

DEVELOPMENT OF WEB-BASED MEDICAL RECORD INFORMATION SYSTEM AT PUSKESMAS SUWAWA

Sri Novita Bumulo
*Information System
President University
Cikarang, Indonesia*
sri.bumulo@student.president.ac.id

Abstract-This project addresses problems and provides ideas and suggestions for problems that occur at the Suwawa Health Center, because it is known that each Health Center has a medical record for each patient. After conducting research at the Suwawa Community Health Center, they experienced problems in managing medical records because they still used handwriting which might cause medical records to be scattered or possibly lost. will be required to maintain handwritten medical records. For this reason, the creation of a web-based medical record information system will greatly assist and facilitate health services in managing or storing patient medical records, it can also make it easier to view the entire medical record history of every patient who has been treated at a Public Health Center. Apart from that the Suwawa Health Center does not yet have access to information that is given to local people online, therefore through this system it provides information for the community regarding services and the time needed by the community to seek treatment at the Suwawa Health Center.

Keywords- Development Web-Base, Medical record, information system

I. INTRODUCTION

Medical officers in carrying out health services are required to make medical records in accordance with Article 47 paragraph (3) of Law Number 29 of 2004 concerning Practice, it is necessary to re-regulate the implementation of medical records with regulations from the minister of health. According to the Regulation of the Minister of Health Number 269/Menkes/Per/III/2008 concerning medical records, it is explained that medical records are files that contain notes and documents regarding patient identity, examination, treatment, action and other services to patients in health care facilities.

Medical records are patient care records in every Health center and Hospital. Problems with

medical records are common because they still use the manual way of making and managing medical records (handwritten) so that it takes time and can result in scattered documents that are still being managed manually because the documents are still in hard copy form.

Puskesmas is the closest health service provider to the community, showing that more than 40% of Indonesia's population utilizes health services at the Puskesmas. This shows that the Puskesmas is the provider of health services for the first level or closest to the community in the form of physical examinations and direct health services to the community. All these activities are then documented in operational books and medical record books. The patient operational book will be useful as public health service data. The patient's medical record book is also used for recording and storing patient examination data in all health service units in the Puskesmas. [1]

One of the puskesmas that has medical record services is the Suwawa puskesmas. The Puskesmas suwawa is one of the community health centers in Suwawa district Gorontalo city, the Community Health Center itself is to realize healthy behavior, awareness and ability to live healthy in the community, the reason the author chose the Puskesmas suwawa as a place of research is because the making of medical records is still done manually and causes several problems, one of which is in medical record storage which will continue to accumulate as more patients are added so that more and more space is needed to store them because the medical record documents are still in hard copy form.

Based on these problems, in this study the authors developed a medical record information system application for the Puskesmas suwawa. This information system functions to make it easier to quickly record patient data, record treatment and

care history data, and make it easier to store data. The application is implemented in the form of a website to make it easier to access.

II. LITERATURE REVIEW

An information system is an organized combination of modules originating from components related to hardware, software, people and network based on a set of interconnected or interacting computers to process data into information to achieve goals.

A. Medical Record

Medical records are facts related to the patient's condition. Past and current medical history and treatment written by the health professional who provides services to these patients.[4]

Article 46 paragraph (1) of the Medical Practice Law. What is meant by medical records are files that contain notes and documents concerning patient identity, examination, treatment, actions and other services that have been provided to patients. In the Regulation of the Minister of Health Number 749a/Menkes/Per/XII/1989 concerning Medical Records it is explained that medical records are files that contain notes and documents regarding patient identity, examination, treatment, action and other services to patients in health care facilities. updated with Permenkes Number 269/MenKes/Per/III/2008 concerning Medical Records is a file containing notes and documents about patients containing identity, examination, treatment, other medical procedures at health care facilities for outpatient and inpatient care, both managed by the government and the private sector.

