DESIGN OF INFORMATION SYSTEM FOR MAPPING TOP 10 DISEASES BASED ON FACILITIES AND HEALTH CARE PERSONNEL AT XYZ HOSPITAL, BEKASI

Annisa Syarifatul Maula
Politeknik Piksi Ganesha
Bandung, Indonesia

Yuda Syahidin
Politeknik Piksi Ganesha
Bandung, Indonesia

Abstract. This study aims to assess the information system for tracking the top 10 diseases. The research employs a qualitative approach, with data collected through observation, interviews, and literature review. The study identified several issues in the current information system for top 10 outpatient diseases: reports on these diseases are still compiled manually rather than digitally, resulting in frequent delays; diagnoses written by nurses or doctors are sometimes difficult to read, forcing staff to guess the correct diagnosis; and disease diagnoses are not standardized with ICD-10 codes. To address these issues, the following solutions are recommended: hospitals should develop a computerized information system for the top 10 diseases to improve hospital operations, particularly for streamlined reporting; diagnoses should be codified using ICD-10 for consistency and accuracy; reporting staff should complete reports on the top 10 diseases promptly to avoid delays; and hospitals should provide training to enhance the quality of human resources.

Keywords: *Diseases Information System, Disease Tracking, System Qualitative Research*

Introduction

The ever-increasing pace of development of technology has led to increasingly fierce business competition in the world of medicine or hospitals. This requires that every hospital be able to manage data on all activities carried out in order to provide quick and precise information on the basis of which decisions can be made.

A hospital as a public service institution needs an information system that is accurate, reliable and sufficient to improve its services to patients. With a wide range of services, many complex problems naturally arise in the service delivery process in the hospital. The many variables in a hospital also determine the speed of information flow required by users and the hospital environment.

The Minister of Health's Regulation No. 269 of 2008 states that every healthcare infrastructure is obliged to maintain medical records. Medical records are files that contain notes and documents related to patient identity, diagnostic results, treatment, procedures and other services offered to patients in the healthcare infrastructure. Organizing medical records at home

The disease includes the patient's inclusion in the reporting. The services provided by hospital services include outpatient services, inpatient services and emergency services, which also include medical and medical support services. Outpatient services are one of the work units in hospitals that provide care to outpatients and whose service time, including all diagnostic and therapeutic measures, is less than 24 hours. Also, outpatient care is one of the dominant areas of the hospital market and is a significant source of funding, which is why efforts are always being made to improve the quality of service.

Data management in hospitals is one of the important components in creating an information system in hospitals. Manual data management has many weaknesses, in addition, its accuracy is unacceptable because the probability of errors is very high, possibly mentioning missing medical records.

The data processing for preparing outpatient reports is still done manually. To prepare outpatient reports, medical records staff must first fill out the daily census and morbidity reports

a long time and also a greater burden. This naturally leads to delays in the preparation of reports.

With the support of current information technology, manual data management is to be replaced by an information system using computers. Data management will not only be faster and easier, but also more accurate.

LITERATURE REVIEW AND RESEARCH HYPOTHESIS

A. System design

is the design of the sequence of several individual elements into a unified whole and has a function.

System design can be interpreted as:

1. Post-analysis phase of the system development cycle

2. Definition of functional requirements

3. Preparation for the design of the implementation diagram

4. Describe a system to be formed

5. In the form of a description, planning and arrangement of several components into a whole.

Configuration of a software and hardware system from a single unit.

B. Understanding database

According to several experts, there are several definitions of databases, including:

1. Janner Simarmata (2007) states that a database is a data storage structure for adding, accessing and processing data stored in a computer database. This requires a management system such as a MYSQL server.

2. Anhar (2010:45) states that a database is a collection of tables that contain data and a collection of data fields or columns. The file structures that make up a database are records and fields.

