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# ANDROID-BASED ONLINE OUTPATIENT REGISTRATION SYSTEM (Case Study At Klinik Waris Medika)

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## Abstract

*The rapid advancement of information technology has had a major impact on various sectors, including the health sector. The current outpatient registration system at Klinik Waris Medika is still limited to on-site registration, which can cause some problems such as long queues and time-consuming registration processes. This research aims to overcome these problems by developing an Android-based outpatient online registration system at Klinik Waris Medika to simplify the registration process and reduce patient waiting time at the clinic. The system development method used is the System Development Life Cycle (SDLC) method using the PHP programming language and MySQL database. The system database structure consists of patient tables, doctor tables, polyclinic tables, officer tables, doctor schedule tables, reservation tables, and visit tables. The system is designed to generate various reports, including patient data reports, doctor data reports, polyclinic data reports, officer data reports, registration data reports, online patient visit reports, daily patient visit reports, new patient visit reports, and old patient visit reports. The system offers features for scheduling and reserving visits, making the service simpler and more efficient. By implementing this system, the quality and efficiency of patient registration services at Klinik Waris Medika is expected to improve significantly.*

***Keywords :*** *Android, Online, Outpatient, Registration System*

## 1. Introduction

The times and advances in information technology have had a considerable impact in the health sector. The application of information technology in the health sector is believed to provide various benefits for health care providers such as the availability of accurate and comprehensive patient health information [1] One of the utilization of information technology in the health sector is the implementation of medical records. Medical records are documents containing data on patient identity, examination, treatment, actions, and other services that have been provided to

patients [2]. One part of organizing medical records is patient registration. . Registration is the initial stage for patients to get health services and patient registration can be done using two ways, namely on-site and online registration [3].

Patient registration at Klinik Waris Medika is still done on-site, where patients who want to do an examination must come to the clinic first to register and examine. Patient registration that is only done onsite results in a long queue if the number of visits is very large. If there are patients who do not bring KIB, it will also affect the search for medical record documents where the long registration process causes the tracer not to be made immediately and the process of searching for medical record documents becomes long. This will affect the quality and efficiency of services at the Waris Medika Clinic. The existence of problems at the patient registration counter will lead to the perception that patient services are not well organized [4].

To be able to provide fast, precise, and careful services, adequate facilities and infrastructure are needed and operate properly. One of these facilities and infrastructure is online patient registration. The existence of online registration can reduce the crowd of patients when taking queue numbers, patients can find out the doctor's schedule and can speed up the registration process [5]. Online registration applications that can be accessed by patients will have a positive impact on clinic registration officers to save time in serving patients [6].

With online registration, patients can register independently from anywhere and anytime so that it will overcome the problem of long patient queues and services can be carried out more quickly and efficiently.

## 2. Method

This research is a qualitative research with descriptive method. The approach used is a cross-sectional approach. The variables used consisted of patient registration flow and procedures, patient data, doctor data, polyclinic data, officer data, and patient visit data. Data collection was carried out through observations made at the patient registration site and interviews with registration officers. The system development method used is the system development life cycle (SDLC) method and designed using the PHP programming language with a MySQL database.

## 3. Result and Discussion

### 3.1. The Developed System

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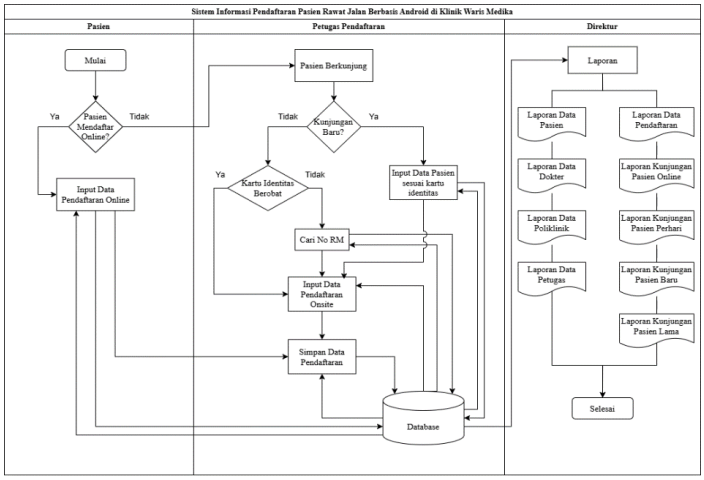


