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Research Article

A Website-Based Management Information System For Pratama Sidhi SAI Clinic

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Abstract:
Healthcare services in Indonesia currently need to be improved given Indonesia's dense population, which results in patient queues at health service facilities. This is due to several factors, one of which is the manual processing of health data, as is the case at the Sidhi Sai Pratama Clinic. This research aims to improve healthcare services and provide easy access to information for both clinic staff and patients. The stages of this research method are needs analysis, system design, implementation, and testing. In the needs analysis stage, data was collected through direct observation and interviews with one of the clinic staff. The system design stage was carried out by creating a system flowchart and database model required to ensure the clinic's needs for the system were met. The results of the study showed that the system can run effectively in terms of managing patient data, patient medical records, and managing medication data. Based on the results of testing using the black box testing method, all features in the system are functioning well according to the objectives. With this system, it is hoped that the problem of patient queues can be overcome by providing effective and efficient healthcare services.

Keyword: Management Information Systems, Health Services, Queues.

1. Introduction:

Health is a vital aspect of human life and efficient and quality health services are very important [1]. Efficient, fast and quality health services are an urgent need as Indonesia's population continues to grow [2]. Therefore health is a shared responsibility [3]. The increase in population has a direct impact on the high burden of services in health facilities, especially hospitals, resulting in long queues and long waiting times [4]. This condition encourages some people to switch to other health service facilities such as clinics in the hope of getting faster service.

Based on the results of an interview with Mrs. Jaehani as the clinic's admin officer, she said that the clinic's operational activities such as recording medical data, recording drug inventory, and financial administration are still carried out manually and rely on the Microsoft Excel application. Hospital administrators are often challenged with the growing patient load resulting in overcrowding at hospitals [5].

To overcome the problems faced by the Sidhi Sai Primary Clinic, the author plans to develop a website-based management system[6]. This system is expected to speed up the clinical service process, making it easier for clinic staff to manage financial reports and well-documented drug inventories [7]. In addition, this system will enable clinics to record, process and manage medical record data more quickly and accurately [8]. The main reason for choosing a

website as the basis for system design is because of its wide accessibility, it can be used from anywhere without any downloading process and can be accessed from various devices with a user account so it has good compatibility [9]. In this study, we developed queue, reservation, medical record, reminder, and medical action modules. We expected that facilities could improve the operational efficiency of hospital services [10].

However, in this study there are several limitations of the problem that limit this study, namely the system only records payment data manually (paid/unpaid status), has not been integrated with the online payment system, the system is only website-based and accessed via a browser, the system only focuses on one branch.

2. Method:

The Waterfall Method (SDLC) is an application development technique that begins with the stages of Requirements (data collection), Design (modeling), Implementation (development), Verification (testing), and Maintenance (deployment) [11]. The stages in this method begin with the planning stage and continue through the management (maintenance) stage and are implemented in stages [12]. The importance of the waterfall model (SDLC) lies in its ability to provide a well-defined roadmap for software development projects, ensuring that each stage is carefully planned and executed [13].

The first stage of this research is data collection, to gather information about the patient care process at the clinic. This research used several methods for data collection, including interviews. Interviews are described as a data collection method in which the interviewer asks questions to the interviewee, either face-to-face or remotely [14]. This research also used the observation method, which is the act of carefully observing something or someone to obtain information [15]. The information collected needs to be validated, namely, faithfully reflecting the participants' opinions and minimizing the potential for researcher bias that may arise from questionnaire analysis and traditional research methods [16].

To clarify the system description, the author used a data flow diagram (DFD) to explain the designed system flow. A data flow diagram (DFD) is a structured analysis method that represents the flow of data through a software system [17]. DFD it self is widely used to assist application developers in general, especially in the process of making information systems [18]. A data flow diagram (DFD) contains four basic symbols to represent entities, processes, data flows, and data stores to trace and depict the movement of information used to create a process model during analysis [19].