C. System Analysis

This analysis is required to evaluate and determine the problems that arise in order to find the right solution to solve them. In Harapan Mulia Hospital, the following problems occurred in the system for calculating inpatient and outpatient costs:

1. Transaction recording still uses books as archives, so errors often occur.

2. Calculating inpatient and outpatient costs is still done using a calculator and therefore takes quite a long time.

3. Reports take a lot of time to prepare, so the information presented is less up-to-date.

D. Medical records

According to Gemala Hatta (2012:73), medical records are files containing notes and documents related to patient identity, examinations, treatments, procedures and

other services provided to patients in health care institutions. According to PERMENKES No. 269/MENKES/PER/III/2008 Article 1 Paragraph (1), medical records are files containing notes and documents related to patient identity, examinations, procedures and other services provided to patients.

E. Electronic medical records

Electronic medical records are an electronic information storage system about the health status and health services received by patients throughout their lives and are stored in a way that can serve various legitimate uses" (Shortliffe, 2001).

Methodology

In conducting this research, the author used several stages or methods, including:

1. Field Research (Field Research) Field research is research conducted by directly visiting the object under study. Field research data is obtained in two ways, including:

A. Observation

Data collection techniques by conducting research and directly checking problems from the field.

B. Interviews

An interview or interview is a method of collecting data by directly communicating with parties dealing with sales problems.

2. Library Research (Library Research)

Literature is a method of collecting data by reading and studying books or notes on data processing problems, relying on expert opinions as comparison material with the actual situation.

Software Development Methods

A. Systems Approach Method

The systems approach method used in this research is to use a structured method, namely a process for implementing a sequence of steps to solve problems in the form of a program. The following are the foundation stones that support software development (Rogers S. Pressman, 2002:28):

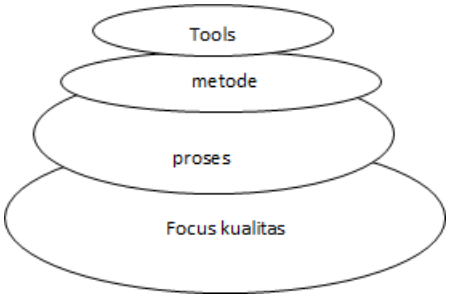

Figure 1 Software Foundation

Software development methodology (also called process model or software engineering paradigm) is a development strategy that combines processes, methods and tools.

Results and Discussion

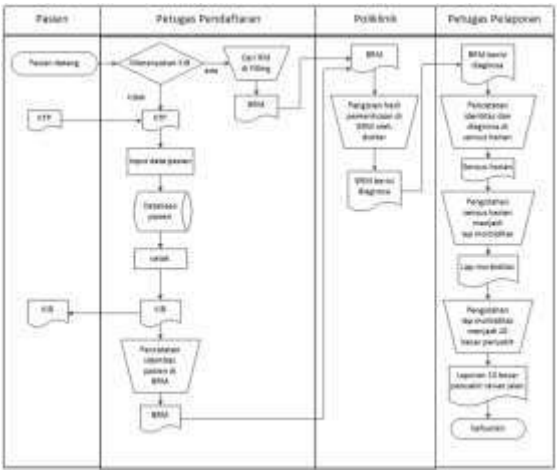

Figure 2 FlowMap of data processing for top 10 current diseases

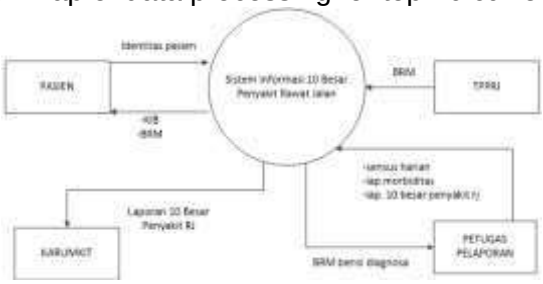

Figure 3 Running system context diagram
Table 1 System Data Dictionary That Runs

Kamus Data

Nama Tabel : Tabel Input Data Pasien	
Keterangan : Untuk menyimpan datapasien rawat jalan di database pasien	
Struktur Data :	No RM, Nama, Tanggal lahir, Jenis kelamin, Pangkat, Kesatuan, Alamat, no telp

