Medical Record Laboratory Electronic Information System Design Analysis

Ayu Wijaya*[1], Andi Muh.Adam Aminuddin[2], Nelly Nugrawati[3]
[1,2,3] Stikes Amanah Makassar
e - mail :*[1]ayuwijayadam@gmail.com , [2]andimuhammadadam546@gmail.com ,
[3]nellyamanah@gmail.com

Abstract

This study aims to create a system design information record medical electronic where is the recording system medical electronic is system that provides information completeness of patient data and record medical During maintenance and storage all patient data. System management Archives in the Amanah Stikes Laboratory Record Medical not yet computerized. Patient data entry still uses paper, while recording and storage record medical done manually. Study this aim for making related apps with system information record medical electronic on Amanah Stikes laboratory. In research descriptive this we use approach qualitative, what d do on guarantor answer laboratory staff record medical. Based on from result study with doing questionnaire and observation, therefore then Relevant data is required with recording record medical take care road for example number record medical information, patient data info, and disease data info, in designing a system information record medical electronics.

Keywords — system, information, record medical, electronic

INTRODUCTION

In this study, which was allocated precisely in Amanah Stikes Makassar, which is a wrong one institution education that organizes study programs Information Health that prints candidate recorder medical, which aims to equip the student to have Skills in the field knowledge, value and norm in operating profession recorder medical wrong the only one method that is equipped para student with competence recorder through practice work field (PKL) in the laboratory record medical, hospital, and health center.
System information records medical is something system that provides information on patient data report and records medical During maintenance and storage all patient data, so help in large patient data processing by fast, accurate and efficient.

Based on results studies Preliminary did researcher on November and December 2021 at the Amanah Stikes Laboratory, known that system management records medical moment this not yet fully computerized where is the patient data input process still using paper media moment recording medicine, files, and storage media did manually with keep or archive files on rack storage. This thing could influence quality or performance record medical and quality service by overall in the Amanah Stikes laboratory Record Medical. This thing compares backward with reality on the ground that moment this almost all facility health already use system computerized in the process of archiving patient data.

Before students enter world work real and adapt to conditions at home sick, students already capable and used to use technology computerized patient data archiving. Adjustment student in Case this needs to be done through field education. Several method adaptations could be realized in shape practice in the Amanah Stikes Laboratory Record Medical.

From the background behind that, the researcher is interested in designing system information record medical electronics. With the existence of application, this expected could add knowledge and experience student Recorder Health and informatics Health inpatient data archiving with use computerized system as well as could Upgrade quality service in the laboratory Record Medical Amanah Stikes Makassar.

RESEARCH METHODS

This research certainly requires research methods used to research to be able to answer the problems being studied and the research objectives. The research will usually be preceded by careful planning that follows a series of guidelines that are arranged logically and systematically, to get results that represent the real situation and can be justified.

System Analysis
In this process the researcher analyzes by making a plan for the Medical Record Information System at the Amanah Clinic Stikes using UML (Unified Modeling Language) modeling with the following steps:
a. Determining Initial Planning
    At this stage, a plan is made regarding what activities will be carried out along with the time required for each activity.
b. Perform Process Analysis
    At this stage an analysis of the processes that occur in the Amanah Stikes Medical Record Information System.
c. Analyzing Information Systems Used Today
    At this stage, an analysis of the information systems and technology currently used to support business processes in the Amanah Stikes Medical Record Information System.

RESULTS AND DISCUSSION

Results
Here's the system view processing, archiving information a data medic at the research location Laboratory Amanah Stikes Makassar.
Context Diagram (Here we can see the context diagram design)
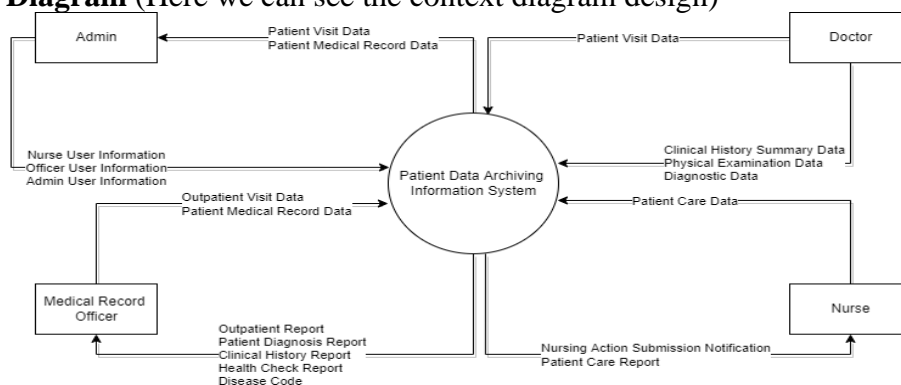

