

Outpatient Health Record Management Information System at Canossa Health & Social Center Foundation, Inc., Tondo Branch.

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EXECUTIVE SUMMARY

This study focuses on developing an Outpatient Health Record Management Information System for the Canossa Health & Social Center Foundation, Inc., Tondo Branch.

The health center is using paper to record patient information. This causes problems like slow searching, lost files, and mistakes.

The goal of this project is to create an online system that can store and manage patient records faster and more safely. The system includes features like patient registration, consultation records, lab results, medicine dispensing, and reports.

The researchers used interviews, observations, and surveys to collect data. The system was developed using the Agile method. It was tested using the ISO 25010 standard to check its quality.

The results showed that the system is faster, easier to use, and more accurate than the old paper system. Users agreed that the system is helpful and improves their work.

In conclusion, the system solved the problems of the manual process and helped the health center provide better service. It is recommended to fully use the system.

CHAPTER 1

PROJECT CONTEXT AND BACKGROUND

Introduction

Healthcare demand is increasing in areas like Tondo, Manila, and health centers need a better way to manage patient records and medical supplies. Accurate records are essential for timely care, as they contain patient information, medical history, consultations, and prescriptions.

Many centers still use manual paper-based systems, making information hard to find and increasing the risk of losing important documents. Manual inventory management also makes it difficult to track supplies and slow down services. A computerized Health Record Management Information System can solve these

problems by storing, updating, and organizing patient data, tracking supplies, and generating reports efficiently.

This study focused on developing and implementing such a system at Canossa Health & Social Center Foundation, Inc., Tondo Branch, to improve record-keeping and provide faster, more efficient healthcare services, while supporting medication dispensing in the pharmacy department.

Project Context and Its Background

The Canossa Health & Social Center Foundation, Inc., run by the Canossian Sisters, is a medical center that provides affordable healthcare services to poor communities. Tondo branch, founded on February 6, 1973, emphasizes outpatient services, allowing patients to receive care and return home on the same day. The center seeks to assist low-income families by providing accessible healthcare and social support services.

The health center accommodates approximately 50 to 70 patients each day, comprising children, expectant mothers, and seniors. It provides a range of services, including medical consultations, dental services, lab tests, X-rays, circumcisions, and dispensing medications. Various departments, such as the Outpatient Department (OPD), Pharmacy, Dental, and Laboratory, provide support for these services, with a limited number of doctors and staff collaborating.

The center presently utilizes a manual system for handling patient records and medicine inventory. Patient details are recorded on paper and kept in filing cabinets, causing delays in retrieval and increasing the risk of mistakes or lost files. The inventory of medicine is also tracked manually, lacking a formal system for monitoring expiration dates. These obstacles impact the effectiveness of the center's everyday functions and service provision.

To tackle these challenges, a digital Outpatient Health Record Management Information System was suggested. This system enhanced the storage, retrieval, and management of patient records and medical supplies, streamlining the process to be quicker, more precise, and better organized. Consequently, the center can offer enhanced and more effective healthcare services to the community.

Statement of the Problems

The center still uses a manual, paper-based system for managing outpatient health records. This outdated method causes lost patient files, slow retrieval of information, and incorrect data. As a result, staff struggle to provide fast and reliable healthcare services; patients experience longer waiting times, and the center faces difficulties in monitoring its daily operations effectively.

The center additionally utilizes a manual approach for overseeing medication stock. This approach leads to inadequate tracking of inventory and heightens the likelihood of mistakes. Medicine supplies are solely verified by physical counting, and stock is deemed low when items can no longer be seen. Moreover, not having a formal method for tracking expiration dates could result in expired medications being overlooked, compromising the safety and effectiveness of healthcare services.

Sub-Problems

This study aimed to answer the following simple questions:

1. What problems do staff currently face the paper-based system in recording and finding patient information?
2. How fast can the new system find a patient record compared to the old way of searching through paper files?
3. How does the new system help staff track medicine stocks and know when supplies are running low?
4. Do the staff find the new system easy to use and helpful in their daily work at the health center?

Purpose and Description

The Outpatient Health Record Management Information System was designed to change how patient records are kept at the Canossa Health & Social Center Foundation, Inc., Tondo Branch, from manual to computer-based. The system replaced the manual process of writing and storing patient information on paper. It used a centralized digital database to keep all outpatient information in one place. This included personal details, medical history, laboratory results, and medications given.

The purpose of this system was to provide a health center with a reliable, fast, and safe tool for managing patient information. By using a computer, the system removed the problems of paper filing, such as lost files, duplicate records, and slow searching of records. It served as one place where different departments could see and update patient information. This made the data the same and corrected across all services.

The system has different parts for different users. The admin part allows managers to control user accounts and see reports. The doctor part indicates how doctors see patient records and add consultation notes. The patient's part allows patients to give their information online before visiting the center. This saves time and reduces waiting time. This system is made to be simple and user-friendly. The processes are not difficult to follow, and the displays are simple. Staff with basic computer skills can learn to use the system quickly. This is important so that the system will be accepted and used by everyone in the health center.

Objectives of the Study

General Objective

The general objective of this study was to design, develop, and implement an Outpatient Health Record Management Information System for Canossa Health & Social Center Foundation, Inc., Tondo Branch. The system aimed to improve the efficiency, accuracy, and security of outpatient health record management while enhancing the overall workflow of healthcare service delivery.

Specific Objectives

In this study, the goal was to:

1. design and develop an integrated system for the secure storage and organized management of outpatient records, including patient demographic information, medical history, laboratory results, and prescription data.
2. implement an efficient search and retrieval feature that enables healthcare personnel to access patient records quickly and accurately.
3. incorporate user authentication and access control mechanisms to ensure confidentiality and data security.
4. develop a reporting module capable of automatically generating relevant statistical and administrative reports, such as monthly patient consultations and frequently diagnosed conditions.
5. evaluate the system's functionality, usability, and performance through user testing involving healthcare personnel to determine its effectiveness in meeting the operational needs of the health center.

Significance of the Study

This study is useful for many people because the new system will help them in different ways.

Healthcare Volunteers. The system makes it easier to keep patient records organized and track consultations, helping them deliver more structured and efficient services.

Patients. The patients will receive faster and better service. Their records will be easy to access, departments will coordinate more efficiently, and medicines will be available when needed.

Administrative Staff. The system makes it easier to keep track of patients and supplies, create reports, and plan. With clearer and more organized information, they can make better decisions and manage their work more smoothly. **Community.** A better health center means faster and more organized healthcare for everyone, especially people who need it most.

Researchers. The study helps researchers learn how to make healthcare systems work better and use technology in health services.

Future Researchers and Developers. This study can be used as a guide for anyone who wants to make healthcare systems in the future.

