

WEB-BASED PATIENT CLINICAL DATA INFORMATION SYSTEM AT CLINIC PRATAMA

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ABSTRACT

The existence of information technology has now had a major influence in all fields, including the health sector. The application of information technology can be used as a solution in managing health data. One example is designing a system for registering and filling in patient clinical data at Pratama clinics. In general, the implementation of health data processing still uses manual methods which has problems from distribution officers, namely if a medical record file is missed, so it takes time to search for medical records. The research method used is a descriptive survey. The data collection method is observation and free guided interviews. By identifying outpatient registration flow variables, patient data, registration data, doctor data, examination data and polyclinic data. The approach used is cross sectional. And uses a system development method, namely SDLC (System Development Life Cycle). The design of a website-based clinical data filling information system at Pratama Clinic was built using the PHP programming language and MYSQL database with input of patient data, registration data, doctor data, examination data and polyclinic data. Then it produces output patient data reports, registration data reports, doctor data reports, polyclinic data reports, KIB, and daily patient examination reports.

Keywords: clinical data; information systems; medical records

INTRODUCTION

Health is a state of physical, mental and social well-being that enables every person to live a socially and economically productive life. Health checks, treatment and pregnancy can be carried out at health service facilities provided by the government or from the private sector. A health service facility is a tool and/or place used to provide health service efforts, whether promotive, preventive, curative or rehabilitative, carried out by the central government, regional government and/or the community (Government Regulation Number 47 of 2016). Electronic medical records are one of the main challenges in the application of information and communication technology (ICT) in health services. In implementing electronic medical records, clinical data will be filled in by the medical record officer after the doctor has carried out an examination and obtained laboratory results, other supporting examinations, and treatment given to the patient. Filling in clinical data is mandatory to provide medical information regarding the health status and health services received by the patient throughout his life.

In services at Pratama clinics, there are still many manual health data processing processes. Currently, the process of data collection, service and recording of patient medical records that occurs at the Pratama clinic still mostly uses written media. This will make it difficult for medical personnel when they want to search for and sort patient data, medical records and drug stock in the pharmacy because these reports are buried in the report archive room and medical personnel have to search for report after report one by one. The problems experienced by Pratama Clinic officers are that medical records are often misfiled, the distribution of medical records takes a long time,

preparation of incoming and outgoing drug reports takes time, and examination officers experience difficulties where after carrying out a physical examination of the patient the officer will give the examination notes to doctors who are in the patient's destination, medical record storage shelves that can barely accommodate medical records. With a clinical data entry system, clinic staff can process and store various types of data safely and in an organized manner. With an information system, the health service process in the clinic will run better, minimizing data recording errors, managing patient data efficiently, reducing the use of paper materials for medical records and medical record storage shelves

METHOD

The research uses a descriptive survey research method. According to Notoatmodjo (2018:35) descriptive survey, the subjects in this study were registration officers at the Pratama Clinic. The system development method used is the System Development Life Cycle (SDLC). System development in this way consists of four major steps and focuses on the methods and techniques used. The steps are as follows: 1. Analysis: studying the current system and proposed replacement systems, 2) Design: The design stage is the stage of changing original requirements in the form of a concept into a real system. The system design stages carried out are Logical Design and Physical Design, 3) Implementation: This stage is where the real code is written and compiled into an operational application, and where the data base and text files are created. 4) Testing: This stage will be carried out as the program is created, adding components, adding features and so on. At this testing stage, it will be carried out to validate whether the program code is correct or not and the program runs as desired. 5) Maintenance: the process of modifying a software solution after delivery and deployment to improve output, correct errors, and improve performance and quality.