B. Puskesmas

According to the Regulation of the Minister of Health of the Republic of Indonesia Number 75 of 2014 concerning Community Health Centers, it is explained that Community Health Centers are health service facilities that carry out public health efforts and first-level individual health efforts, with more priority on promotive and preventive efforts to achieve the highest degree of public health. in their working area.[5] Therefore the puskesmas is a spearhead of health services because it is in front of those responsible for administering public health, as well as in medical services.

C. Website

In the current era, technology is developing rapidly, this is because the mindset of the community is increasingly advanced and developing quite rapidly, to meet the needs of the community in terms of information, science, and the world of work requires the development of web applications so that people will continue to move and innovate along

with the times. The web is a network that allows many people to convey or receive data / information easily and quickly using the internet.

According to Pontoh and Lumenta (2016: 25), "a website is often also called a web, which can be interpreted as a collection of pages that display various kinds of text information, data, still or moving images, animated data, sound, video or a combination of all of them, both static and dynamic, which form a series of interrelated buildings where each is connected by a network of pages or hyperlinks."

So in conclusion, the web is a service that can be used by computer users connected to the internet, in the form of text, images, sounds and videos that are interactive and have the advantage of connecting (linking) one document to another (hypertext) which can be accessed through a browser.[6]

D. Related Work

System Medical Record Klinik Saffira Sentra Medika Batam is an information system that is created in order to facilitate the management of medical records in the clinic. the development of this system uses the waterfall method, the features contained in this system such as login, add patient, add medical record, and list of medical personnel.[7]

III. SYSTEM ANALYSIS

This final project aims to create and develop a system that will help Puskesmas Suwawa. Previously, Puskesmas Suwawa only used paper to manage medical records, namely from patients visiting for treatment and recording medical records. This system helps employees to facilitate data collection of visiting patient data, recording medical records in the doctor's office, and storing medical records which over time are increasing. In addition, this system helps minimize the time from patients waiting to arrive at the employee in making patient data or finding patient data, helps the security of medical records in storing medical records so as to avoid loss/scattered patient medical records, helps avoid errors in inputting medical record numbers such as duplicate medical record numbers and also for the community itself can contact and get information about the puskesmas suwawa widely.

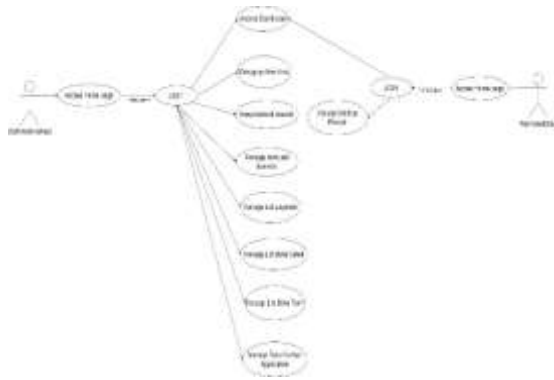


Figure 3. 1 Use case diagram of the website

IV. SYSTEM DESIGN

The user interface (UI) is the part of the experience with which the user interacts. User interface design is more than simply colors and shapes it is about providing the user with the tools they need to achieve their goals. Interface are critical in website systems since practically every website has a user interface. A bad interface design frustrates visitors and degrades the productivity or experience of viewing a website.[8]

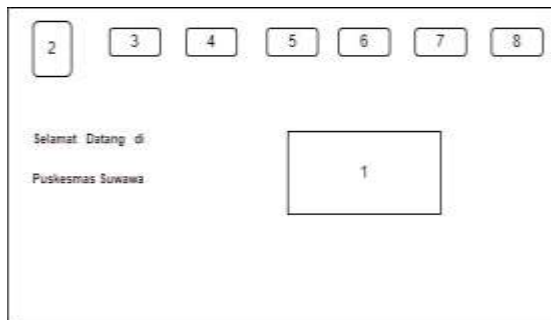


Figure 4. 1 Interface Design Homepage

Based on Figure 4.1 above, it can be seen that there are 8 components contained in the homepage of the web. then there is label 1 for images to beautify the web, label 2 there is a logo for the web functional description of the web, labels 3,4,5,6, and 7 for information about the web, and 8 to enter the login page