Project Scope and Limitations

The system handled records for outpatient services at the Canossa Health & Social Center - Tondo Branch. This included the Outpatient Department (OPD), Dental Department, Pharmacy, X-ray Department, and Laboratory. It featured adding new patients, updating personal information, recording doctors' findings and medicines given, saving laboratory results, and allowing the doctor to see how many patients he can consult a day. The user access was managed through a role-based login system. Patients logged in via the homepage, while healthcare volunteers and administrative staff used a separate login form accessible through a different URL. The system runs online and can be accessed through any web browser. Users did not need to install anything; they only opened a browser on a computer, tablet, or phone and logged in using an internet connection. The system allowed patients to submit their information online before visiting the center. This saved time during registration. Through the system, staff found records easily in filing cabinets and reduced paperwork.

Limitations

The system did not include financial functions and did not support billing or payment processing. It included features for handling overnight patient records since the center only serves outpatients. It did not include advanced medical tools like checking drug interactions or suggesting diagnoses. The system was designed specifically for the Tondo Branch of the Canossa Health & Social Center and may be modified before it can be used in other branches. The system did not include old patient records that are still in paper form, so they would need to be entered manually. Only authorized users, including admins, staff, and healthcare volunteers, can access the system. Patients can fill up form and request record access, but they cannot book appointments and can only submit their information. The system will not connect to other systems such as the government health databases or PhilHealth systems. This feature may be considered in the future, but it is not part of the project's scope.

Definition of Terms

To help readers better understand the study, the following terms were defined based on how they were used in the Outpatient Health Record Management

Information System for Canossa Health & Social Center Foundation, Inc., Tondo Branch.

Administrator. The system user with full access who manages user accounts, assigns roles, monitors system activity, and helps ensure the security and proper use of the system.

Database. A digital storage system where patient records, consultations, and other health-related information are organized, stored, and easily retrieved.

Data Security. The methods used to protect patient information from unauthorized access, changes, or loss. This includes login credentials and role-based access.

Dental Service Record. A digital record of dental consultations, treatments, and procedures provided to patients at the health center. **Doctor.** A licensed healthcare professional who accesses patient records, records consultations, updates diagnoses, and encodes prescriptions in the system.

Electronic Health Record (EHR). A digital version of a patient's medical file that includes personal details, medical history, consultations, laboratory results, and treatment information.

Health Center. It refers to Canossa Health & Social Center Foundation, Inc., Tondo Branch, where the system will be implemented to support outpatient healthcare services.

Health Record. A complete digital file of a patient's medical information, including personal data, medical history, consultations, diagnoses, treatments, and prescriptions.

Laboratory Result. The results of medical tests done on patient samples, such as blood or urine, which are stored and accessed through the system. **Login.** The process of accessing the system by entering a valid username and password based on the user's assigned role.

Medical Consultation. A record of patient visits with a healthcare provider, including assessment, diagnosis, and recommended treatment.

Medical History. A record of a patient's past and current health conditions, illnesses, treatments, and medical procedures.

Module. A specific part of the system designed to handle certain tasks such as patient registration, consultation records, laboratory processing, or pharmacy inventory management.

Outpatient. A patient who receives medical care at the health center without being admitted overnight.

Patient. An individual receiving healthcare services at the health center who can create an account, log in, and submit personal and medical information through the system.

Patient Demographics. Basic personal information about a patient, such as name, age, birthdate, address, and contact details.

Pharmacy Inventory Management. A system feature used to track, record, and manage medicine stocks in the health center pharmacy.

Prescription. A doctor's instruction that specifies the type of medicine, dosage, and how it should be taken by the patient.

Report. A summary generated from system data, such as patient statistics, consultation records, and service reports.

Search Function. A feature that allows users to quickly find patient records or information using keywords like name or patient ID.

System. It refers to the Outpatient Health Record Management Information System developed for the Canossa Health & Social Center Foundation, Inc., Tondo Branch, used to manage patient records and healthcare services. **User.** Any person authorized to use the system, including administrators, doctors, healthcare volunteers, and patients, each with specific roles and access levels.

CHAPTER 2

REVIEW OF RELATED LITERATURE AND STUDIES

This chapter presents a review of existing literature and studies relevant to the development of the Outpatient Health Record Management Information System for Canossa Health & Social Center Foundation, Inc., Tondo Branch. The review is organized thematically, focusing on: (1) the benefits of Electronic Health Records (EHR) and Electronic Medical Records (EMR) in outpatient settings, (2) barriers to EMR adoption in community health centers, (3) user acceptance and satisfaction with digital

health systems, (4) EMR implementation in the Philippine context, and (5) the role of digital health in health system strengthening.

Benefits of EHR/EMR in Outpatient Settings

The quality, effectiveness, and safety of outpatient healthcare services are greatly enhanced by Electronic Health Records (EHR) and Electronic Medical

Records (EMR), according to several studies conducted between 2020 and 2025.

According to a comprehensive review by Albagmi (2021) that was published in F1000Research, EMR deployment successfully lowers documentation mistakes and patient wait times in outpatient clinics. The study concluded that digitizing patient records improves patient outcomes and streamlines clinical procedures by enabling healthcare providers to access information more quickly. The main goal of the Canossa Health Center project is to replace sluggish, error-prone paper records with an effective digital system, is directly supported by this discovery.

Similarly, research published in BMC Primary Care by Aldosari et al. (2020) looked at patient satisfaction following the adoption of EMRs in Saudi Arabia's Western Region. Because doctors have access to their medical histories and communicate more effectively, the researchers discovered that patients expressed greater satisfaction. The study, which included 384 individuals from various primary healthcare facilities, demonstrated how EMRs enhanced patient satisfaction by lowering perceived waiting time and improving the standard of interactions between patients and their healthcare professionals. This made it possible for patients to submit information online before visiting the center by including a patient portal function in the Canossa system.

Yamashita et al. (2025) conducted a paper in Studies in Health Technology and Informatics that looked at the integration of EHRs with Personal Health Records (PHRs) to manage outpatient clinical pathways in the context of managing chronic diseases. The study showed that facilitating bidirectional communication and individualized goal setting, connecting provider and patient data enhances chronic illness management for ailments including diabetes and chemotherapy. This discovery implies that the Canossa system may potentially be extended to incorporate chronic illness monitoring modules, even though its initial focus was on basic record management.

In 2020, Özer and Şantaş conducted research on electronic medical records (EMRs). They discovered that EMRs facilitate more rapid record-keeping by doctors. Errors are also decreased using EMRs. Patient treatment is safer as a result. During checkups, important information such as medications, allergies, and previous illnesses may be readily noticed. For Canossa Health Center, this is necessary since paper records may be misplaced or include incorrect data.

Scarano et al. (2025) studied digital records and paper records in dental clinics. They found that digital records help staff get patient information faster. They also made sure that no important details were missed. This helped improve patient treatment. This is important for the Canossa system because it supports adding a Dental Service module. This will make dental records easy to access and safe, just like medical records.

Barriers to EMR Adoption in Community Health Centers

Researchers have repeatedly found substantial obstacles to the effective use of EMRs despite their proven advantages, especially in community health clinics and settings with minimal resources.