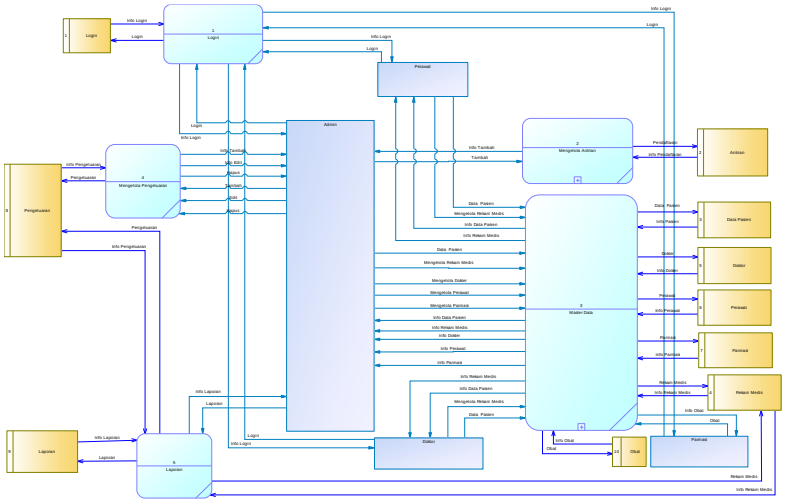


Figure 1 Data Flow Diagram

In addition to the system flow, the database in this study is crucial, described using a conceptual data model (CDM). Conceptual data model is an iterative activity during software engineering that attempts to reconstruct objective statements about a domain of discourse using a modeling language for data or process modeling [20]. A conceptual model consists of constructs, such as entities, events, goals, attributes, relationships, roles, and processes,

linked by well-defined rules [21]. The model aims at providing richer expressiveness and incorporating a set of semantics to support the design, control, and integrity parts of the data stored in data management structures and coordinate viewing of connections and ideas on a database [22]. Therefore, conceptual data model plays an important role in data modeling and design [23].

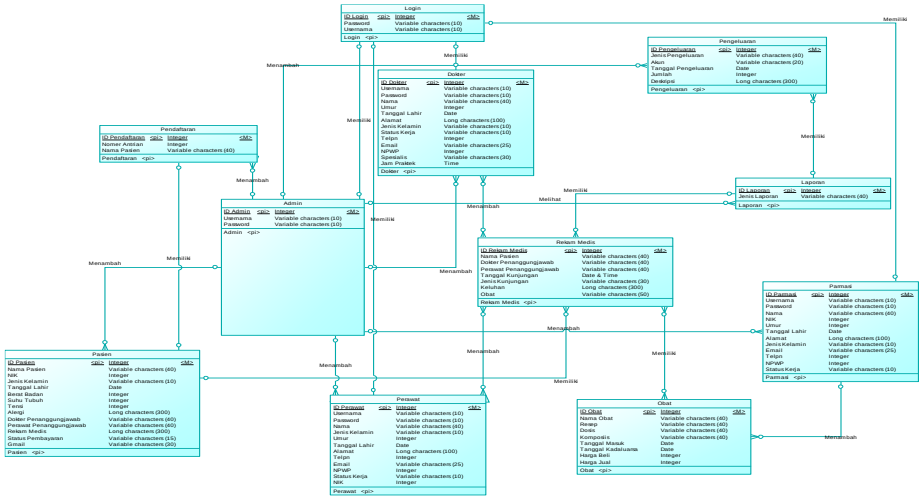


Figure 2 Conceptual Data Model

To ensure all features function properly, testing is required to ensure the success of this research. This research uses black box testing, Black Box Testing is a testing method that focuses on the functional requirements of the software [24]. This method is highly effective for evaluating software behavior to identify errors in functions, interfaces, data models, and external data access [25].

3. Result and Discussion:

Result

The patient page is the main display that contains all information related to patient data and activities at the clinic. On this page, users can view a list of registered patients along with basic information such as name, medical record number, gender, age, and contact information. The patient page also provides quick access to detailed examination history, diagnosis results, and visit schedules.

