public health (Minister of Health Regulation No. 75 of 2014 concerning Community Health Centers)[9]. Puskesmas is a place or place for first-level public health service facilities that prioritizes promotive and preventive efforts.

F. Definition of Website

According to Rahmad Hidayat (2010), a website is a collection of pages that are used to display text information, still or moving images, animation, sound, and/or a combination of all of them, both static and dynamic, which form a series of interrelated buildings, each of which – each is connected to page networks[10].

G. Community Health Center Governance Information System

Website based at Sukaraja Community Health Center

The results of this research are: Improve The Puskesmas service system is carried out conventionally with a computerized system and makes it easier to process patient data for outpatient services, inpatient care, pharmacies, counter registration, administration (printing certificates/referrals & Puskesmas reports), and polyclinics.

III. METHODS

A. Data Collection Methods

1. Observation

   According to Sutrisno Hadi and Sugiyono (2013), Observation is a complex process, process that is composed of various biological and psychological processes, two of the most important of which are the processes of observation and reconnaissance [11]. In this process, researchers were directly involved and saw and observed how interactions occurred between community health center officers and the community using community health center services.

2. Interview

   According to Sugiyono (2013), an interview is a meeting of two people to exchange information and ideas through questions and answers, so that meaning can be constructed on a particular topic [12]. Interviews are used as a data collection technique if researchers want to know things from information in depth.

3. Literature Study

   The method used is studying and reading literature that is related to the problem that is the object of research. A literature study is a way of collecting data using a review study of books and literature related to the research problem.

B. IS Design Method

1. Waterfall Method

   According to (pressman, 2012) the waterfall method is often called the classic life cycle, which describes a systematic and sequential software development, starting with the specification of user needs and then continuing through the stages of planning, modeling, construction, and delivery of the system to customers/users (deployment) which ends with support for the device. complete software produced [13].

2. Waterfall Stages

   The stages of the waterfall method can be seen below:

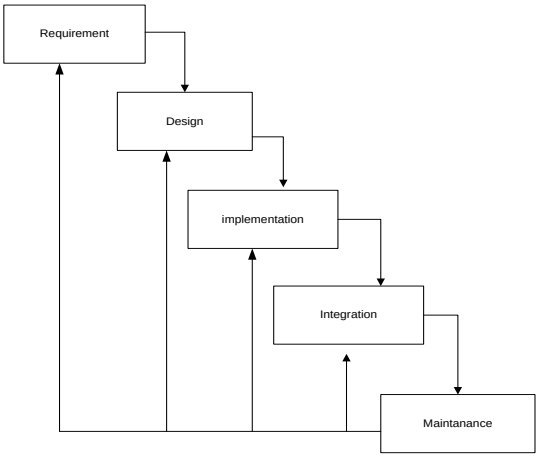

Fig. 1 Stages of the Waterfall Method

1. Requirements
   At this stage, system development is needed which aims to understand the software expected by users and the limitations of the software. This information can usually be obtained through interviews, discussions, or direct surveys.
2. Design
   The requirement specifications from the previous stage will be studied in this phase and the system design will be prepared. System design supports, defines the architecture, and determines the hardware and system requirements.
3. Implementation
   At this stage the system is first developed in small programs called units, which are integrated in the next stage, each unit is developed and tested for functionality which is called unit testing.
4. Integration
   All units developed in the implementation stage are integrated into the system after testing carried out by each unit. After integration, the entire system is tested to check for any failures or errors.
5. Maintenance
   In this stage, the finished software is run and maintained. Fixing errors not found in the previous steps is part of maintenance. Repair of the system unit may become a new need.

C. Research Framework

In this research, what was carried out to develop a community health center management information system was by using a thought framework. The research framework, in this case, is that before creating a journal and conducting research, researchers must first look for the problems of all these problems, then submit a journal title, if it is feasible to examine it, then collect references and collect data related to the proposed journal title, then design a system. which will be created and then enter the data that has been obtained into the health center management information system that was created earlier. Shown in Figure 2.