RESULTS AND DISCUSSION

The flow of recording health data at the Pratama Clinic which is carried out conventionally generally still uses written media, namely by entering data in the form of complaints, supporting examinations, diagnoses will be written in one medical record. Filling in medical records is only carried out by the doctor or nurse who handles the patient. The recording flow is as follows:

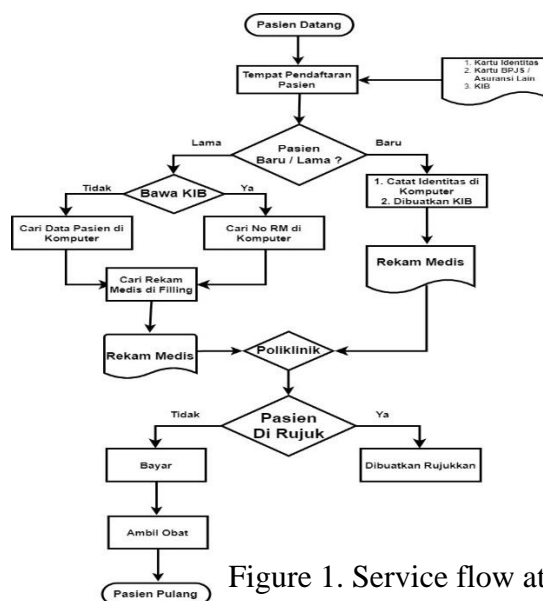


Figure 1. Service flow at Pratama Clinic

The system design developed is the design of the entire system design which consists of Data Flow Diagrams (DFD), database design, input design, output design, and operations and layers.

Design Data Flow Diagrams (DFD)

The data flow diagram (DFD) presented in this research is the design of a context diagram as follows:

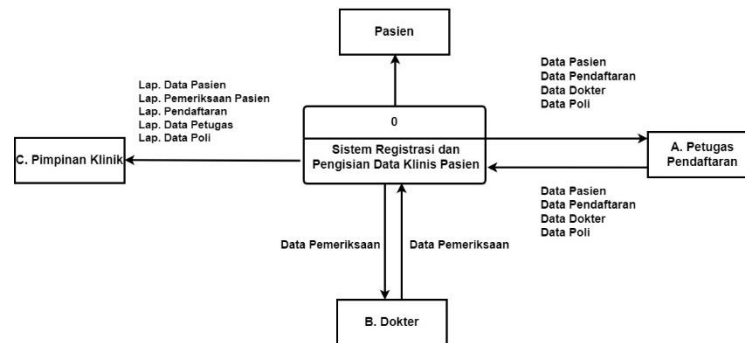


Figure 2. Context Diagram

Database Design

Database design in developing a clinical data recording system includes:

patient table The patient table is used to store patient data with the name `tb_patient` and has 12 fields which function as patient data storage. The primary key in the patient table is `no_rm`. Type, Width and information on each field can be seen in the following table:

Tabel 1.
Patient table

Nama Field	Type	Width	Keterangan
<code>no_rm</code>	VARCHAR	6	No RM
<code>nama_pasien</code>	VARCHAR	50	Nama Pasien
<code>alamat</code>	TEXT	-	Alamat Pasien
<code>jenis_kelamin</code>	ENUM	'Laki-Laki','Perempuan'	Jenis Kelamin Pasien
<code>tempat_lahir</code>	VARCHAR	50	Tempat Lahir Pasien
<code>tanggal_lahir</code>	VARCHAR	20	Tanggal Lahir Pasien
<code>nik</code>	VARCHAR	50	Nik Pasien
<code>no_telp</code>	VARCHAR	15	Telepon Pasien
<code>agama</code>	VARCHAR	25	Agama Pasien
<code>jaminan</code>	VARCHAR	50	Jaminan Pasien
<code>no_jaminan</code>	VARCHAR	100	No Jaminan Pasien
<code>alergi</code>	VARCHAR	100	Alergi Pasien

Doctor Table

The doctor table is used to store doctor data with the name `tb_dokter` and has 8 fields which function as doctor data storage. The primary key in the doctor table is Doctor Code. Type, Width and Description of each field can be seen in the following table:

Tabel 2.
Doktor table

Nama Field	Type	Width	Keterangan
id_dokter	VARCHAR	6	Kode Dokter
nama_dokter	VARCHAR	50	Nama Dokter
Spesialis	VARCHAR	50	Spesialis
alamat	TEXT	-	Alamat Dokter
no_telp	VARCHAR	15	Telepon Dokter
jadwal	VARCHAR	100	Tarif Dokter
poli	VARCHAR	50	Kode Poli
jenis_kelamin	ENUM	'L', 'P'	J_kel dokter

Outpatient Registration

Table The registration table with the name tb_registration has 8 fields which function as registration data storage. The primary key in the registration table is registration_no, and the foreign keys in the registration table are rm_no, doctor_id, and policy_id. Type, Width and Description of each field can be seen in the following table:

Tabel 3.
Registration table

Nama Field	Type	Width	Keterangan
no_pendaftaran	VARCHAR	6	No Daftar
tgl_pendaftaran	DATE	-	Waktu Daftar
no_rm	INTEGER	6	No Rekam Medis Pasien
id_dokter	VARCHAR	6	Kode Dokter
ket_ruang	VARCHAR	50	Keterangan Poli
jaminan	VARCHAR	5	Jaminan Pasien
nik	VARCHAR	16	NIK Pasien
id_poli	VARCHAR	6	Kode Poli

Outpatient Examination

Table The Examination Table is used to store Outpatient examination data with the name tb_peperiksaan which has 8 fields which function as data storage for patient medical records. The Primary Key in the Outpatient Examination table is id_periksa, and the Foreign Key is id_dokter. Type, Width and information on each field can be seen in the following table:

Tabel 4.
Examination table

Nama Field	Type	Width	Keterangan
no_pendaftaran	VARCHAR	6	No Daftar
tgl_pendaftaran	DATE	-	Waktu Daftar
no_rm	INTEGER	6	No Rekam Medis Pasien
id_dokter	VARCHAR	6	Kode Dokter
ket_ruang	VARCHAR	50	Keterangan Poli
jaminan	VARCHAR	5	Jaminan Pasien
nik	VARCHAR	16	NIK Pasien
id_poli	VARCHAR	6	Kode Poli

Table Relations

Table relationships are relationships between tables that are related to each other in a database. Table relations can be related to each other through the index of the table. The following is an overview of table relations in the registration database used in a web-based outpatient registration information system.

Table Name	Field Name	Field Type
Klinik.tb_poliiklinik	id_poli	varchar(6)
	nama_ruang	varchar(50)
	ket_ruang	varchar(50)
Klinik.tb_dokter	id_dokter	varchar(6)
	nama_dokter	varchar(50)
	jenis_kelamin	enum("Laki-Laki","Perempuan")
	spesialis	varchar(50)
	alamat	text
	no_telp	varchar(15)
	poli	varchar(50)
jadwal	varchar(100)	
Klinik.tb_pemeriksaan	id_periksa	int(8)
	nama_pasien	varchar(100)
	no_rm	int(8)
	tanggal	date
	keluhan	varchar(100)
	pemeriksaan	varchar(100)
	terapi	varchar(100)
	id_dokter	varchar(100)
	diagnosa	varchar(100)
	Klinik.tb_pendaftaran	no_pendaftaran
no_rm		varchar(6)
tgl_pendaftaran		date
nik		varchar(16)
id_dokter		varchar(6)
id_poli		varchar(6)
ket_ruang		varchar(50)
jaminan	varchar(50)	
Klinik.tb_pasien	no_rm	varchar(6)
	nik	varchar(50)
	nama_pasien	varchar(60)
	tempat_lahir	varchar(50)
	tgl_lahir	date
	jenis_kelamin	enum("Laki-Laki","Perempuan")
	agama	varchar(25)
	alamat	text
no_telp	varchar(15)	
jaminan	enum("UMUM","BPJS")	
no_jaminan	varchar(100)	
alergi	varchar(100)	

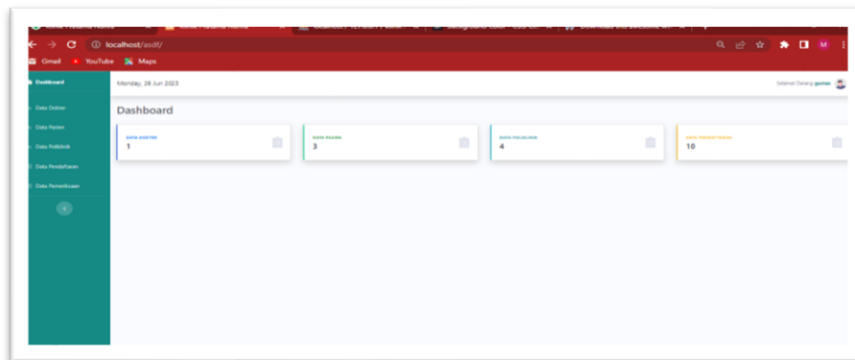
Figure 2. relation table

To use the clinical data recording information system, you can start by opening the application via a browser by entering the url: localhost/klinikpratama, wait a few moments until the login column appears, then enter the username and password. The login form displays as follows:

The login form features a dark header with the word "LOGIN" in white. Below the header, there are two input fields: "Username : Enter username" and "Password : Enter password". The password field includes a toggle icon for visibility. A prominent green "Login" button is positioned at the bottom of the form.