Figure 1. Context Diagram

From the results of studies conducted by investigators on respondents, it was found that the electronic Medical Record Information system at the Amanah Stikes laboratory was still not fully computerized, which for the patient data input process was still using paper media while recording medical records and storage media. This is done manually by storing and archiving files on the shelves or in the available storage cabinets.

Therefore, the results of research conducted by investigators on respondents obtained a result of a patient data archiving form, in an outpatient form that was following what was expected, namely the implementation and evaluation form of nursing actions, a summary of clinical history, medical history, and physical examination.

Making a supporting design for an electronic medical record information system at a research location centered in the Amanah Stikes laboratory.

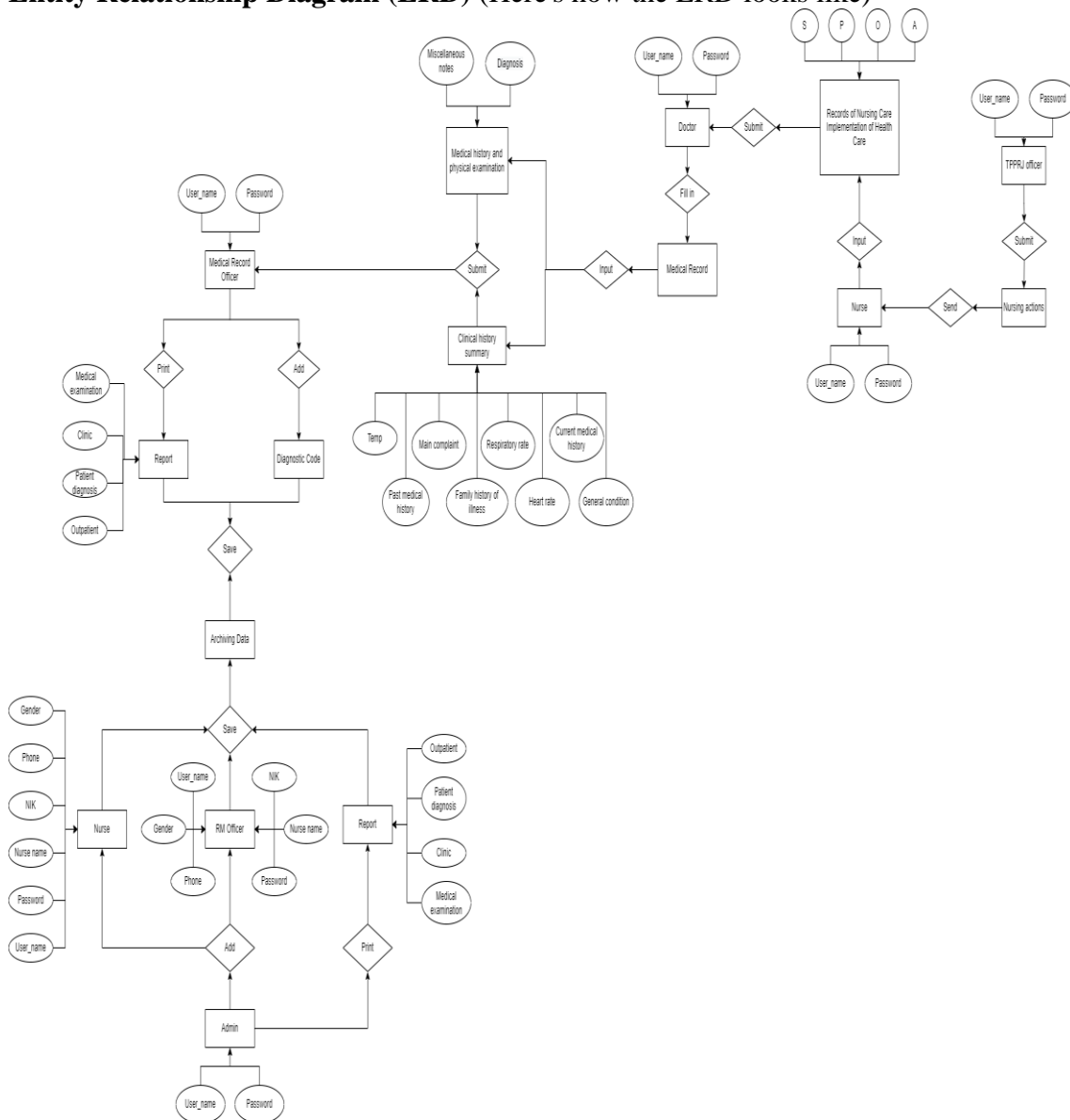**Entity Relationship Diagram (ERD)** (Here's how the ERD looks like)