The advantages and difficulties of electronic medical records in outpatient settings were investigated in thorough research by Kavandi, Al Awar, and Jaana (2024), which was published in the Healthcare Management Forum. According to the study, while EMRs enhance staff communication, their successful use necessitates dependable computers, steady internet access, and thorough user training. Even well-

designed systems might not produce the desired results without these fundamental components. This conclusion directly relates to the Canossa Health Center, which operates in Tondo, Manila, where there can be infrastructural issues.

According to Hackett et al. (2023), spending limitations and weak internet connectivity continue to be two of the most encountered obstacles to EMR implementation in low-resource settings in the Philippines.

EMR usage records from rural health institutions in Western Visayas, Philippines, were examined by Acacio-Claro et al. (2024) and published in *Acta Medica Philippina*. In several rural health facilities during the pandemic, the study discovered that EMR use varied from less than one hour to more than eight hours. The study showed that EMR adoption trends may be impacted by public health events and that users' progressive use from basic to comprehensive may differ in rural areas.

Electronic medical record (EMR) systems are only useful when healthcare personnel are properly trained and able to utilize them with ease, according to a recent study.

In research published in the *JMIR Medical Informatics*, for instance, AlOtaibi et al. (2022) discovered that healthcare professionals are more inclined to use electronic health record (EHR) systems when they believe they are userfriendly and supportive of their regular clinical work. The study highlighted the importance of simple and user-friendly system design by showing that perceived ease of use is a significant indicator of both satisfaction with use and usage, which is even more influential than other characteristics. The Canossa system's user interface design, which prioritizes a simple layout, easy navigation, and rolespecific dashboards to enhance usability, was informed by this understanding.

According to the Uganda Ministry of Health (2025), the implementation of EMRs changes patient care and data administration, but it highlighted that ongoing technical assistance is required for long-term success. According to the paper, EMR systems frequently become outdated after the initial phase of implementation in the absence of continuous maintenance, system updates, and support for users. This result emphasizes how crucial it is to involve a maintenance and support plan in the Canossa system installation approach.

Agarwal et al. (2026) conducted research in Ethiopia, Ghana and Zimbabwe. They stated that digital health initiatives improved data collection, accountability, and resource management. The survey also discovered a few persistent issues, including excessive staff resignations, inadequate technical training, and inconsistent systems. The researchers concluded that without the right guidance and assistance, technology is insufficient on its own. This lends credence to the notion that Canossa Health Center should develop precise Standard Operating Procedures (SOPs) and teach employees how to use the system efficiently. An institutional database is the only way to access the entire study.

User Acceptance and Satisfaction with Digital Health Systems

Understanding user acceptance is critical for the successful implementation of any health information system. Several studies from 2020 to 2025 have applied theoretical frameworks to predict and explain healthcare workers' acceptance of EMR systems.

Almarzouqi et al. (2022) used an SEM-artificial neural network approach to study the determinants of EMR adoption. The study, which surveyed healthcare professionals in the Middle East, found that performance expectancy and effort expectancy are primary drivers of behavioral intention. In practical terms, healthcare workers will use the system if it helps them do their job better (performance) without requiring too much effort (ease of use). This finding guided the development of the Canossa system's role-based dashboards, which present only the information and functions relevant to each user type.

In addition, De Mesa et al. (2024), who examined user acceptability of electronic health records in urban, rural, and remote regions of the Philippines, published in BMJ Open Quality. Over 90% of healthcare personnel in a variety of settings were eager to utilize EMR if given the right training and assistance, according to the research. Crucially, the study found that a major mediator of actual system utilization was perceived behavioral control, or the user's confidence in their own ability to operate the system. This implied that merely offering the program is not enough; users must have faith in their capacity to utilize it. The advice that all Canossa employees participate in practical training sessions is highly supported by this outcome.

Acta Medica Philippina published research by Rosales (2025) that assessed nurses' satisfaction with the use of an electronic medical record in a public hospital during the pandemic. The poll revealed that Filipino nurses were usually satisfied with EMR since it made work easier and faster, despite early adoption problems. Nurses said that the system reduced their administrative burden and gave them more time to give direct patient care when they cleared the learning curve. This suggests that long-term user satisfaction may be achieved provided that the Canossa system's early training and support phases are well managed. According to Asri and Budi's (2025) evaluation of EMR deployment in Indonesian hospitals, user satisfaction and information quality were crucial success factors. The study, which surveyed 116 outpatient users, discovered that while facility characteristics had no discernible effect on attitudes, information quality had the greatest influence on user satisfaction and net benefits. This suggests that having the newest computers or the quickest internet connection is not as important to the Canossa system as making sure that data is correct, comprehensive, and accessible.

EMR Implementation in the Philippine Context

The Philippines has made substantial progress in the usage of EMRs, mostly because of government-run initiatives and academic research.

The University of the Philippines Manila developed the Community Health Information Tracking System (CHITS), a PhilHealth-certified EMR used in rural health facilities around the country.

The integration of CHITS platforms with the RxBox telemedicine device, rural health workers can now capture medical signals like blood pressure, heart rate, temperature, and fetal heart rate and communicate them to physicians at the Philippine General Hospital. The RxBox program, funded by the Philippine Council for Health Research and Development (PCHRD)-DOST, with around PHP 41.8 million, allows medical practitioners to diagnose, monitor, and treat patients in rural health institutions.

A study by Elepaño et al. (2025) looked at how electronic health records (EHRs) are used in primary care clinics in the Philippines. The study found that EHRs help improve recordkeeping and reduce errors in outpatient and clinical work. The researchers also said that systems should not use a "one-size-fits-all" design. Instead, they should match the specific workflow of each health clinic. Because of this, the Canossa system was designed based on direct observation and interviews with the health center staff. This ensures that the digital system follows and improves its current manual process.

As previously mentioned, Acacio-Claro et al. (2024) offered actual data on EMR utilization trends in rural Philippine healthcare institutions. EMR adoption expanded reporting reasons but stayed low for clinical decision-making, according to the study's analysis of usage logs during the COVID-19 pandemic. This suggests that personnel may utilize EMRs only as "digital filing cabinets" rather than as instruments to enhance patient care in the absence of special incentives or training centered on clinical usage. This result

implied that training the Canossa system should focus on using the data for clinical decision-making and patient monitoring in addition to data entry.

The proper use of introducing an outpatient EMR based on CHITS at the Philippine General Hospital was investigated by Gumabon (2020). The results supported the potential of open-source EMR systems in Philippine tertiary and primary care settings by showing high user acceptance. This study showed that EMRs may be successfully adopted even in complicated, high-volume healthcare settings if they are made to work with current processes, and users are properly taught.

The Role of Digital Health in Health System Strengthening

Digital health systems are essential for supporting whole health systems, especially in low- and middle-income nations, in addition to managing individual patient records.