Figure 1 Flowchart Of The Outpatient Online Registration System

Registration starts with whether the patient registers online or not. If the patient registers online then the patient needs to input the online registration data then the clerk confirms and saves the patient's online registration data. If the patient does not register online then the clerk asks if the patient is a new patient or an old patient. If the patient is new, the clerk asks for the patient's identity card and inputs the patient's data according to the identity card into the system and then registers the patient's visit. If the patient is an old patient then the officer asks whether the patient brings KIB or not, if the patient brings KIB then the officer can directly register the patient's visit. If the patient does not bring KIB then the officer searches for patient data in the database first and after finding it, the officer can register the patient's visit. After all the registration process is complete and inputted into the database, it will produce a data report that is given to the clinic director.

### 3.2. Context Diagram

The context diagram is a diagram that describes the input and output relationships between the system and the external entity [7]. The context diagram of the developed system is as follows:

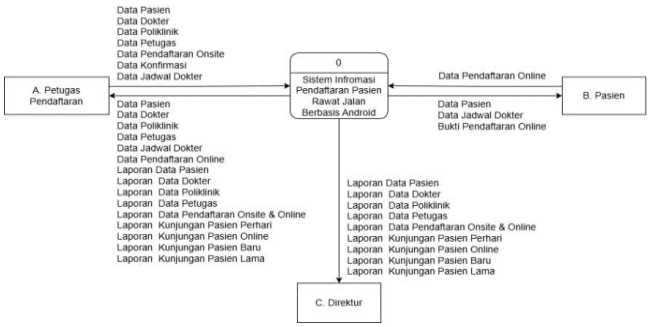


Figure 2 Context Diagram of Outpatient Online Registration System

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The registration officer can send and view patient data, doctor data, polyclinic data, officer data, doctor schedule data, onsite registration data and confirmation data to the registration system database. The registration officer will also receive data reports. Patients can submit online registration data and can view patient data, doctor schedule data and proof of online registration. The clinic director will receive a report of the data that has been inputted in the patient registration information system.

### 3.3. Data Flow Diagram

Data Flow Diagram is a model that describes the data transformed by the process in a system which is a complete explanation of the data [8] DFD of the developed application can be seen in the following figure:

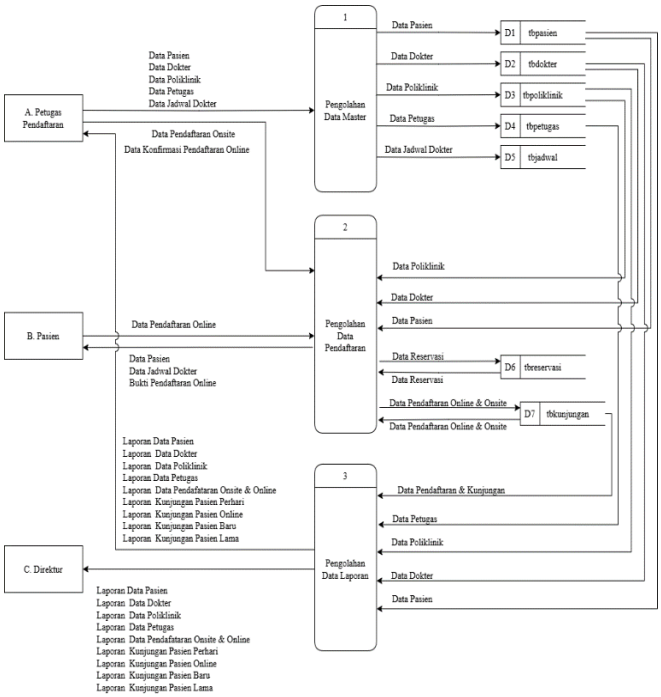


Figure 3 Data Flow Diagram of Outpatient Online Registration System

The registration officer can send patient data, doctor data, polyclinic data, officer data and doctor schedule data to the master data processing. After the data is sent to the master data processing, the data is sent to the respective master data table which can then be used in the registration data processing. Registration officers can send onsite registration data and online patient registration confirmation data to the registration data processing process. Patients can register online so that patients can send online registration data to the registration data processing. Patients will receive proof of patient registration, patient data and doctor schedule data. From the registration data processing and master data, report data processing is carried out which will be sent to the clinic director.