Figur 3. Form login

After the display as above appears and enters the username and password, if the user and password match, the main menu will appear with all the icons active as in the image below:



Figur 4. Main Menu

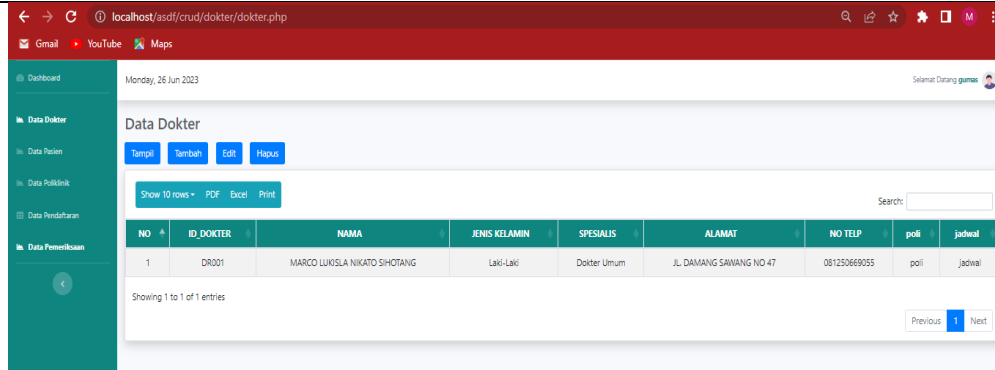
To start data processing, you can start by entering master data. The master data in the system being developed includes doctor master data, patient master data, medical record master data, registration master data, diagnosis master data. Master data is used to process data that must be input into the system. The first is to process patient master data, the patient master data display is as follows:

A screenshot of the 'Data Pasien' (Patient Data) master data display. The page shows a table with columns for patient information. Above the table are buttons for 'Tampil', 'Tambah', 'Edit', 'Hapus', and 'Cetak Kartu'. Below the table are options for 'Show 10 rows', 'PDF', 'Excel', and 'Print'. A search bar is also present. The table contains three rows of patient data.

NO	NO REKAM MEDIS	NIK	NAMA PASIEN	TEMPAT LAHIR	TGL LAHIR	JENIS KELAMIN	AGAMA	ALAMAT	NO TELP	Jaminan	No Jaminan	Alergi Obat
1	010001	3311109080605	marco lukisia nikato snotang	PALANGKARAYA	2023-06-24	Perempuan	Kristen	JL DAMANG SAWANG NO 47	081250669055	BPIS	2147483647	tidak ada
2	010002	1	MUKHLIS ADI PUTRA	KARTASURA	2010-06-08	Laki-Laki	Islam	sukoharjo	1	UMUM	12	tidak ada
3	010003	1	TOPIK	SAMBIROTO	2000-02-01	Laki-Laki	Islam	WONOGIRI	123	UMUM	12	-