Research by Barth et al. (2024) in Preventing Chronic Disease showed how chronic disease registries may be created using electronic health information. The Michigan study demonstrated how EHR data may be used to develop public health reports, assess illness prevalence, and evaluate treatment outcomes. This result implied that the reporting module of the Canossa system, which produces monthly patient consultation reports and commonly diagnosed illnesses, might support disease monitoring and community health planning. Health information systems assist healthcare institutions in maintaining accurate patient data and enhancing medical treatment.

According to guidelines published in 2021 by the Pan American Health Organization (PAHO). These systems are crucial for managing resources, evaluating progress toward health objectives, and making data-driven choices, according to PAHO. This is in line with the Canossa system's architecture, which has a reporting function that generates helpful reports. Administrators of health centers can use these reports to plan and assess their services.

The Office of the National Coordinator for Health Information Technology (ONC) states that electronic health records provide several benefits over paper records (2022). Better information availability, improved provider communication, and technologies that facilitate decision-making to improve patient care are some of these benefits. In addition to having digital reproductions of paper documentation, the ONC emphasized that EHRs are dynamic systems that may provide clinical alerts, reminders, and decision support. This finding suggests that the Canossa system may be expanded to include clinical decision support features like drug interaction alerts or treatment suggestions.

Synthesis

The reviewed literature and studies collectively highlighted the significant role of Electronic Health Records (EHR) and Electronic Medical Records (EMR) in improving the efficiency, accuracy, and quality of healthcare services, particularly in outpatient settings. Various studies emphasized that digital record systems reduce documentation errors, minimize patient waiting time, and enhance accessibility of patient information, leading to better clinical decision-making and improved patient satisfaction. However, despite these benefits, several barriers to

EMR adoption were identified, especially in community-based health centers. These included limited technological infrastructure, unreliable internet connectivity, insufficient funding, and a lack of proper user training. The literature further revealed that user acceptance plays a crucial role in the successful implementation of digital health systems. Factors such as system usability, ease of use, and perceived usefulness significantly influence the willingness of healthcare personnel to adopt such systems. In the Philippine context, studies demonstrated that EMR systems like CHITS have successfully improved healthcare delivery when properly implemented and supported with adequate training. Moreover, research

emphasized the importance of customizing systems based on the specific workflow of healthcare facilities rather than applying a generic design. Furthermore, digital health systems contribute not only to efficient record management but also to broader health system strengthening by supporting data-driven decision-making, resource management, and public health monitoring. Based on these findings, the proposed Outpatient Health Record Management

Information System for Canossa Health & Social Center Foundation, Inc., Tondo Branch was aligned with existing studies and addresses the identified gaps. It aimed to replace the manual paper-based system with a user-friendly, efficient, and secure digital solution tailored to the specific needs of the health center. The system integrated patient record management, inventory tracking, and reporting functionalities to improve overall healthcare service delivery.

Technical Background

The proposed Outpatient Health Record Management Information System is a web-based system designed to improve patient records and healthcare services managed at Canossa Health & Social Center Foundation, Inc., Tondo Branch. The system works using a client-server setup, where users access it through a web browser, and all data is stored in a central database. The system has different types of users, including Administrator, Healthcare Volunteers, Staff, and Patients. Each user has their own role and access. Administrators manage the system, user accounts, and reports. Healthcare volunteers and staff handle patient records, consultations, and inventory. Patients can log in to view and submit their personal information through a secure portal. The system interface (frontend) is built using HTML, CSS, JavaScript, and Bootstrap 5. These technologies help make the system easy to use and accessible on different devices like computers, tablets, and mobile phones. The backend of the system uses PHP to handle system functions such as login, data processing, and system logic. MySQL is used as the database to store all information, including patient records, consultations, laboratory results, and inventory data. XAMPP is used as the local server for testing and development. Other tools such as jQuery and Data Tables are used to make the system more interactive and to manage data easily. Phpmailer is used to send emails for account verification and password recovery to keep user accounts secure. The system includes important features such as patient registration, consultation records, laboratory and dental records, medicine inventory tracking, and report generation. It also uses role-based access control to make sure that only authorized users can access certain data. Overall, the system is designed to be simple, reliable, and efficient. It helps reduce manual work, avoid errors, and improve the quality of healthcare services at the health center.

System Technical Requirements

The system has different types of users: Administrators, Healthcare Volunteers, Staff, and Patients. Patients are allowed to create their own accounts through the system, while Administrators manage user roles and access. After registration, the system automatically sends a verification email to the user, allowing them to confirm their account and set up a secure password. The admin interface includes a dashboard that shows real-time data about the system. This helps administrators monitor daily operations, track important information, and make better decisions. The dashboard displays the following: total number of registered patients; total daily and monthly consultations; available and low medicine stock; most common illnesses recorded and a summary of laboratory and consultation records. Additionally, administrators have full control over system operations. They can manage patient records, update consultations, handle laboratory and dental records, manage inventory, generate reports, and manage user accounts. On the user side, healthcare volunteers and staff can securely log in to the system, update patient records, record

consultations, manage inventory, and access important information needed for their work. Patients can also log in to their accounts, update their personal information, submit their details before visiting the health center, request access to their medical records, and communicate with healthcare staff through the system. Overall, the system provides a secure and organized way of managing patient information, improving efficiency, and supporting better healthcare services.

Tools and Technology Used

The system uses both client-side and server-side technologies to provide a reliable and user-friendly experience. The Frontend Technologies include HTML, used to create the structure of each web page; CSS, used to design the layout and appearance of the system, JavaScript which adds interactive features such as form validation and dynamic content and Bootstrap, used to make the system responsive and accessible on different devices.

Backend Technologies:

The following are the backend technologies:

PHP. It handles the system logic, processes user requests, and manages authentication.

MySQL. It is used as a database to store patient records, consultations, laboratory results and inventory data.

XAMPP. It is used as a local development and testing environment.

Frameworks and Libraries:

jQuery. It is used to simplify coding for interactive features and system functions. Data Tables. It is used to organize tables with search, sorting, and pagination features.

PhpMailer. It is used to send emails such as account verification and password reset.

Hosting Environment:

The system is hosted using Hostinger, which provides the server and online access. This is deployed using a domain name: Canossa Tondo Site. Users can access the system anytime through a web browser with an internet connection. Overall, the Outpatient Health Record Management Information System is designed to be functional and scalable. By using modern web

technologies and tools, the system provides a reliable, efficient, and user-friendly platform that improves patient record management and healthcare service delivery.

CHAPTER 3

RESEARCH METHODOLOGY

This chapter presents the research methodology used in the development of the Outpatient Health Record Management Information System at Canossa Health & Social Centre Foundation, Inc., Tondo Branch. It describes the research design, sampling technique, data gathering procedures, and system development approach. The methodology supports the objective of improving patient record management and inventory tracking in response to the increasing healthcare demand in Tondo, Manila.

Research Design

This study used a research design called Descriptive Developmental Research Design. The m part of this plan described what is currently happening at Canossa Health & Social Center Foundation Inc., Tondo Branch, with their outpatient health records. The people doing the study talked to healthcare volunteers, administrative staff, and patients to see what problems they are having with the manual system.