Figure 2. ERD

Relationship Table
Tables related to this patient data archive include outpatient schedules, doctor schedules, polytechnics, schedule tables. The following is the contact table in the patient data archiving application:
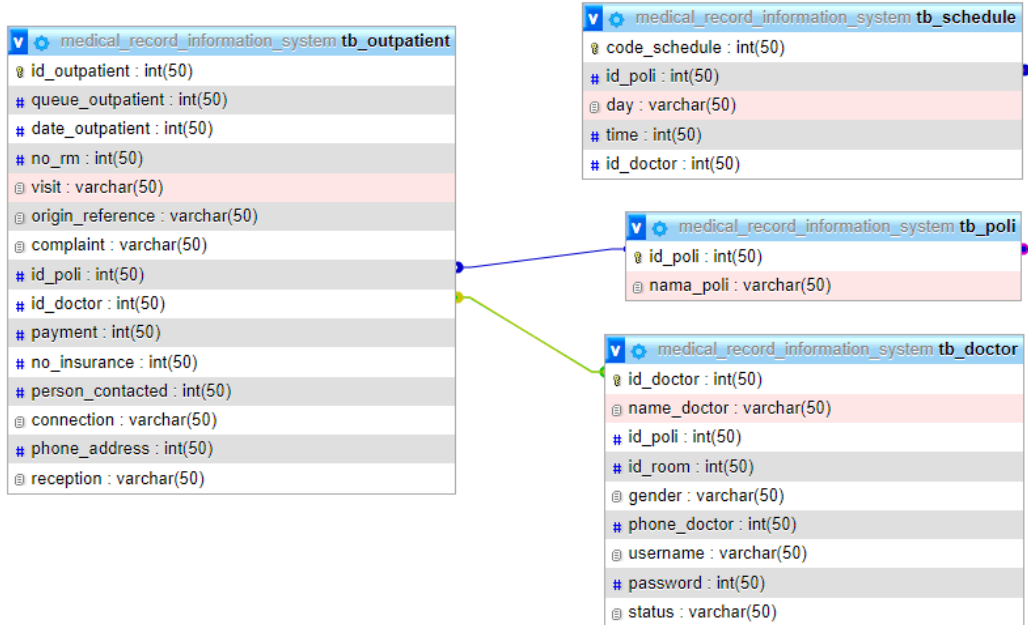

Figure 3. Relationship Table

Interface display modeling
As for the modeling of the designed system interface, there are four users involved. These users or users have different interaction characteristics with different systems and have different information needs as follows:
a.Nurse
b.Doctor
c. Filing officer
d.Admin

Building an Electronic Medical Record Information System in the Laboratory at Amanah Stikes. The creation of an Electronic Medical Record information system is carried out by translating the design firm into a code or machine-readable language. The programming language that will be used is PHP.

Testing the Application of the Amanah Stikes Electronic Medical Record Information System. The trial of the Electronic Medical Record information system was carried out using the black box test method.