Table 2 System Data Dictionary Running

Kamus Data	
Nama Tabel : Tabel Data Sensus HarianRawat Jalan	
Keterangan : Untuk mencatat diagnosapasien rawat jalan	
Struktur Data :	Tanggal, No RM, Nama, Umur, Jenis Kelamin, Golongan pasien (militer, PNS, keluarga militer, umum), Kesatuan, Diagnosa

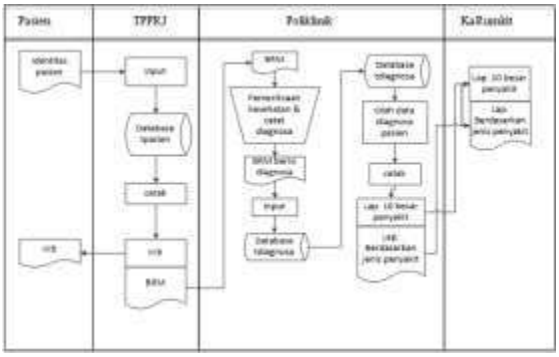

Figure 4 Flowmap of the Designed System

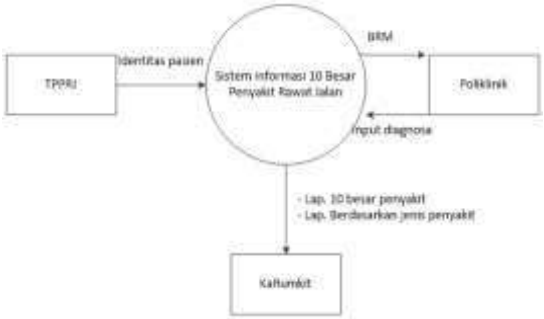

Figure 5 Designed System Context Diagram

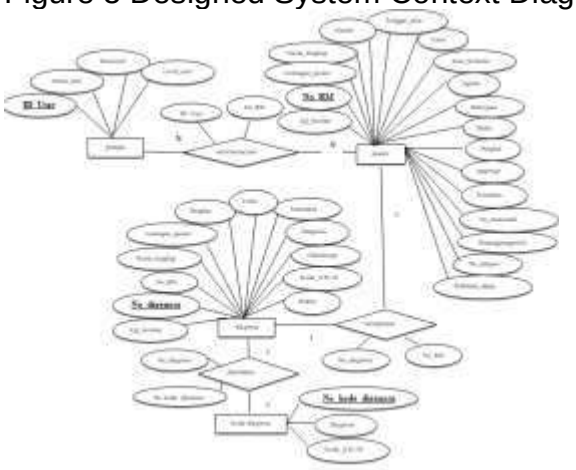

Figure 6 ERD Design

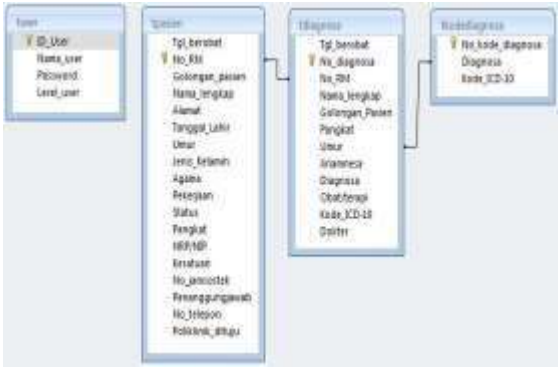

Figure 7 Table Relation Schema

Table 3 User Table Structure

Nama	Type Data	Ukuran	Keterangan
ID User	Varchar	10	Primary Key
Nama_user	Varchar	10	-
Password	Varchar	10	-
Level_user	Char	10	-

Table 4 patient table structure

Nama	Type Data	Ukuran	Keterangan
Tgl_berobat	Varchar	8	-
No_RM	Char	8	Primary key
Golongan_pasien	Varchar	20	-
Nama_lengkap	Varchar	50	-
Alamat	Varchar	100	-
Tanggal_Lahir	Varchar	20	-
Umur	Int		-
Jenis_kelamin	Char	10	-
Agama	Varchar	10	-
Pekerjaan	Varchar	30	-
Status	Varchar	20	-
Pangkat	Varchar	10	-
NRP/NIP	Varchar	20	-
Kesatuan	Varchar	20	-
No_jamsostek	Varchar	30	-
Penanggungjawab	Varchar	50	-
No_telepon	Varchar	30	-
Poliklinik_dituju	Varchar	15	-