### 3.4. Database Table Relations

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A database is a structured collection of interrelated data, stored on computer storage media, and can be accessed and managed using specialized software [9]. The relation or relationship between tables in this system database is as follows:

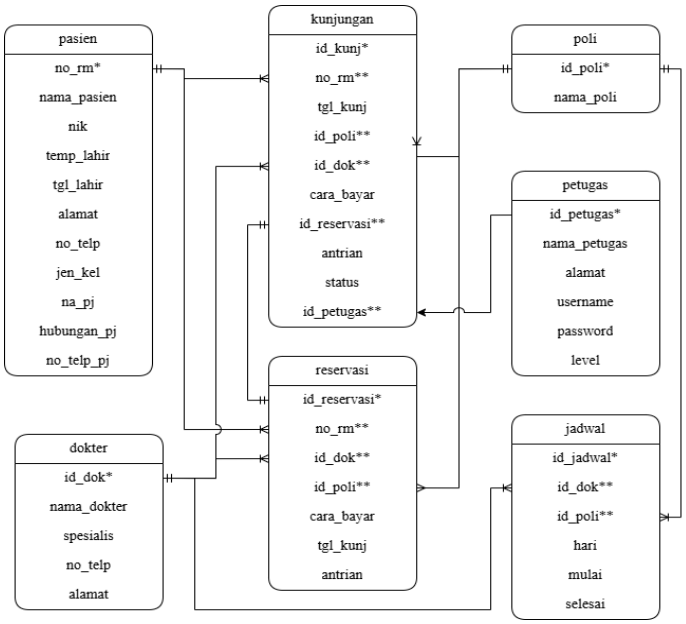


Figure 4 Database Table Relation of Outpatient Online Registration System

The relationship of the patient table with the reservation and visit tables is one to many where one patient can make many visits and reservations, but one reservation and one visit can only be made by one patient. Similarly, the doctor table relationship with the reservation, visit and schedule tables is one to many where one doctor can handle many visits, reservations and has many schedules, but one visit, one reservation, and one schedule can only be handled and owned by one doctor. The poly relation is also the same, where one poly can have many visits, reservations, and schedules, but one visit, one reservation, and one schedule can only be owned by one poly. The relationship between officers and visits is also one to many where one officer can input many visits and one visit can only be inputted by one officer. The relationship between the reservation table and the visit table is one to one where one reservation has one visit and one visit is only owned by one reservation.

### 3.5. System Implementation

#### 3.5.1. Director side

When the system is activated, it will open the login page. The director needs to input his username and password to enter the system.

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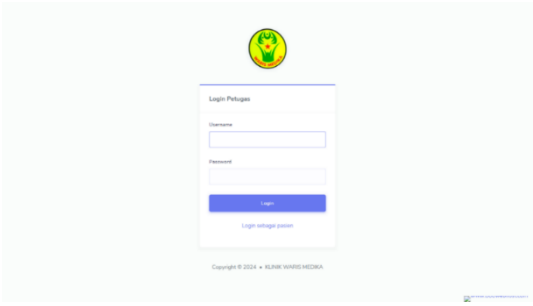

Figure 5 Login page

After successful login, it will be redirected to the director's dashboard page. Director access rights are limited to viewing data reports. To access other menus can be done by selecting the menu on the sidebar or clicking the logo available on the director's dashboard page.

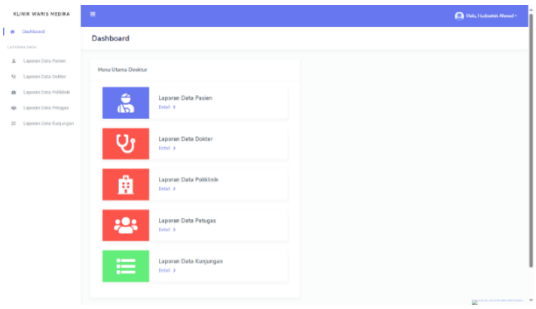

Figure 6 Director Dashboard Page

**3.5.2.** Registration Officer Side

**3.5.2.1.** System Activation

When the system is activated, it will open the login page. The registration officer needs to input a username and password to enter the system. If the username and password are correct, it will be redirected to the registration officer dashboard page.