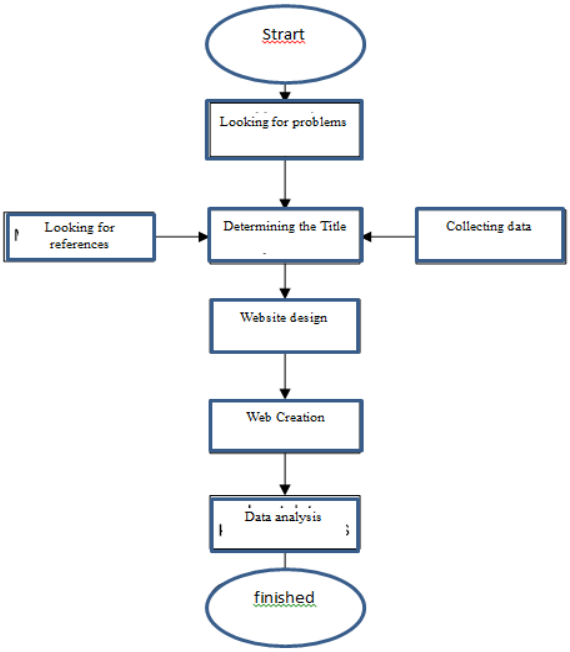

Fig. 2 Research Framework.

IV. RESULTS

A. System Design

1. Context Diagram

A context diagram is a picture of a large circle representing all processes in a system. All external entities are shown in the context diagram along with the main data flow to the system. This diagram contains absolutely no data storage and is not simple to create. The context diagram is shown in Figure 4.1

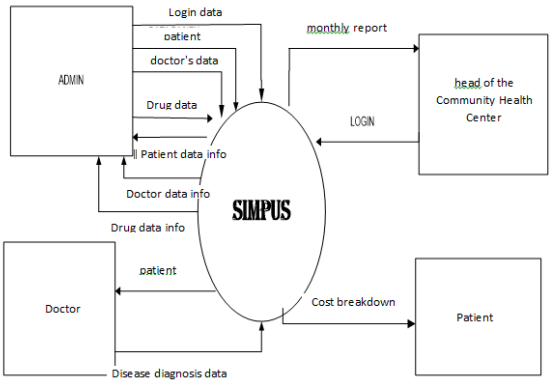

Fig. 3 Context Diagram

From the picture above, the health center's patient data information system has four external entities, namely:

a) Admin
Only processing patient data, doctor data, and drug data obtained from patient registration results, examiner data, disease diagnosis data, and drug type data, then the results of data processing are reported to the leadership of the health center.

b) Doctor
Examining the patient then recording the disease diagnosis data and the type of medication that must be given to the patient in the status of the examination results.

c) Patient
Patients get cost details from the system.

d) Head of the community health center
Just check monthly data.

2. DFD Level 0

Describes the processes that occur in the system, and in this case what is meant by the system is the information system for examination data, disease diagnosis, and types of medication for patients from the time the patient arrives until the patient goes home. The level 0 diagram is shown in Figure 4

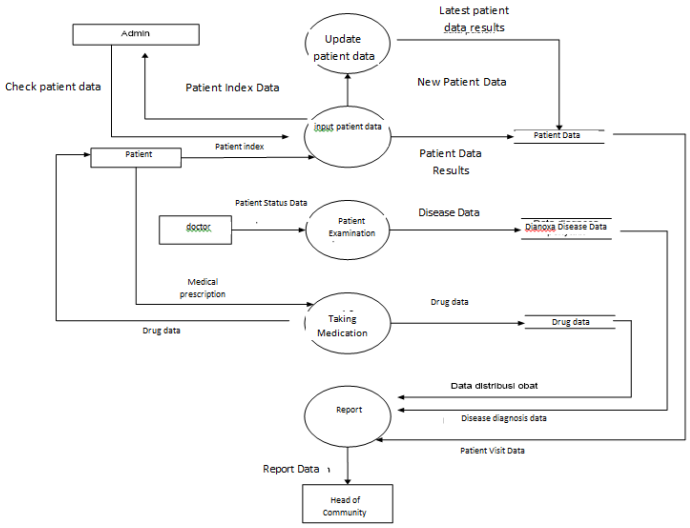

Fig. 4 DFD Level 0 patient data information system

In the level 0 diagram, there are 5 processes, namely:

a) Enter patient data, The registration section checks whether the patient inputs the patient index.
b) Update patient data, Whether the patient has been examined or not, if not, create a new patient index number then enter the patient data.
c) Patient examination, After the patient waits his turn and receives a call, the patient enters the examination room. The data from the inspection results is recorded and then given to the SIMPUS admin to be processed into a report.
d) Taking medication, Taking the medicine is done after the patient has been examined and received information about the diagnosis of the disease and the type of medicine that must be taken, then taking the medicine at the pharmacy and then the patient goes home. The drug data that comes out is recorded and then submitted to the admin to be processed into a report.
e) Reporting, Reporting is carried out by the admin of the reporting section to the leadership of the community health center.

3. DFD Level 1

Depicting a large circle that represents the small circles within it, is a breakdown of the context diagram to the zero diagram. The following is the DFD Level 1 of the patient data information system at the community health center.

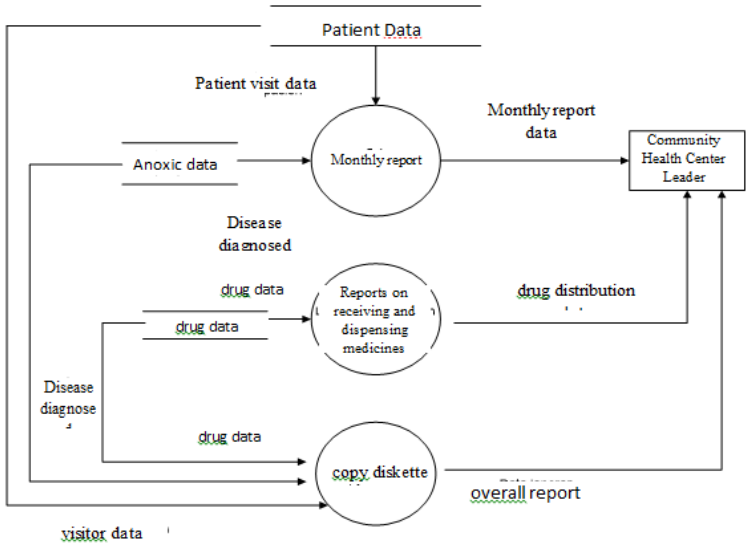

Figure 5 DFD Level 1 reporting process

This level 1 diagram depicts the reporting process, namely process 5.0 from DFD level 0, DFD level 1 consists of 3 processes, namely:

a) Monthly report process 1. In the process of creating monthly patient visit reports, data is obtained from patient data and disease diagnosis data.
b) Process of receiving and reporting drug expenditure. This process functions to create drug distribution data reports, both data on drugs issued and those received from the health service.
c) Copy process to diskette. This process is carried out if the report is provided in softcopy form by saving it on a diskette.

4. ERD (Entity Relationship Diagram)

A diagram depicting database modeling that is used to produce a conceptual schema for a system's semantic data type or model. The following is the ERD from the health center information system.