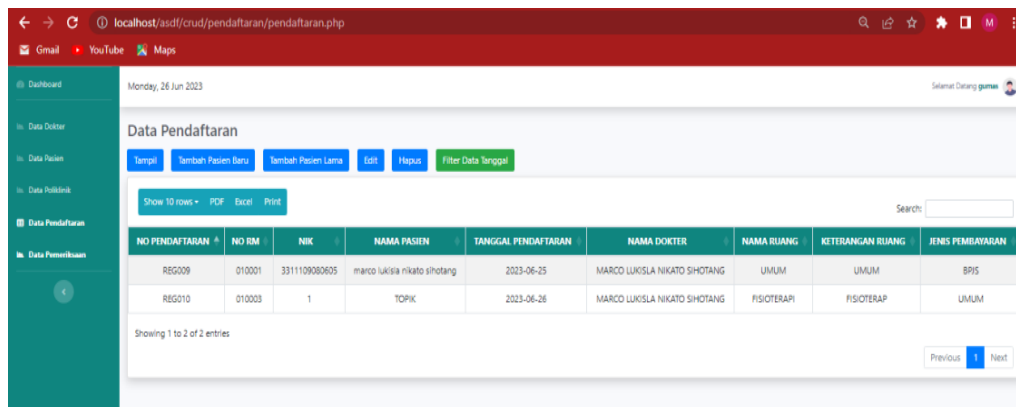
Figur 5. Master patient

The patient master form display is equipped with several buttons that have different functions. Select the add button to add patient data and then save it to the database. Meanwhile, to change patient data, select the edit button. Meanwhile, deleting patient data can be done by selecting the delete button. The print card and display buttons are used to create reports, either printing via print media or displaying them on the screen. The next one is the doctor's master data. Master doctor is used to process basic doctor data which has the following display:



Figur 6. Master Doctor

To process doctor data, you can use the add button to add data, the edit button can be used to change doctor data, the delete button can be used to delete data and the display button is used to display doctor data into the system. The doctor's form is also equipped with Print, PDF and Excel display functions. From the master data processing example above, the next one is the registration processing form. This is a form that can be used to register patients to receive services. The registration form can be seen in the following display:



Figur 7. Registration form

This menu display displays the Registration Number, RM Number, NIK, Patient Name, Registration Date, Doctor's Name, Room Name, Room Description, and Payment Type. Registration data can be edited and deleted using the buttons provided in the system. Then to process clinical data, you can then use the examination data form. This form is used to process patient data who have previously registered. The inspection data processing form can be seen through the following display:

Thursday, 29 Jun 2023

Selamat Datang MARCO LUKISLA NIKATO SIHOTANG

Data Pemeriksaan

Tambah Pemeriksaan

Show 10 rows - PDF Excel Print

NO	ID PERIKSA	NO REKAM MEDIS	NAMA PASIEN	TANGGAL PERIKSA	KELUHAN	PEMERIKSAAN	DIAGNOSA	TERAPI	NAMA DOKTER
1	2	1	tes	0000-00-00	tes	tes	tes	tes	tes
2	3	10002	Mukhlis Adi Putra	2023-06-27	Pusing	110/90, 50Kg, 37D, Hb: 10, Trombosit: 11	Hipertensi	Parasetamol 9 : 3x1	DR003
3	4	10001	marco lukisla nikato sihotang	2023-06-29	Demam sudah 3 hari, muntah-muntah, dan tiap menjelang sore demam tinggi	110/80, 45kg, 33, trmb : 9, HB: 7	Tifus, dan DBD	Vitamin c 9 : 3x1	Drq. Robert
4	6	10004	BARA ADITYA	2023-06-29	Demam sudah 3 hari, muntah-muntah, dan tiap menjelang sore demam tinggi	110/80, 45kg, 33, trmb : 9, HB: 7	Tifus, dan DBD	Vitamin c 9 : 3x1	Dr.Sp.OG. Nomegae Nasar
5	13	10003	TOPIK	2023-06-29	Demam sudah 3 hari, muntah-muntah, dan tiap menjelang sore demam tinggi	110/80, 45kg, 33, trmb : 9, HB: 7	Tifus, dan DBD	Vitamin c 9 : 3x1	Dr.Sp.FM MARCO LUKISLA NIKATO SIHOTANG

Showing 1 to 5 of 5 entries

Figur 8. examination form

Select the add examination button to start entering patient examination result data. This form can display data on Examination ID, Medical Record Number, Patient Name, Main Complaint, Supporting Examination, Treatment, Diagnosis and Doctor's Name. With the examination form, medical officers can also summarize the examination results. To find out the results of data processing, reports related to the information system are needed. The following are examples of reports that can be used by clinic staff, including patient data reports. Patient data reports are used to display patient data that has been input into the system. The following displays the patient data report:

574e3034-252e-4436-b12a-82be468d5fab

1 / 1 100%

Data Pasien

NO	NO REKAM MEDIS	NIK	NAMA PASIEN	TEMPAT LAHIR	TGL LAHIR	JENIS KELAMIN	AGAMA	ALAMAT	NO TELP
1	010001	3311109080605	marco lukisla nikato sihotang	PALANGKARAYA	2023-06-24	Perempuan	Kristen	JL. DAMANG SAWANG NO 47	081250669055
2	010002	1	MUKHLIS ADI PUTRA	KARTASURA	2010-06-08	Laki-Laki	Islam	sukoharjo	1
3	010003	1	TOPIK	SAMBIROTO	2000-02-01	Laki-Laki	Islam	WONOGIRI	123