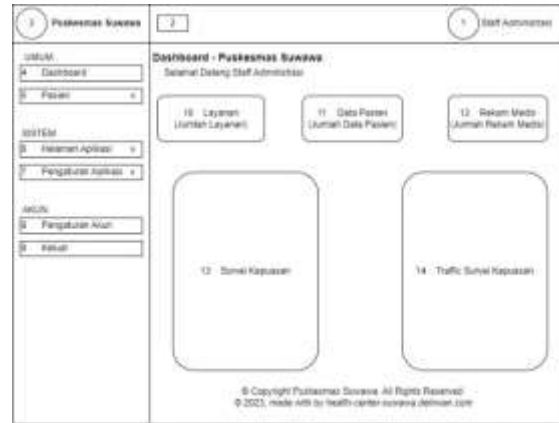


Figure 4. 2 Interface Design Dashboard Staff administrasi

Based on Figure 4.2 above, it can be seen that there are 14 components contained on the administrative staff account dashboard page. then there is label 1 for the image as the identity of the account profile, label 2 for the window button that is used to hide the component, label 3 for the logo image, and some buttons are in the sidebar: Dashboard, patient, application page, application settings, account settings, and exit. And also for the contents of the dashboard are the number of services, the amount of patient data, the number of medical records, satisfaction surveys, and satisfaction survey traffic.



Figure 4. 3 Interface Design Data Pasien Page

Based on Figure 4.3 above, it can be seen that there are 15 components contained on the patient data page. then there is label 1 for the image as the identity of the account profile, label 2 for the window button used to hide the component, label 3 for the logo image, and some buttons are in the sidebar: Dashboard, patients who have content: Patient data and medical records, application pages, application settings, account settings, and log out. And also for the contents of the patient data page there are labels for adding data, search buttons, data change buttons, and delete data. and also displays columns that must be filled in if you are going to add patient data and examples of patient data that has been inputted.

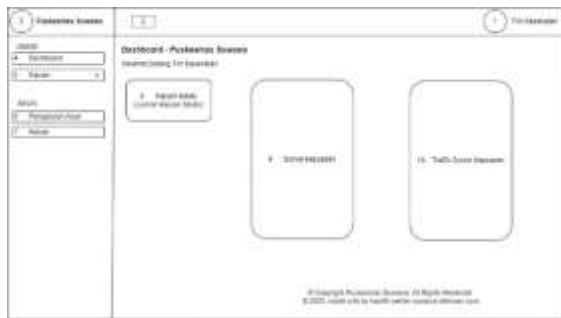


Figure 4. 4 Interface Design Dashboard Tim Kesehatan

Based on Figure 4.4 above, it can be seen that there are 10 components found on the health team account dashboard page. There is label 1 for the image as the account profile identity, label 2 for the window button used to hide components, label 3 for the logo image, and several buttons on the sidebar: Dashboard, patient, account settings, and exit. And also for the contents of the dashboard are the number of medical records, satisfaction surveys, and traffic satisfaction surveys.



Figure 4. 5 Interface Design Rekam Medis Tim Kesehatan

Based on Figure 4.5 above, it can be seen that there are 15 components on the medical record page for the health team account. For this reason, there is label 1 for the image as the identity of the account profile, label 2 for the window button which is used to hide the components contained in the sidebar, label 3 for the logo image, and several buttons located at the top. The sidebar is Dashboard, Patients which contain: medical records, Account Settings, and Logout. and also which for this page displays several labels 9 for the button to select patient data that has been inputted but does not yet have a medical record, and vice versa for labels 10 this is used to make it easier for the health team to store medical records, besides this page also has labels 11 for the search button, label 12 is to view/open medical record documents while deleting previously created medical record sections, label 13 is to provide notifications to patients for their next visit, label 14 is to create patient medical record records, and label 15 is to download data patient in the form of a barcode and medical records in pdf form if needed. So the health team account focuses on managing medical records based on patient data that has been input by the administrative staff

account. The health team can input, delete, search and send notifications to patients.