The next part of the plan was the development of the Outpatient Health Record Management Information System. This system is meant to make it easier to record, store, and get information when needed. By

using this research plan, the people doing the study were able to look at the situation and create a system that makes things faster, more organized, and more efficient for the Outpatient Health Record Management Information System, at Canossa Health & Social Center Foundation Inc., Tondo Branch.

Respondents

The respondents of this study were selected from Canossa Health & Social Center Foundation, Inc., Tondo Branch, where the proposed system was designed and tested. A total of 14 respondents participated in the study. These respondents were composed of two (2) Healthcare Volunteers, two (2) Administrative Staff and ten (10) Outpatients. These groups were chosen because they are the main users of the health center's outpatient services and patient records.

Healthcare Volunteers. This group included the doctors, dentists, and other healthcare staff in the center. The OPD has one staff member who is responsible for patient consultations, conducting basic medical procedures, and updating patient records. Their feedback helped the researchers to evaluate how the system supports their tasks and provides faster and more efficient access to patient information.

Administrative Staff - This group included the healthcare staff, such as front desk personnel, patient coordinators, and records staff in the healthcare center. They are responsible for patient registration, organizing records, and maintaining accurate patient information. Their feedback helped the researchers understand how the system can reduce manual tasks, improve record management, and support faster and more efficient healthcare services.

Patients. The patients were included to give feedback about their experience using the system. The health center serves mostly poor individuals, around 50 to 70 patients each day. Some patients used the online form to submit their personal information before visiting the health center. Their responses helped measure the convenience and usefulness of the system. The diagram below shows the distribution of the respondents.

Table 1. Distribution of the Respondents

Category	Target Population	Sample Size
Healthcare Volunteer	2	2
Administrative Staff	3	2
Outpatient	10	10
Total	15	14

Sampling Technique

The researchers used Purposive Sampling in selecting the respondents. This method was used because the researchers needed participants who were directly involved in the outpatient services of the health center. The respondents included healthcare volunteers, administrative staff, and patients who are familiar with the current process of recording and managing patient information. Their feedback helped the researchers evaluate the proposed system.

Data Gathering procedure

To really understand what is going on with records and medical supplies, the researchers did a very thorough job of collecting information. They used a few methods to get the information they needed. These methods included giving out surveys, conducting interviews, and using an evaluation form. The

researchers selected these methods to obtain accurate and reliable information. This information helped them in making plans and building the Outpatient Health

Record Management Information System. The following instruments were utilized: **Interview.** The researchers spoke with people at the health center to learn more about what they do every day and the problems they face. They wrote down a list of questions to make sure they didn't miss anything. They also asked follow-up questions to get information. From these talks, the researchers got an understanding of what the system needs to do and what users want.

Questionnaire. The researchers conducted surveys with healthcare volunteers, administrative staff, and selected patients to assess how the current paper-based system works. The questions focused on managing records, finding information, and tracking inventory. Based on their responses, many experienced long waiting times, difficulty in locating records, and worries about important documents being misplaced or lost.

Evaluation Form. The researchers used an evaluation form to see how easy the proposed system was to use and how well it worked. They asked people to rate the system based on things like how easy it was to use, how efficient it was, how accurate it was, and how happy they were with it. The results of the evaluation helped the researchers figure out if the system does what users need it to do and if it helps manage patient records and medical supplies. The Outpatient Health Record Management Information System is what they were trying to improve. They wanted to see if the system would be good for managing patient records and medical supplies.

Research Instrument

The main research instrument used in this study was a survey questionnaire. The questionnaire was used to collect the opinions of the respondents about the proposed Outpatient Health Record Management Information System.

The questionnaire had two parts. The first part gathered basic information about the respondents. The second part included questions used to evaluate the system based on its functionality, usability, reliability, and efficiency.

A Likert scale was used to measure the responses. The respondents selected their answers from Strongly Agree, Agree, Disagree, and Strongly Disagree.

Agile Methodology

The researcher also used the Agile Model to make the Outpatient Health Record Management Information System at Canossa Health & Social Center Foundation Inc., Tondo Branch. They used Agile because it is a way of working that is easy to change, and it does things repeatedly. This means they could break the project into parts and make it better all the time. They took the system one step at a time. They got feedback from people regularly to make the system better. They worked on things like managing patient records, keeping track of consultations, and watching the inventory.

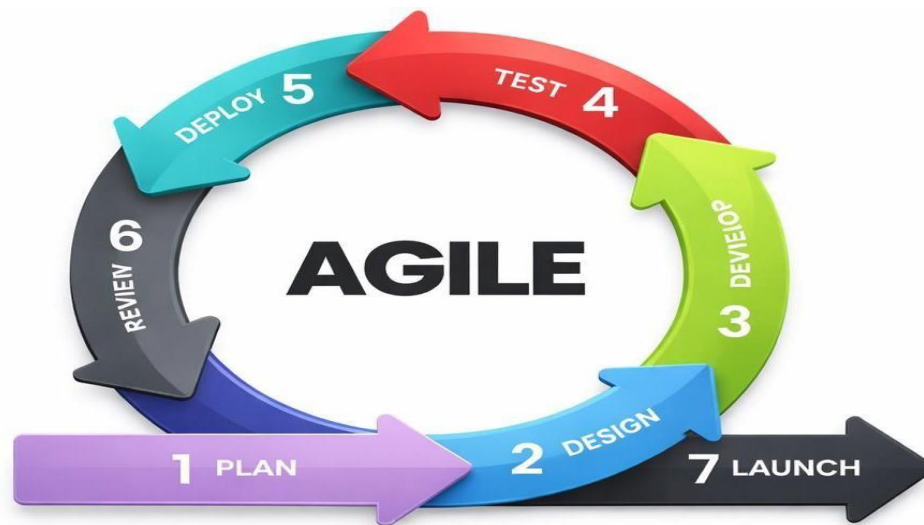


Figure 1. Agile Methodology

Agile is a way of developing a system step by step. It allowed the researchers to make changes easily and improve the system based on feedback. The process includes planning, designing, developing, testing, and improving the system many times until it works well. This helps make sure the system meets the needs of the users.

Stage 1 Plan: In this phase, the researchers gathered information from healthcare volunteers, staff, and patients at Canossa Health & Social Center Foundation, Inc., Tondo Branch. They identified problems in the current paper-based system, such as slow searching of records, lost files, and difficulty tracking medicines. Based on this, they listed the needed features like patient records, consultations, and inventory tracking. They also set the project's scope, timeline, and goals.

Stage 2 Design: In this stage, the researchers planned how the system will look and work. They created system structure, database design, and screen layouts. The system was designed to be simple, easy to use, and user-friendly. The database was organized to store patient information, records, and other data safely.

Stage 3 Develop: In this phase, the system was built step by step. The researchers created features like patient registration, record management, consultation records, and inventory tracking. They developed the system in small parts so it can be improved easily. They used technologies such as PHP, MySQL, HTML, CSS, and JavaScript.