Discussion
Identify

Amanah Stikes Electronic Medical Record Information System
We need to know that the Electronic Medical Record Information System in the medical record laboratory still uses paper media as storage material, the existing system has not been able to record structured and detailed data. This will reduce the level of efficiency in terms of finding the required patient data, as well as making patient reports. This web-based application can be used by the Medical Record Laboratory in the hope that it can help speed up the process of retrieving patient data, as well as making patient reports.
This electronic medical record information system can increase the level of efficiency in searching patient data and simplify report generation.

Input Data
The data that is processed in the electronic medical record information system is sourced from the format of implementation and evaluation of nursing actions, a summary of disease history, disease history, and physical examination in outpatient medical records at the Amanah Stikes Medical Record Laboratory.
The contents of the outpatient medical record data at least contain data on Patient identity; Date and time; The results of the anamnesis, minimal patient complaints, and disease history; The results of the physical examination and medical support; Diagnosis; Management plan; Treatment and/or action; Other services that have been provided to patients; For dental cases, the patient is provided with a clinical odontogram; Action approval.

Processed reports
The reports that are processed in the filing section are generally patient data reports and medical records during treatment. Outpatient data archiving reports can also be made based on the needs that exist in the health care facility.

a. Nursing action reports are reports in the form of the number of patients who are given nursing actions by nurses to patients who come to visit or seek treatment at outpatient facilities within a certain time.
b. Outpatient reports are reports in the form of outpatient visits at outpatient installations.
c. A patient diagnosis report is a diagnosis report to find out the number of new and old cases after providing health services in outpatient installations.
d. d. Clinical history report is a report which is a summary of the clinical history of patients who have performed services in outpatient installations.
e. Health examination reports, namely report in the form of chief complaints, disease history, and vital signs given by doctors in outpatient installations.

Designing System Information Record Medical Electronic
The design of the Electronic Medical Record information system is done by translating the design form into PHP programming.

Discussion
Identify

a. Amanah Stikes Electronic Medical Record Information System. Electronic Medical Record Information System in medical record laboratories still uses a manual process of paper media as storage material, the existing system has not been able to record structured and detailed data. This will reduce the level of efficiency in terms of finding the required patient data, as well as making patient reports. This web-based application can be used by the Medical Record Laboratory in the hope that it can help speed up the process of retrieving patient data, as well as making patient reports. This electronic medical record information system can increase the level of efficiency in finding patient data and simplify report generation.

b. Data to be entered,

c. The data that is processed in the electronic medical record information system is sourced from the implementation and evaluation format of nursing actions, a summary of disease history, disease history, and physical examination in outpatient medical records at the Amanah Stikes Medical Record Laboratory; Date and time; The results of the anamnesis, minimal patient complaints, and disease history; The results of the physical examination and medical support; Diagnosis; Management plan; Treatment and/or action; Other services that have been provided to patients; In the case of the patient's teeth, a clinical odontogram was provided.

Designing an electronic medical record information system in the Amanah Stikes laboratory

Context Diagram
The context diagram is a diagram that describes the relationship of data flow between an application and the users or officers associated with the application. According to Handayani, context diagrams are used to provide various information, the stages of the process will be explained through context diagrams. This is under the context diagram that has been explained by the researcher where the context diagram created can provide and explain the stages of the existing process in the outpatient data archiving information system.

Entity Relationship Diagram (ERD)
The Entity-Relationship Diagram (ERD) is a model used to describe identifying entities that describe data and relationships between data.
According to Pramana, entities are called objects and the relationships they have are called relations. An entity is unique and has attributes that distinguish it from other entities.
ERD made in the outpatient data archive information system in theory. where each entity is related to the other and forms its cardinality.

Relationship Table
The table relation is the relationship between a table and several other tables. This relationship shows the relationship between tables to form a data network in an information system. The relationship between files is a combination of files that have

the same primary key so that these files become a single entity that is connected by a shared key. The data elements are grouped into a single database file along with the entities and their relationships. The relational table created for the design of an outpatient data archiving information system is following the theory above where each table only has one primary key.