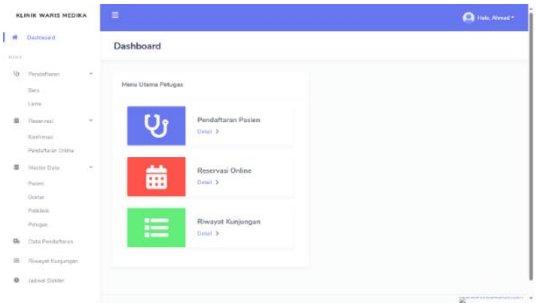

Figure 7 Registration Officer Dashboard Page

**3.5.2.2.** Patient Data Master

This page displays patient data that has been registered at the Waris Medika Clinic. The data displayed can be saved into a softfile and printed as a report.

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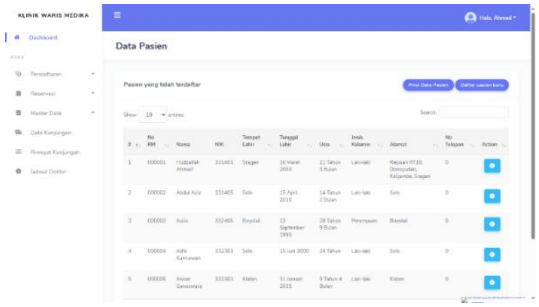


Figure 8 Patient Data Page

In the data table, the patient details icon used opens the patient details page. The page contains the patient's full information and visit history.

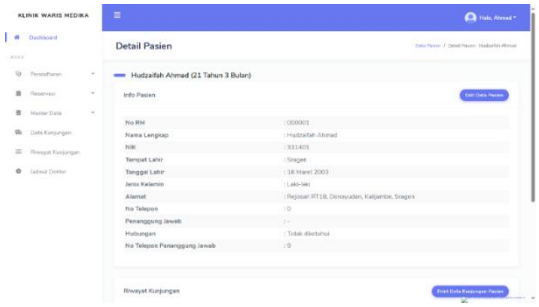


Figure 8 Patient Detail Page

**3.5.2.3.** Doctor Data Master

This page displays data on doctors who practice at the Waris Medika Clinic. Officers can add new data, edit doctor data, and print registered doctor data.

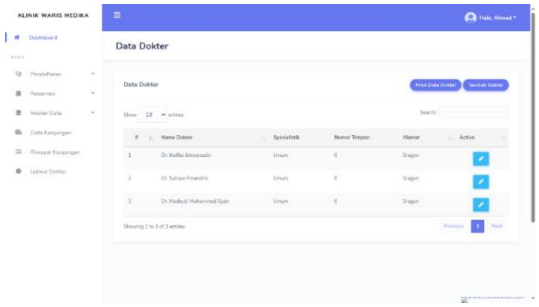


Figure 10 Doctor Data Page

**3.5.2.4.** Polyclinic Master Data

This page displays polyclinic data at Waris Medika Clinic. Officers can add new data, edit data, and print polyclinic data.

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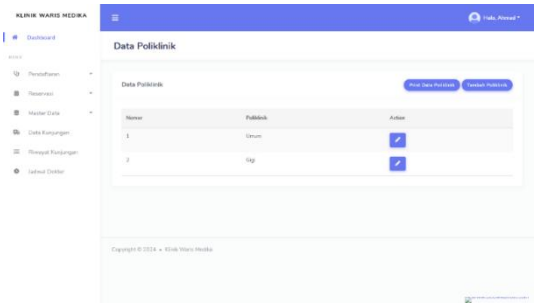


Figure 11 Polyclinic Data Page

**3.5.2.5.** Officer Master Data

This page displays the data of registration officers who work at the Waris Medika Clinic. Officers can add new data, edit data, and print registered officer data.

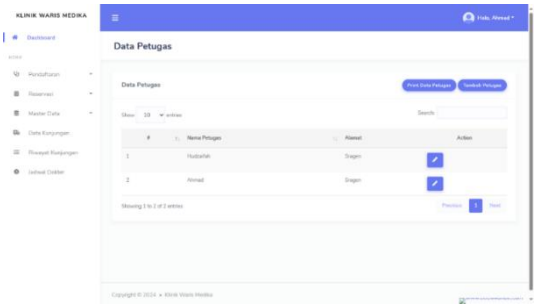


Figure 12 Officer Data Page

**3.5.2.6.** New Patient Registration

The new patient registration process has 2 steps. The first step is the input of new patient data.