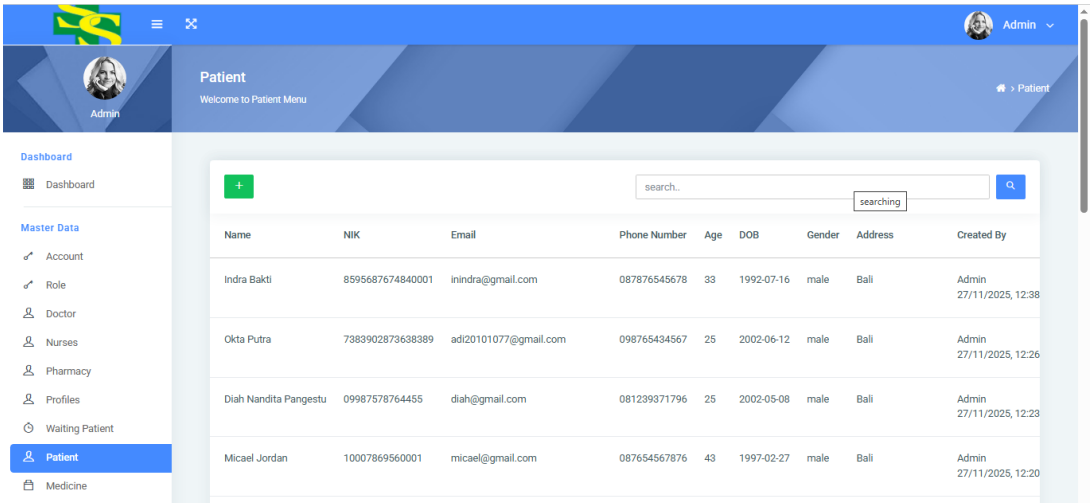


Figure 3 Patient Page

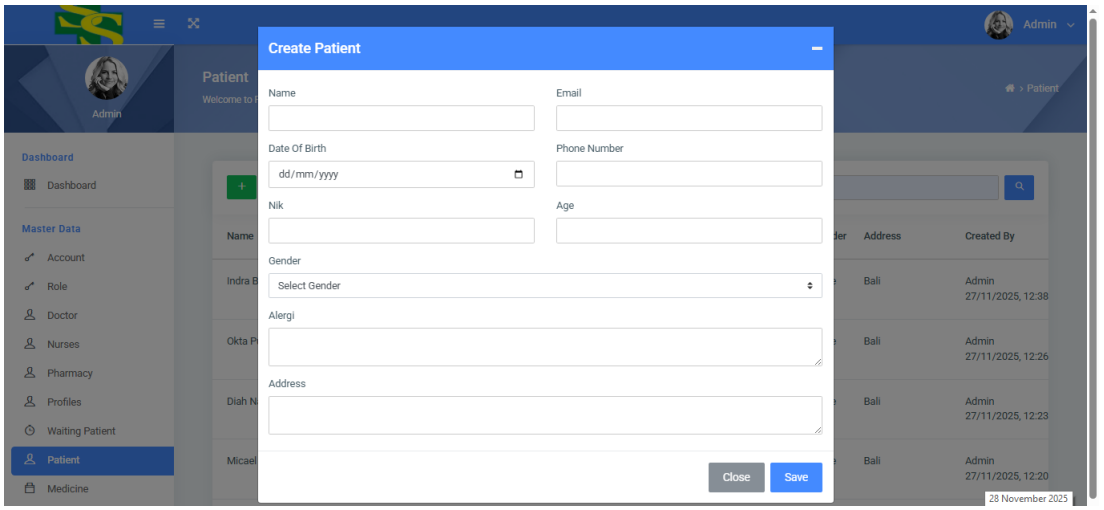


Figure 4 Add Patient Page

After adding patient information, patients will receive a queue number for their appointment with a doctor. In addition to receiving a queue number, patients will also receive a new account so they can register online for future appointments.