Database Design
As for their initial stage, the form of a notification system for outward patient data is to create a database. The database is an important element as a place to store user data, diagnostic data, nurse data, clinical history data, and so on. In the database, there are various schedules for storing data according to the needs of users of the external patient data collection notification system. Creating a database on this external patient data acknowledgment system using MySQL with the XAMPP application.

The database created in this electronic medical record notification system includes a user schedule created to store master data for filing employees, nurses, doctors, and administrators who are registered in the electronic medical record notification system, a diagnostic schedule that serves to store diagnostics. data, the nurse's schedule functions to store nurse master data, the clinical history schedule functions to store patient clinical history data, the treatment schedule functions to store patient care action data, the medical record schedule functions to store patient medical record data, the disease history schedule and physical examination function to keep the history of the disease and physical examination of the patient.

Interface display
The interface display is needed in making this electronic medical record information system to streamline the user interface and how users can interact as easily and efficiently as possible in using the interface on a computer screen.
In this electronic medical record information system, four users can interact with each other, namely nurses, doctors, administrators, and outpatient filing officers. The four users have different roles. The nurse will accept or reject the patient's submission and enter the nursing action. Doctors enter clinical history data, disease history data, and physical examination. The filing clerk enters the patient's diagnosis code and prints the report results. Meanwhile, the admin can login to the system to give access rights to officers.
These users have interaction characteristics with different systems and have different information needs as follows:

a. The nurse needs scenarios, namely managing patient submissions, performing nursing actions, and patient care reports.

b. Doctors need scenarios, namely managing clinical history data, managing disease history data, and physical examinations.

c. Scenarios for filing clerks' needs are managing diagnosis code data, printing outpatient reports, printing patient diagnosis reports, printing medical history reports, and printing health check reports.

d. Admin needs scenarios, namely managing user data, admins can view patient data, print outpatient reports, print patient diagnosis reports, print disease history reports, print health check reports.

Making

The creation of an electronic medical record information system is carried out by translating the form design into a code or machine-readable language. In the patient data archiving information system designed for use in the Amanah Stikes Laboratory, the writing of the program code is following the writing rules attached to the theory.

Trial Process

The system testing stage is one of the stages in the system development life cycle, where this stage is a system test so that later in its use it will no longer experience errors. System testing is also carried out to determine the extent to which the system designed can overcome the problems that have been analyzed previously.

CONCLUSION

1. The data that is processed by the electronic medical record system is data that is processed by the information system in the form of implementation format forms, evaluation of nursing actions, a summary of clinical history, medical history, and physical examination.
2. In making the system design, UML (Unified Modeling Language) modeling is used.

REFERENCES

Arifin, N. Y., Veza, O., & Jusman, I. A. (2021). Analisis Dan Perancangan Arsitektur Penerimaan Karyawan Jne Dengan Metode Profile Matching. *Jr: Jurnal Responsive Teknik Informatika*, *5*(02), 19-28.

Purnomo, Y. J., Harto, B., & Setyabudhi, A. L. (2022). Preliminary Analysis Of Blibli's E-Commerce Msme Determinants On The Use Of Cloud Accounting. *Economic And Business Management International Journal (Eabmij)*, *4*(01), 52-57.

Arifin, N. Y., Kom, S., Kom, M., Tyas, S. S., Sulistiani, H., Kom, M., ... & Kom, M. (2021). *Analisa Perancangan Sistem Informasi*. Cendikia Mulia Mandiri.

Setyabudhi, A. L., & Alfika, N. (2021). Rancang Bangun Sistem Ecommerce Berbasis Web Dengan Model Business To Consumer Pada Olshop Princess Na. Engineering And Technology International Journal, 3(01), 15-25.

Hakam, F. (2018). Integrasi Electronic Medical Record (Emr) Dengan Laboratory Information Systems (Lis) Dan Picture Archiving And Communications System (Pacs). *Jurnal Manajemen Informasi Kesehatan Indonesia (Jmiki)*, *6*(2), 87-94.

Ridwan, F., & Sari, I. (2021). Desain Rekam Medis Elektronik Berbasis Web Di Poliklinik Rehabilitasi Medik Rsupn Cipto Mangunkusumo Jakarta. *Jurnal Akrab Juara*, *6*(4), 89-101.