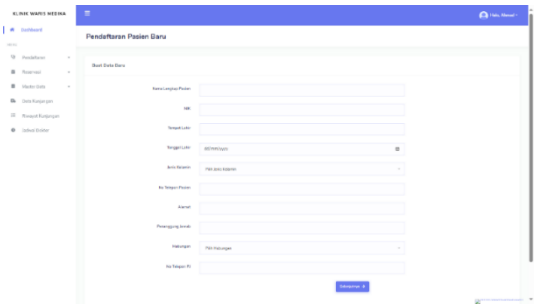


Figure 13 New Patient Data Input Form

If the patient data has been filled in completely, you can proceed to the new patient visit data input form. In the visit data input form, the medical record number and patient name will be filled in automatically according to the data previously inputted.

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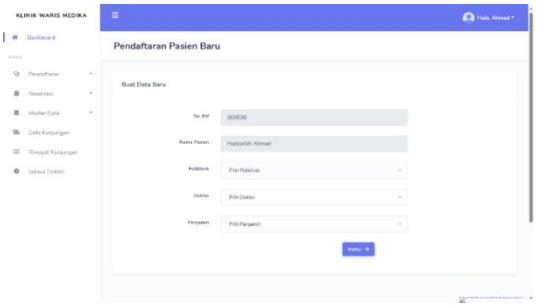


Figure 14 New Patient Visit Data Input Form

**3.5.2.7.** Old Patient Registration

Registration of old patients is done by inputting the patient's medical record number, doctor and polyclinic destination, and the payment method used.

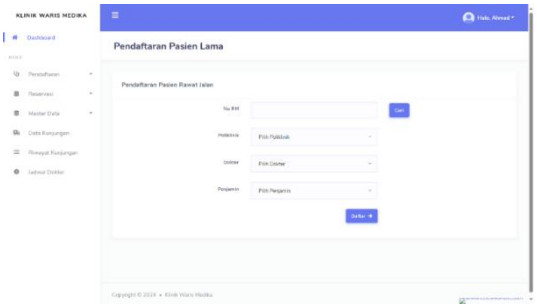


Figure 15 Old Patient Registration Form

**3.5.2.8.** Online Registration

Online registration is done by inputting the patient's medical record number, destination doctor and polyclinic, payment method used, and planned date of visit.

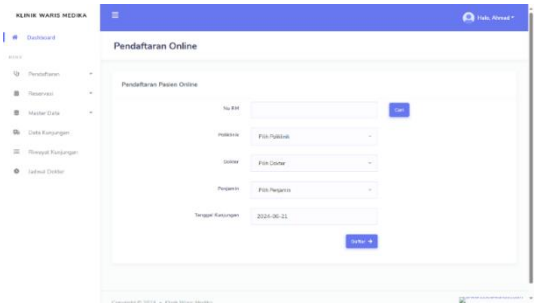


Figure 16 Online Registration Form

**3.5.2.9.** Online Registration Confirmation

The online registration confirmation page is used to confirm patients who have registered online who make a visit to the clinic. Confirmation can be done by clicking the check icon in the action column.

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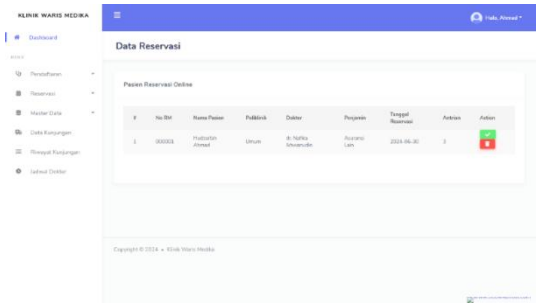


Figure 17 Online Registration Confirmation Page

**3.5.2.10.** Registration Data

The visit data page is a page that displays patient registration data that is still visiting the clinic.

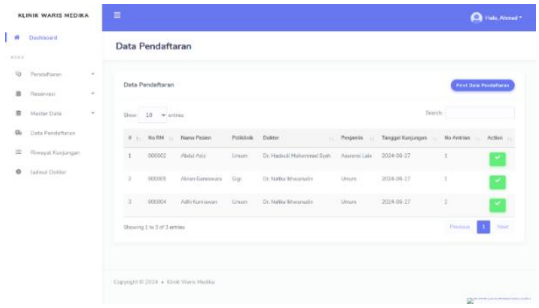


Figure 18 Patient Registration Data Page

In the registration data table there is a check icon that is used to confirm if the patient visit has been completed.