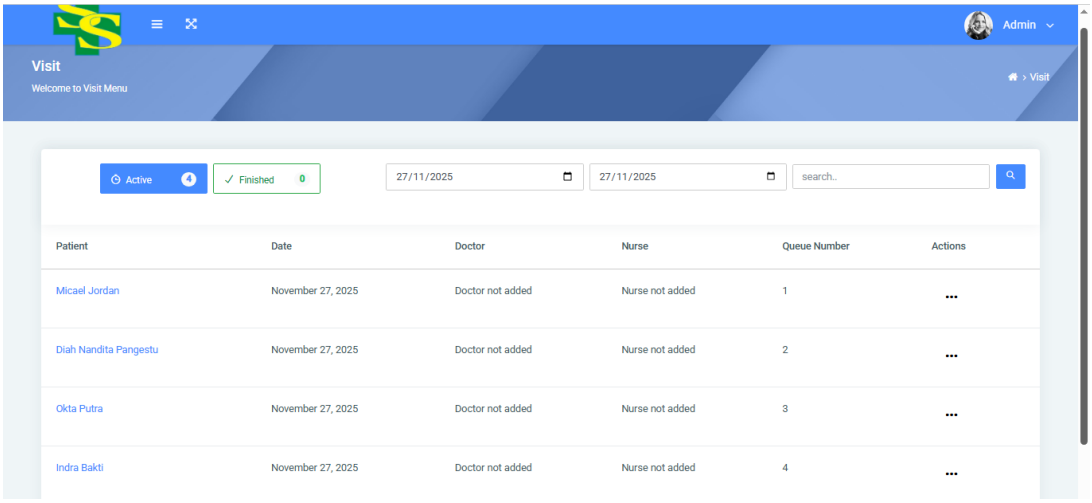


Figure 5 Medical Record Page

To add a patient examination, the doctor needs to go to the medical record page. This page contains a medication form, an additional fee form, and a doctor's notes form that must be completed by the doctor. The add medical record page serves as a place to enter new data related to the patient's condition or the healthcare services received. Through this page, healthcare professionals can record important information such as patient complaints, examination results, diagnoses, medical procedures, and medication administration in an accurate and structured manner. This function ensures that every development in the patient's condition is well documented, ensuring that the medical record remains up-to-date and complete.

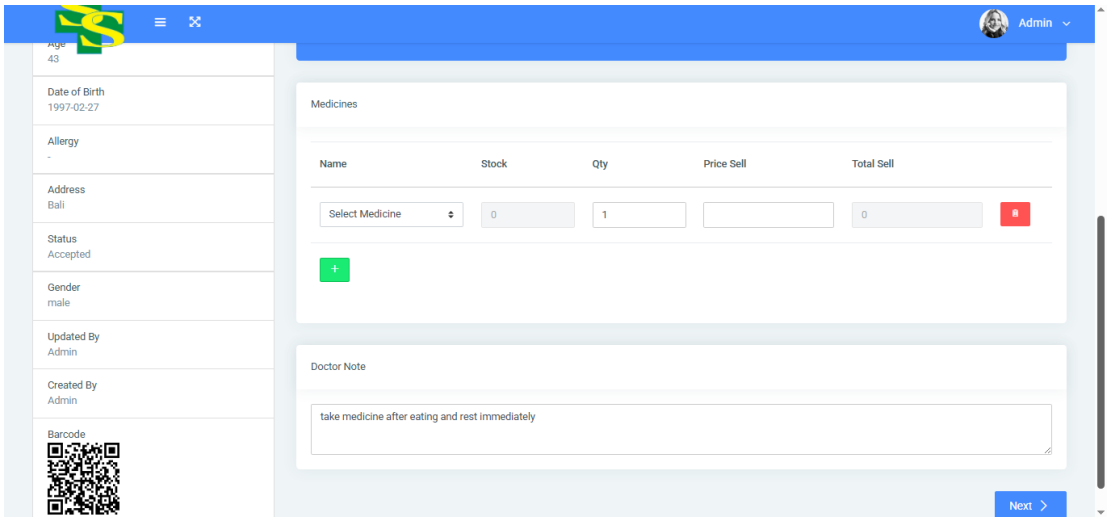


Figure 6 Add Medical Record Page

After the medical record entry process is complete, patients can view the results of their medical records from their account. The medical record data obtained includes the diagnosis, prescriptions, the names of the doctor and nurse who examined the patient, and the total price paid by the patient. The number of medical records a patient has varies depending on the number of visits they have had. The medical record page serves as the primary document that records all patient health information in a complete, systematic, and continuous manner. Through this page, healthcare providers can view the history of examinations, diagnoses, procedures, and treatments that have been administered, making it easier to determine the next steps in their care.