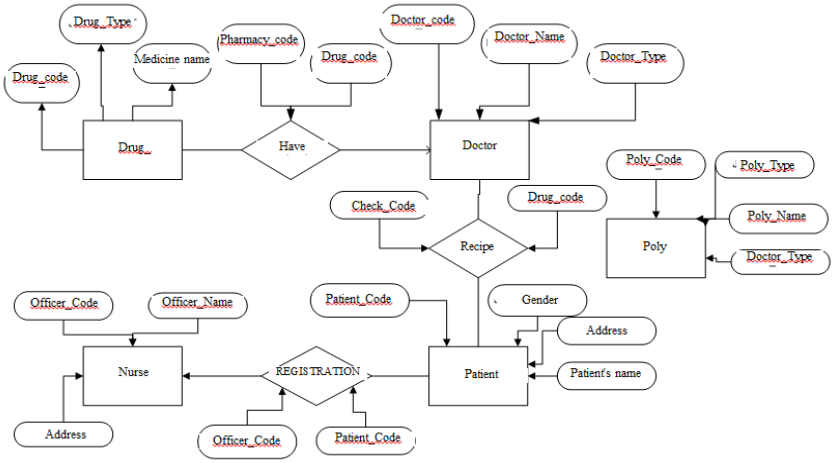

Fig. 6 E R D

B. Application System Design

1) Design the login form
   The first process to open this system is by entering the login form. Users must enter their username and password to determine the distribution of user access rights.
2) Designing the patient data menu
   After logging in, go to the patient data menu, there is data on patients who have been registered at the Sukaraja Health Center, there you can find out who has come to the health center.
3) Designing the Doctor Data Menu
   In this menu, there is data on doctors at the Sukaraja health center.
4) Designing the Drug Data Menu
   The design of this medicine menu aims to make it easier for community health center officers to check prescriptions that have been given to doctors for patients.

C. System implementation

This is a stage of system implementation that will be carried out if the system is approved, including the program that has been created at the system design stage so that it is ready for operation.

1) Implementation of the login form. The login form is used to enter the patient data menu by entering the user name and password. Login can only be done by an admin or administrator.
2) Implementation of the patient data menu. The patient data menu appears after successfully logging in to the health center information system.

Implementation of the Doctor Data Menu
In the doctor's data menu, there is the doctor's name, disease specialist, gender, address, and doctor's telephone number.

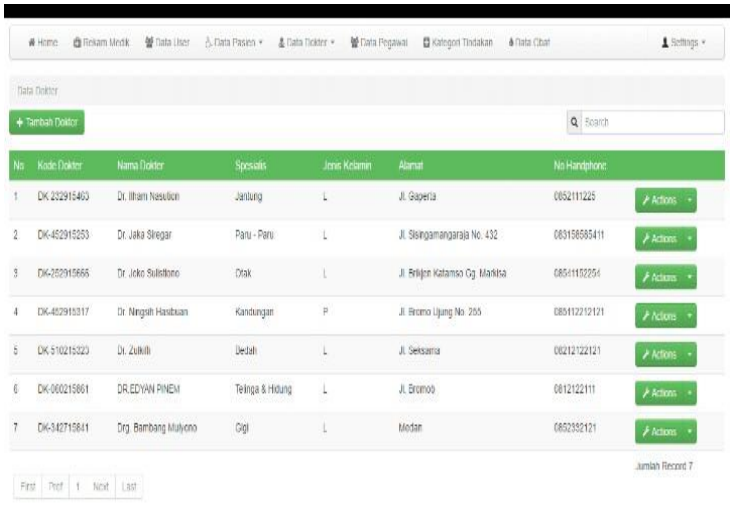

Figure 7. implementation of the doctor's data menu

Implementation of the Medication Menu
This menu contains the patient's name, prescription name, and prescription details. This system can make it easier for community health center officers to check drug prescriptions that have been given to doctors

V. DISCUSSION

From the discussion regarding designing website-based health centers. The author concludes the entire discussion as follows:

a) This website design system application is useful in information media as a form of technology and information development.
b) The design of the website application at the community health center was created as an alternative solution to problems in the existing systems at the Sukaraja community health center.
c) By creating this application, patients can easily see information regarding existing doctors' schedules as well as information related to health centers
d) It is hoped that this website will help improve the effectiveness and efficiency of community health center services.
e) Computerization as an alternative solution to solving existing problems in community health centers.

VI. CONCLUSIONS

Some conclusions that the author can draw after completing the Sukaraja website-based health center management information system are as follows:

1) With this website-based community health center management information system application, data at the Sukaraja Community Health Center is now integrated through a database so that it can process data effectively and efficiently and help provide good services.
2) With the application of this website-based community health center management information system, the reports shown to management will be more accurate.

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