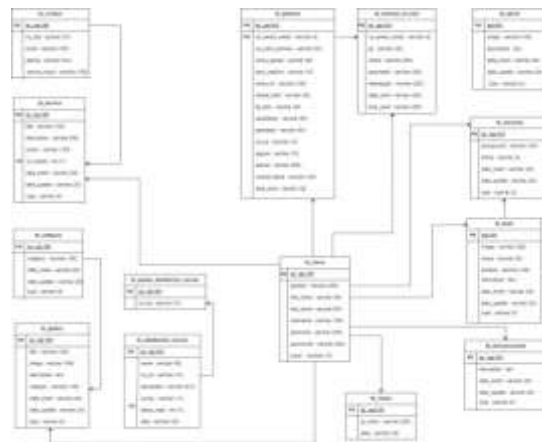


Figure 4. 6 Entity Relationship Diagram

V. SYSTEM IMPLEMENTATION

Implementation of the web user interface will be explained in this chapter. some of the user interface features implemented on this website are: Home page, Login, Administrative Staff account Dashboard, Patient Data Page, Add patient data, Medical Records Administrative Staff account page, Banner Carousel page, Add data carousel page, Service Page, Add Service Data, Gallery Page, Add gallery category data, Add Gallery data, Team Page, Add team data, Application Contact Info Page, Change Contact Data, Info About Application, Add data about, Administration staff Account Settings Page, Change staff account profile administration, Change administrative staff account passwords, Health team account Dashboard, Health Team account Medical Record Page, Create medical record visits, Health team account Settings Page, Change health team account profiles, and change health team account passwords.



Figure 5. 1 User Interface Homepage

The features displayed on this page are information related to the Puskesmas Suwawa for anyone accessing this website. the information provided is: puskesmas employees, services,

puskesmas profiles, provides a satisfaction survey page for the community regarding puskesmas services, and medical records for the button to the login page, but to access the medical records themselves can only be used by those who are obligated.



Figure 5. 2 User Interface Dashboard Staff Administrasi

The features displayed on this page are the staff administrasi account dashboard. The dashboard displays the number of services, the number of patient data, the number of medical records, the display of satisfaction surveys, and the satisfaction survey traffic.



Figure 5. 3 User Interface Data Pasien Page

The features displayed on this page are patient data. Patient data is a button in the sidebar that enters from the contents of the patient button. This page displays the contents of patient data, and there are also Search, Change, and Delete feature buttons.



Figure 5. 4 User Interface Dashboard Account Tim Kesehatan

The feature displayed on this page is the health team account dashboard. Here displays the contents of the dashboard showing the number of medical records, satisfaction survey views, and satisfaction survey traffic.



Figure 5.5 User Interface Rekam Medis Page Account Tim Kesehatan

The medical record page on the health team account is contained in the patient button content. The appearance of medical records on the health team account is not much different from that on the personnel administration account, the difference is that on the health team account there is a button feature for making patient visits. Apart from that, the existing features are also the same, namely: the feature for viewing existing medical records, along with medical records and those that don't yet exist, the feature for contacting patients to visit again, the search feature, the viewing feature, and downloading pdfs.



Figure 5.6 Source Code Dashboard Number of medical records

This source code is the dashboard section for displaying and calculating the number of medical records that have been added. This is in the administrative staff & health team accounts.

VI. SYSTEM TESTING

The testing phase is an important part of the software development cycle. Ideally, when a software has been built, it is necessary to carry out a testing process to avoid system errors.