Table 5 structure of the diagnosis table

Nama	Type Data	Ukuran	Keterangan
Tgl_berobat	Varchar	8	-
No_diagnosa	Char	10	Primary key
No_RM	Char	8	-
Nama_lengkap	Varchar	50	-
Golongan_pasien	Varchar	20	-
Pangkat	Varchar	10	-
Umur	Int		-
Anamnesa	Varchar	100	-
Diagnosa	Varchar	50	-
Obat / Terapi	Varchar	50	-
Kode_ICD-10	Varchar	10	-
Dokter	Varchar	50	-

Table 6 Structure of the Diagnostic Code Table

Nama	Type Data	Ukuran	Keterangan
No_kode_diagnosa	Char	4	Primary key
Diagnosa	Varchar	50	-
Kode_ICD-10	Varchar	10	-

Figure 8 Screen Dialog Design

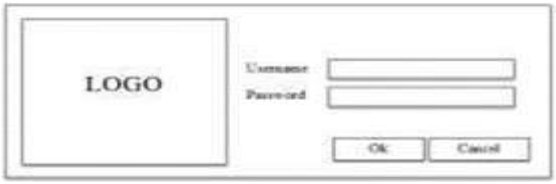

Figure 9 Login form design

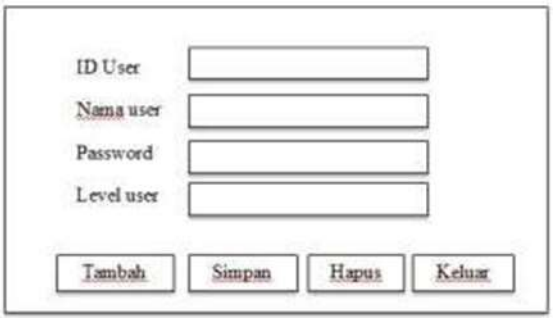

Figure 10 Design of the add user form

Figure 11 Main Menu Form Display Design

Figure 12 Design of Patient Data Input Menu Display

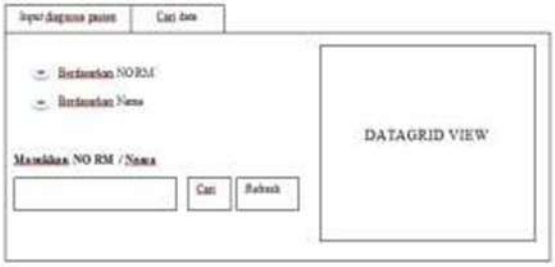

Figure 13 Design of Patient Diagnosis Search Display

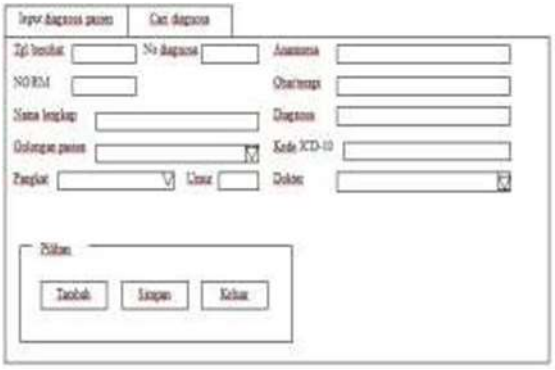

Figure 14 Design of Patient Diagnosis Input Display

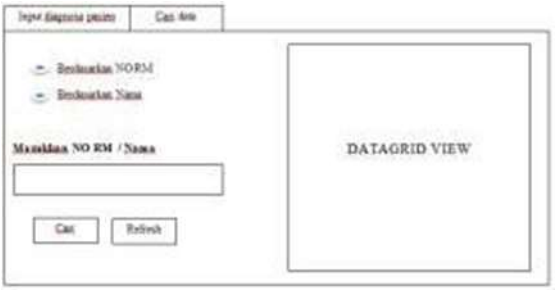

Figure 15 Design of Patient Diagnosis Data Search Display

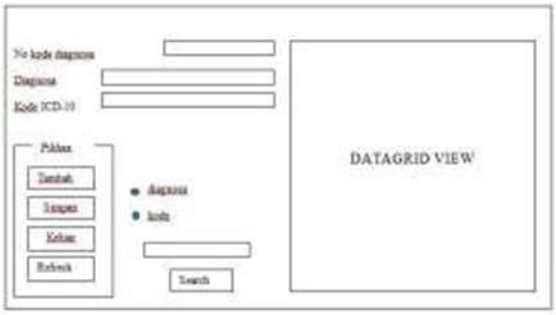

Figure 16 Design of the Diagnostic Code Form Display

Figure 17 Design of the Display Form for the Top 10 Diseases Report

Figure 18 Design of the Report Form Display based on type of disease

Figure 19 Top 10 Outpatient Diseases Report Design

Figure 20 Report Design based on disease type

Figure 21 Login view

Figure 21 Add user view

Figure 22 Patient data input display

Figure 23 Patient data search display

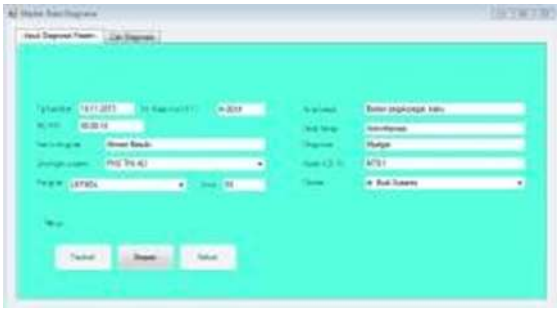

Figure 24 Diagnostic input display

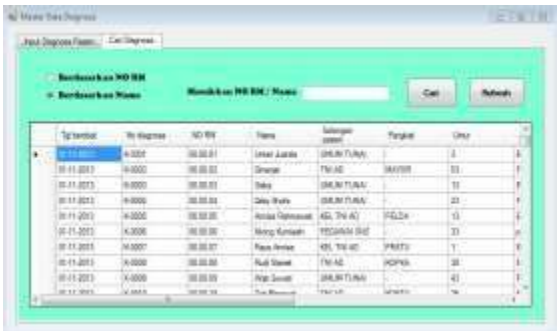

Figure 25 Display of the diagnostic search form

Figure 26 Display of the diagnostic code form