Stage 4 Test: In this stage, the system was tested to make sure everything works properly. Different tests were done, such as checking each function, testing how parts work together, and letting users try the system. Staff and healthcare volunteers tested the system and gave feedback. Errors were fixed to improve the system.

Stage 5 Deploy: After testing, the system was placed online using Hostinger. It was connected to the domain canossatondo.site so users can access it anytime using the internet. The researchers uploaded the system files and database and made sure everything worked in the live system.

Stage 6 Review: In this final stage, feedback from users was collected. The researchers checked how well the system works in terms of usability, performance, and features. Suggestions from users were used to improve the system further.

Overall, Agile helped the researchers build a system that is flexible, easy to improve, and useful for the health center. The Agile Model helped make sure the system does what the health center really needs. It

also helped the health center give people healthcare services that are faster and better. The Outpatient Health

Record Management Information System is a part of this.

System Design

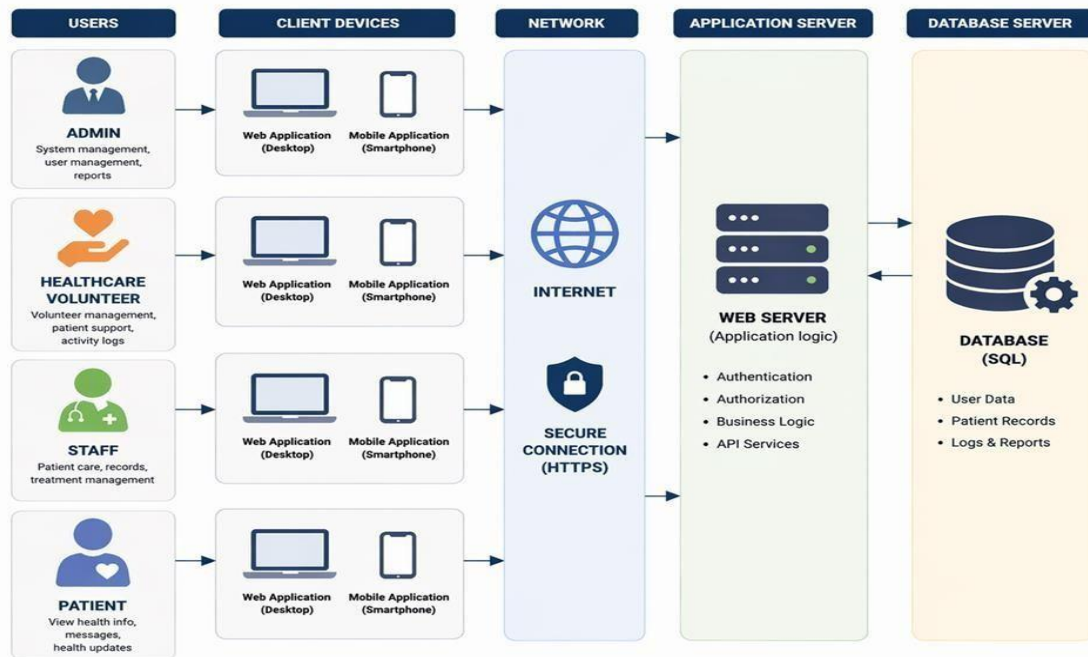


Figure 2. System Architecture

Figure 2 illustrates the overall architecture of the proposed web-based system, highlighting the interaction among four user roles: Administrator, Healthcare Volunteer, Staff, and Patient. Users access the system through web browsers using desktop computers or mobile devices over a network connection.

The system follows a client-server architecture, where the website serves as the interface for user interaction. The Administrator has full control over system management and data handling, while Healthcare Volunteers and Staff are responsible for updating and maintaining relevant information. Patients can access and view their own records within the system. All user requests are processed by the web application and stored in a centralized database, ensuring data integrity, security, and efficient system performance.

Data Flow Diagram

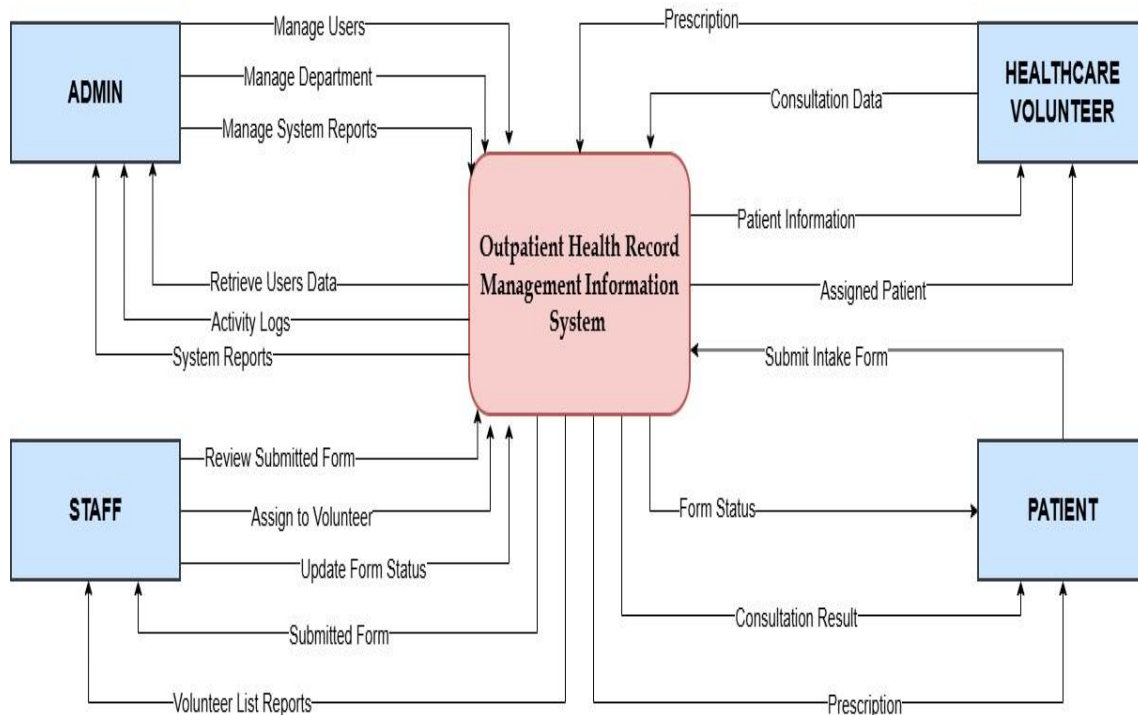


Figure 3. Level 0 Data Flow Diagram

Figure 3 illustrates the Level 0 Data Flow Diagram (DFD). This diagram illustrates the overall data movement within the Outpatient Health Record Management Information System. It shows how four primary external entities, Admin, Staff, Healthcare Volunteer and Patient, interact with the central system to process outpatient health records efficiently and securely.