Testing is the process of finding program errors that were not discovered during programming. In general, seen from the test results, there are 3 situations, namely fault conditions, error conditions and failure conditions, error situations and failure situations. The fault condition is when an error occurs in the line of code, if this fault condition

is executed, the program will generate an error response so that the program does not carry out its functions properly.[10]

VII. CONCLUSION AND FUTURE WORK

The purpose of this final project is to assist the Suwawa Health Center in managing medical records. Previously, the medical records at the Suwawa Health Center were still managed manually using handwriting, and the system serving patients still used the manual method, such as when a patient came for treatment, the patient had to queue up first. Even in the administrative staff section, the staff must as soon as possible unload documents one by one patient data/patient medical records to submit to the health team so that they can immediately treat patients, therefore this system will make it easier to minimize time and use of paper. In addition, this system provides access to information for people who wish to seek treatment at the Suwawa Health Center regarding the time and what services are available, staff, address, and contact information. This is to make it easier for patients before visiting the Suwawa Health Center. all stored data will be stored in the database and this system will only be used via the internet.

Even though this system will run according to expectations, it still needs to be developed in future work, such as:

1. The system can be implemented into a mobile application
2. Added a feature that connects with the pharmacy section

REFERENCES

- [1] T. Saputra and E. Kurniadi, "SISTEM INFORMASI REKAM MEDIS PASIEN RAWAT JALAN DI UPTD PUSKESMAS KUNINGAN BERBASIS WEB," vol. 13, 2019, [Online]. Available: <https://journal.uniku.ac.id/index.php/ilkom>
- [2] J. Mantik, P. Putri Amalia, A. Hendri Hendrawan, and F. Riana, "2022) 1449-1458 Accredited," *J. Mantik*, vol. 6, no. 2, pp. 1449–1458, 2022.
- [3] Aceng Abdul Wahid, "Analisis Metode Waterfall Untuk Pengembangan Sistem Informasi," *J. Ilmu-ilmu Inform. dan Manaj. STMIK*, no. November, pp. 1–5, 2020.
- [4] A. H. Hasugian, M. Fakhriya, and D. Zukhoiriyah, "Volume 6 ; Nomor 1," *Januari*, vol. 6, no. 1, pp. 221–234, 2023, [Online]. Available: <https://ojs.trigunadharma.ac.id/index.php/jsk/index>
- [5] I. F. S. Nasution, D. Kurniansyah, and E. Priyanti, "Analisis pelayanan pusat kesehatan masyarakat (puskesmas)," *Kinerja*, vol. 18, no. 4, pp. 527–532, 2022, doi: 10.30872/jkin.v18i4.9871.
- [6] D. D. Jantce TJ Sitinjak, . Maman, and J. Suwita, "Analisa Dan Perancangan Sistem Informasi Administrasi Kursus Bahasa Inggris Pada Intensive English Course Di Ciledug Tangerang," *Insa. Pembang. Sist. Inf. dan Komput.*, vol. 8, no. 1, 2020, doi: 10.58217/ipsikom.v8i1.164.
- [7] F. M. Raihan, "Perancangan Sistem Informasi Rekam Medis Pada Klinik Saffira Sentra Medika Batam," *J. SNATi*, vol. 1, pp. 47–56, 2021, [Online]. Available: <https://journal.uui.ac.id/jurnalsnati/article/view/20066/11409>
- [8] I. Rochmawati, "Iwearup.Com User Interface Analysis," *Visualita*, vol. 7, no. 2, pp. 31–44, 2019, doi: 10.33375/vslt.v7i2.1459.
- [9] Suparyanto dan Rosad (2015, "RISKI Entity Relationship Diagram & Praktik DBMS," *Suparyanto dan Rosad (2015*, vol. 5, no. 3, pp. 248–253, 2020.
- [10] Sri Anardani, "Analisis Pengujian Sistem Informasi Website E-Commerce Manies Group Menggunakan Metode BlackBox Functional Testing," *Prosiding.Unipma.Ac.Id*, pp. 1–4, 2019, [Online]. Available: <http://prosiding.unipma.ac.id/index.php/SNHP/article/viewFile/768/740>