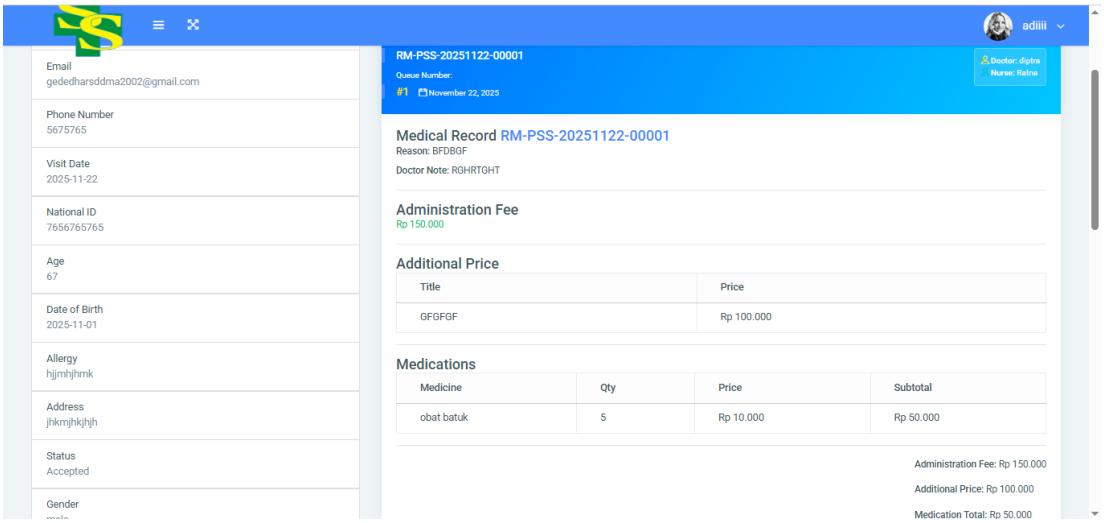


Figure 7 View Medical Record Page

The username and password received by patients after registration will be automatically sent by the system to the email account used during registration. This helps minimize the possibility of frequently forgetting passwords.

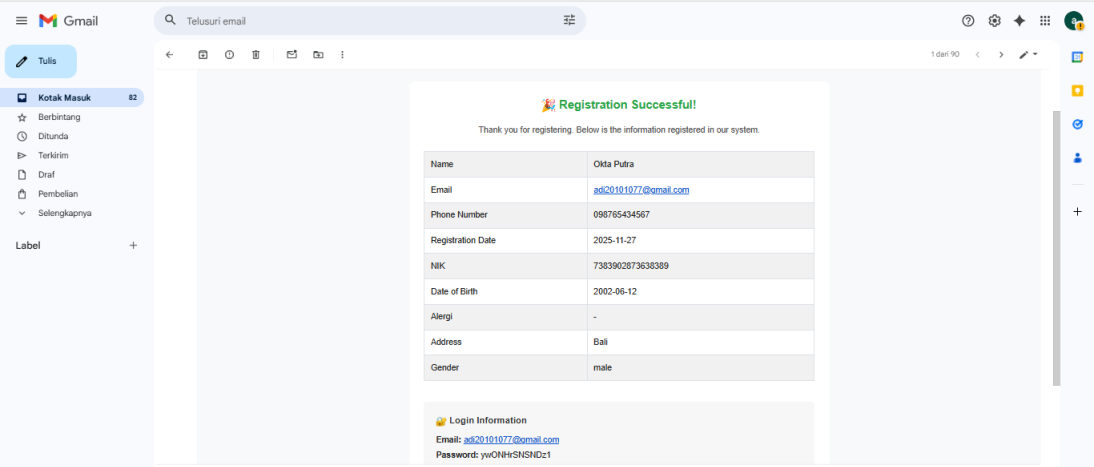


Figure 8 Notification Username and Password Send To Email

4. Conclusion:

Based on the results of the author's research, it can be concluded that the stages of this research are outlined in several stages, starting with system design, followed by data collection, data analysis, and then application design, followed by application development. Finally, the application testing and implementation stages are completed. The system developed in this research can simplify daily healthcare services at the clinic and facilitate patient registration through online registration.

The system developed in this research still requires refinement, so constructive suggestions and input are needed to improve this system. It is hoped that in the future, this system can be developed into an Android-based mobile application for greater user accessibility and to encompass all management functions at the clinic.

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