Figure 27 View of the Top 10 Diseases Report Form

Figure 28 Display of the Report Form based on type of disease

Figure 29 View of the Medical Index Card (KIB)

Figure 30 Medical Record File View

Figure 31 View of the report of the top 10 outpatient diseases

Figure 32 Report view based on disease type

Table 7 Test plan

Item pengujian	Deskripsi	Jenis pengujian
Login	Melakukan *login* kedalam sistem	*Black Box*
Form tambah user	Mengolah data pengguna sistem	*Black Box*
Form input data pasien	Mengolah data pasien	*Black Box*
Form input diagnose	Mengolah diagnose pasien	*Black Box*
Form kode diagnosa	Mengolah kode diagnose	*Black Box*

Conclusion

A. Procedure flow for designing the Top 10 Outpatient Diseases Information System in XYZ Sariningsih Hospital using multi-stage prototype method

B. The implementation of the Top 10 Most Common Diseases Information System in Hospitals created in XYZ Hospital will be implemented in the outpatient registration department and polyclinics to provide services to patients. The aim of the created system is to support the process of patient care and ensure the proper management of patient data.

Suggestion

A. The hospital needs to further develop the existing information system to support all activities in the hospital, especially reporting.

B. The patient's diagnosis should be coded with ICD-10 so that the reporting results are more accurate.

C. In order to optimize the reporting activities, especially the reports on the Top 10 Most Common Outpatient Diseases, the draft of the Top 10 Most Common Diseases Information System prepared by the author can be continued by creating or designing a program to speed up the report preparation process.

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