**3.5.2.11.** Patient Visit History

This page displays patient visit history data at Waris Medika Clinic. The data displayed can be filtered by selecting the date of visit, doctor, polyclinic, payment method, registration method (online or onsite), and patient type (new or old).

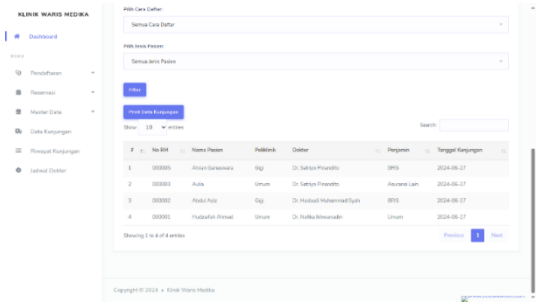


Figure 19 Patient Visit History Table

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**3.5.2.12.** Doctor's Schedule

This page displays the doctor's practice schedule at Waris Medika Clinic. Registration officers can add, edit and delete doctor schedules.

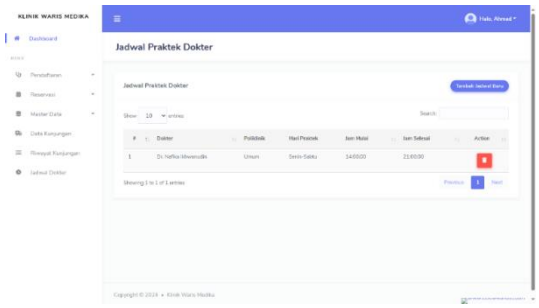


Figure 20 Doctor's Schedule Page

**3.5.3.** Patient Side

**3.5.3.1.** System Activation

When the system is activated it will open the login page. Patients need to input their medical record number and date of birth to log into the system.

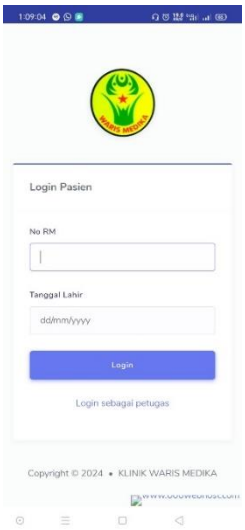


Figure 21 Patient Login Page

After successful login, you will be redirected to the patient dashboard page. Other menus can be accessed by selecting the menu on the sidebar or clicking the logo available on the patient dashboard page.

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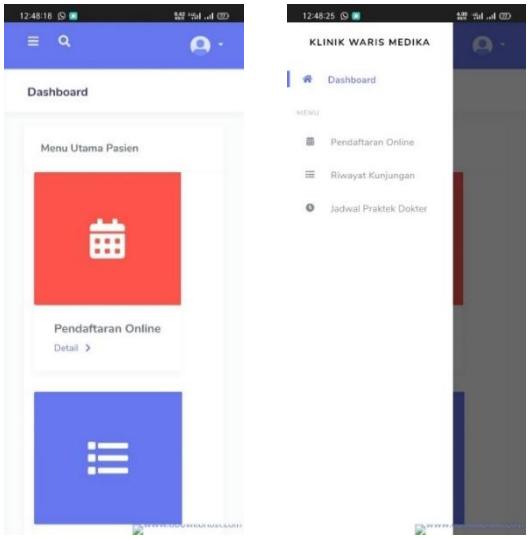


Figure 22 Patient Main Menu Page

**3.5.3.2.** Online Registration

Online registration is done by selecting the destination polyclinic, the destination doctor, the guarantor used, and the date of the planned visit. After registering, it will be redirected to the visit history page which contains information on registrations that have been made and the patient's visit history table.