The **Admin** is responsible for system governance and configuration. The admin sends inputs such as user management, department management, and system report generation to the system. In return, the system provides output including user data, activity logs, and system reports. This ensures proper oversight, monitoring, and control of system operations.

The **Staff** handles the operational workflow of patient records. Staff members submit and review intake forms, assign patients to healthcare volunteers, and update the status of each form. The system processes these inputs and returns structured outputs such as submitted forms and volunteer list reports. This supports efficient coordination and tracking of patient cases.

The **Healthcare Volunteer** focuses on patient care and consultation. The system provides volunteers with assigned patient information and relevant patient data. Volunteers then input consultation data and prescriptions into the system. This ensures that all medical interactions are recorded and stored accurately for future reference.

The **Patient** interacts with the system primarily for service access. Patients submit intake forms, which initiate the healthcare process. The system responds by providing updates such as form status, consultation results, and prescribed medications. This allows patients to stay informed about their healthcare progress. The system acts as a centralized platform that manages the flow of information between all entities. It ensures that patient data is consistently collected, processed, and distributed to authorized users, improving efficiency, accuracy, and service delivery in outpatient healthcare management.

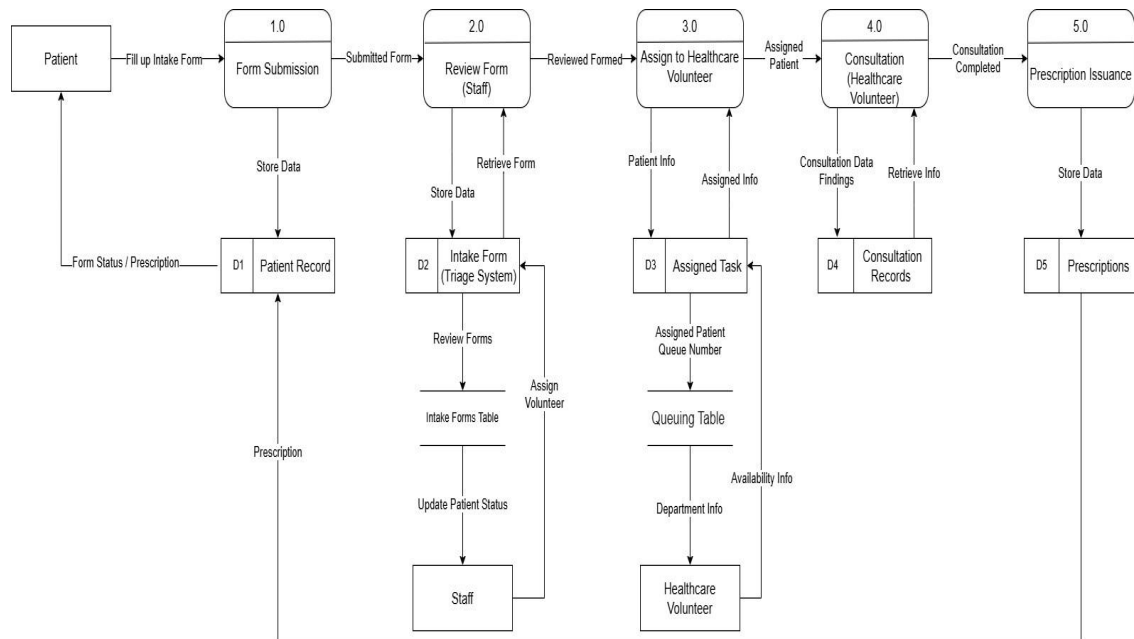


Figure 4. Level 1 Data Flow Diagram

This diagram shows how the system handles a patient step by step, from form submission to prescription. First, the patient fills out and submits an intake form. The system saves this data in the patient's records. Next, the staff reviews the submitted form using the triage system to check and organize the information. After validation, the system assigns the patient to a healthcare volunteer based on availability. The assigned task is recorded, and the patient is placed in a queue for consultation.

During the consultation, the healthcare volunteer accesses the patient's information, records findings, and saves the consultation details in the system. Once the consultation is completed, a prescription is issued and stored.

Finally, the system updates the patient's record and provides the patient with their status and prescription details.

This process ensures that patient data is handled in an organized and continuous flow, supporting faster and more accurate healthcare services.

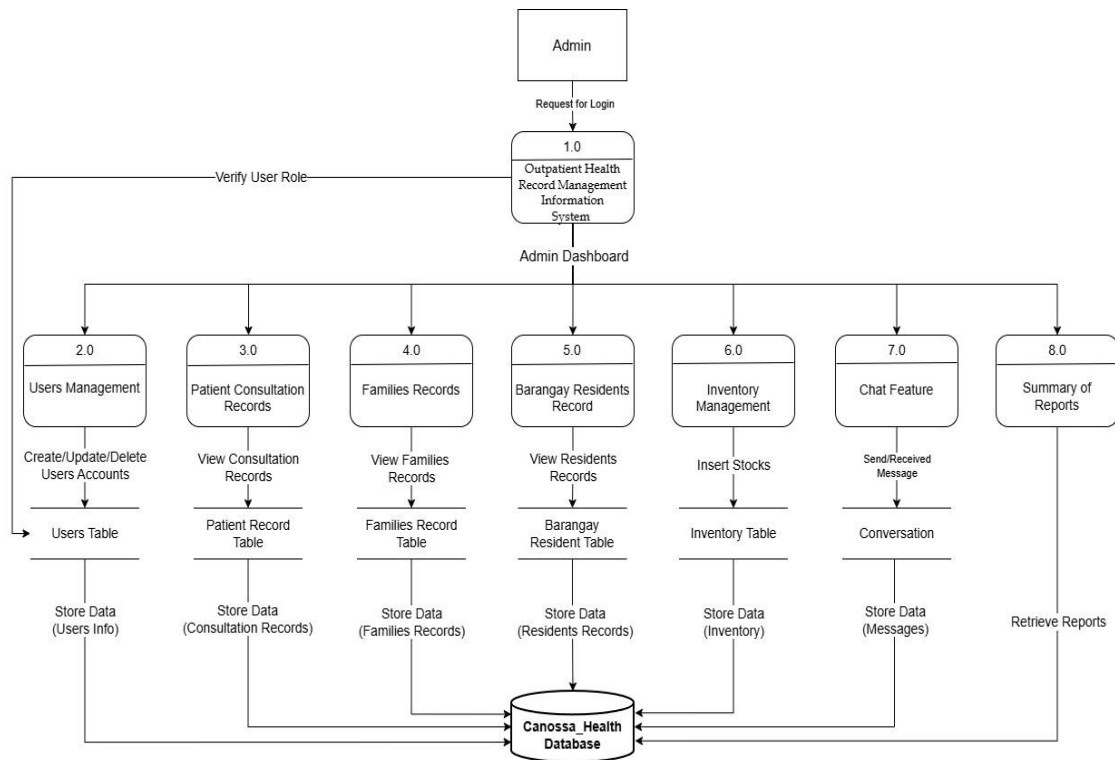


Figure 5. Level 2 Data Flow Diagram

The diagram shows the detailed functions available to the Admin in the Outpatient Health Record Management Information System.