Figur 9. Patient Report

Example of printing a patient examination, click on the examination menu, click print, then select print in the action options. To display patient examination data, see the following image:

NO PERIKSA	ID PERIKSA	NO REKAM MEDIS	NAMA PASIEN	TANGGAL PERIKSA	KELUHAN	PEMERIKSAAN	DIAGNOSA	TERAPI	NAMA DOKTER
1	2	1	tes	0000-00-00	tes	tes	tes	tes	tes
2	3	10002	Mukhlis Adi Putra	2023-06-27	Pusing	110/90, 50Kg, 37D, Hb: 10, Trombosit: 11	Hypertensi	Parasetamol 9 : 3x1	DR003
3	4	10001	marco lukisla nikato sihotang	2023-06-29	Demam sudah 3 hari, muntah-muntah, dan tiap menjelang sore demam tinggi	110/80, 45kg, 33, trmb : 9, HB; 7	Tifus, dan DBD	Vitamin c 9 : 3x1	Dr. Robert
4	6	10004	BARA ADITYA	2023-06-29	Demam sudah 3 hari muntah-muntah, dan tiap menjelang sore demam tinggi	110/80, 45kg, 33, trmb : 9, HB; 7	Tifus, dan DBD	Vitamin c 9 : 3x1	Dr.Sp.0G. Nornegae Nasir
5	13	10003	TOPIK	2023-06-29	Demam sudah 3 hari, muntah-muntah	110/80, 45kg, 33, trmb : 9, HB; 7	Tifus, dan DBD	Vitamin c 9 : 3x1	Dr.Sp.FM MARCO LUKISLA NIKATO

Figur 10. Patient Report

CONCLUSION

A web-based patient registration information system can make it easier for users to register themselves online as outpatients without having to visit the hospital first. A web-based patient registration information system was built using the programming language PHP, html, css and java script Registration information system database processing using MySQL

REFERENCES

- Anhar. 2010. Panduan Menguasai PHP dan Mysql. Jakarta: Media Kita.
- DepKes RI. 2006. Pedoman Penyelenggaraan Dan Prosedur Rekam Medis
- Fatkhudin, Aslam, Alifiani, Nur Dwi. (2017). Sistem Informasi Pendaftaran Pada Klinik dr. Veri Kajan Kabupaten Pekalongan Berbasis Android. Jurnal Ilmiah Edutic/Vol.4, No.1, November 2017
- Fatta, Hanif Al. 2007. Analisis dan Perancangan Sistem Informasi Untuk Keunggulan Bersaing Perusahaan dan Organisasi Modern. Yogyakarta: Andi.
- Jayan. 2010. CSS untuk Orang Awam. Palembang: Maxikom.
- Markus, Suryo Nugroho. 2011. Master Plan Pengembangan Sistem Informasi Manajemen Rumah Sakit. Yogyakarta : Politeknik Kesehatan Permata Indonesia.
- Notoatmodjo, Soekidjo. 2012. Metodologi Penelitian Kesehatan. Jakarta: Rineka Cipta.
- Rustiyanto, Ery. 2011. Sistem Informasi Manajemen Rumah Sakit yang terintegrasi. Yogyakarta: Ardana Media.
- Setiabudi hamid. 2016. Aplikasi pelayanan pendaftaran dan sistem notifikasi pada klinik praktek bersama makasar

Sudra, Rano Indradi. 2014. Rekam Medis. Tangerang Selatan : Universitas Terbuka.

Suryadi A, 2017, 'Rancang Bangun Sistem Informasi Rekam Medis Klinik Rawat Jalan Berbasis Web', Infokes, Vol.12, No.1, 73-43

Sutanta, Edhy. 2011. Basis Data Dalam Tinjauan Konseptual. Yogyakarta: Penerbit Andi.

Yakub. 2012. Pengantar Sistem Informasi. Yogyakarta: Graha Ilmu