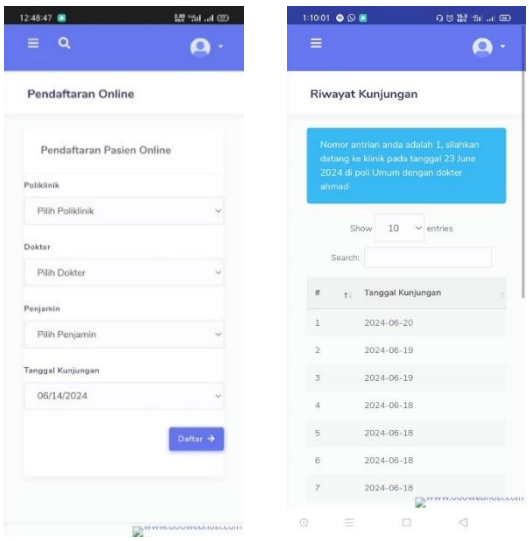


Figure 23 Patient Online Registration Page and Patient Visit History Page

**3.5.3.3.** Doctor's Schedule

The doctor's schedule page contains information on the doctor's practice schedule at the Waris Medika Clinic. the page can be seen in the following image:

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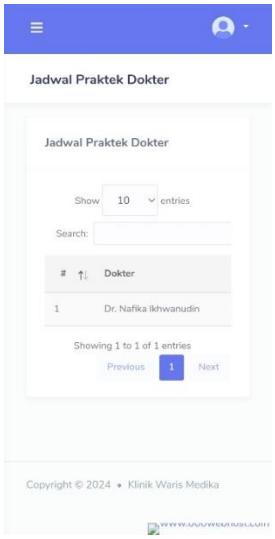


Figure 24 Doctor's Practice Schedule Page

## 4. Conclusion

Outpatient registration at the Waris Medika clinic is computerized but limited to on-site registration. The android-based outpatient registration information system at the Waris Medika Clinic was built using the PHP programming language and MySQL database as well as the SDLC system development method. The android-based outpatient registration information system at the Waris Medika Clinic can generate information in the form of patient data reports, polyclinic data reports, doctor data reports, officer data reports, registration data reports, online patient visit reports, daily patient visit reports, new and old patient visit reports. The construction of this android-based outpatient registration information system is expected to improve the quality and efficiency of patient registration services at the Waris Medika Clinic.

## 5. Acknowledgement

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## 6. References

[1] Cholik, C. A., "Perkembangan Teknologi Informasi Komunikasi / ICT Dalam Berbagai Bidang", *Jurnal Fakultas Teknik*, vol. 2, no. 2, pp. 39-46, 2021.

[2] Republik Indonesia, Peraturan Menteri Kesehatan no. 24 Tahun 2024, *Tentang Rekam Medis*. Jakarta: Menteri Kesehatan Republik Indonesia.

[3] Alfauzian, Wisandra, A., & Azzahra, P. S., "Perancangan Sistem Informasi Pendaftaran Online Pasien Rawat Jalan Pada Puskesmas Menggunakan Metode Prototype", *Jurnal Testing dan Implementasi Sistem Informasi*, vol. 1, no. 2, pp. 122-136, 2023.

[4] Farlinda, S., Roziqin, M. C., Hikmah, F., & Pratama, Y. (2019). Designing and Creating Web-Based Outpatient Information System At Panti Community Health Center (Puskesmas) Jember. *Journal of Pysics: Conference Series*.

[5] Ritno, Katarina, D., & Juleha, S., "Aplikasi Pendaftaran Pasien Rawat Jalan Pada Rumah Sakit Brimob Berbasis Android", *Seminar Nasional Ristek dan Teknologi*, pp. 593-598, 2021.

[6] Hakim, M. A., Mustofa, K., & Suryadi, A., "Sistem Pendaftaran Online Pasien Rawat Jalan Berbasis Android Klinik Pratama Ary Farma", *Prosiding Seminar Informasi Kesehatan Nasional*, pp. 372-379, 2023

[7] Zuhri, A. F., Ahmad, A., Dewi, R., & Solikhun, "Sistem Informasi Data Rehabilitasi Narkoba Pada Badan Narkotika Nasional Kota (BNNK) Pematangsiantar", *Seminar Nasional Teknologi Komputer & Sains (SAINTEKS)*, pp. 255-260, 2020.

[8] Taryanto, A., & Handayani, L. N, "Pengembangan Sistem Informasi Retensi Rekam Medis Di Rumah Sakit Dustira Cimahi", *Jurnal E-KOMTEK (Elektro-Komputer-Teknik)*, vol. 3, no. 2, pp. 62-70, 2019.

[9] Syahputri, K., & Nasution, M. I, "Peran Database Dalam Sistem Informasi Manajemen", *Jurnal Akuntansi Keuangan dan Bisnis*, vol. 1, no. 2, pp. 54-58, 2023.