The process starts when the admin logs into the system and accesses the dashboard. From there, the admin can manage different modules:

Users Management (2.0). This can create, update, and delete user accounts. All user data is stored on the user's table.

Patient Consultation Records (3.0). It views and manages consultation records stored on the patient's record table.

Families Records (4.0). This can access and review family-related records stored on the families' table.

Barangay Residents Record (5.0). It views and manages resident information stored in the barangay resident table.

Inventory Management (6.0). This adds and updates medical supplies, with data stored on the inventory table.

Chat Feature (7.0). It can send and receive messages, which are saved in the conversation records.

Summary of Reports (8.0). It retrieves system-generated reports for monitoring and decision-making.

All data from these modules are stored and retrieved from the central Canossa Health Database, ensuring consistent and organized data management.

Overall, the diagram highlights how the admin controls and monitors all system functions through a single interface.

Use Case Diagram

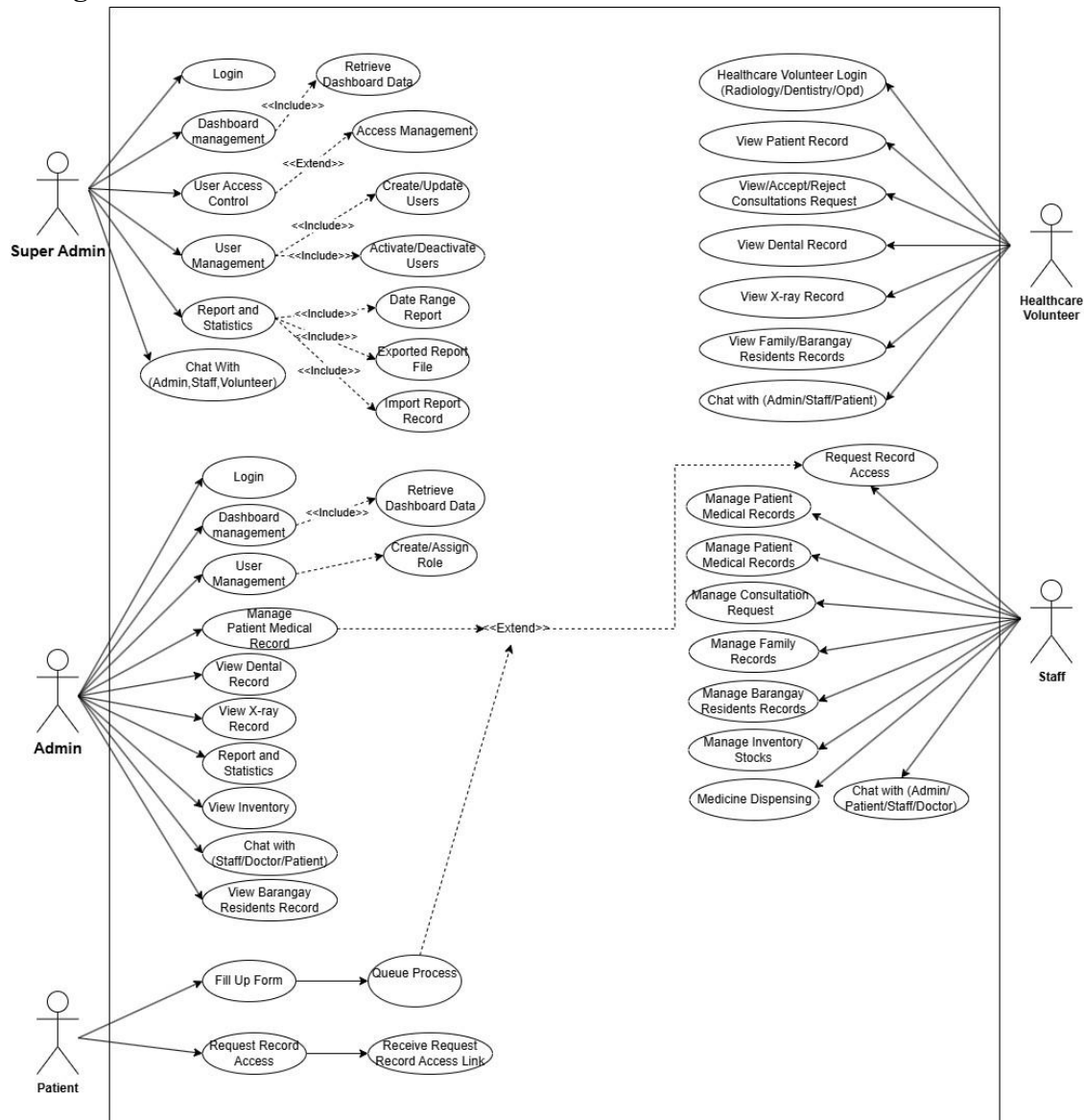


Figure 6. Use Case Diagram Illustrating Interactions Between Main Users

Figure 6 shows the Use Case Diagram of the Health Information Management System, illustrating the interactions between the five main user roles—Super Admin, Admin, Staff, Healthcare Volunteer, and Patient—and the system. It highlights the key functions available to each user and how their actions are connected through <<include>> and <<extend>> relationships, showing required and optional processes. The system is designed to manage patient records efficiently, improve communication among users, and support healthcare service operations.

Super Admin Use Cases:

Login and Dashboard Management. The Super Admin can access the system and manage the dashboard, which includes retrieving the dashboard data for the monitoring system activities.

User Access Control. It allows the Super Admin to control user permissions, which may extend to Access Management for handling roles and restrictions. **User Management.** It enables creating, updating, activating, or deactivating users to ensure proper system access.

Reports and Statistics. The Super Admin can generate reports based on a selected date range, export report files, or import records for system analysis. **Chat System.** It allows communication with Admin, Staff, and Healthcare

Volunteers for coordination and support.

Admin Use Cases:

Login and Dashboard Management. The Admin can log in and retrieve dashboard data for daily operations.

User Management. The Admin can create or assign roles to users within the system.

Manage Patient Medical Records. The Admin handles and updates patient records, including dental and X-ray records.

View Records. It includes viewing dental records, X-ray records, and barangay residents' records for reference.

Reports and Statistics. The Admin can access reports to monitor healthcare data.

Inventory Management. It allows viewing of inventory items used in the health center.

Chat System. It enables communication with staff, doctors, and patients.

Staff Use Cases:

Manage Patient Medical Records. The staff can update and maintain patient information.

Manage Consultation Requests. It handles patient consultation requests for approval or processing.

Manage Family and Barangay Records. The staff can organize and maintain community health records.

Manage Inventory Stocks. It ensures proper tracking of medical supplies. **Medicine Dispensing.** The staff can record and manage the distribution of medicines.

Request Record Access. The staff may request access to certain records when needed.

Chat System. It allows communication with Admin, patients, and other staff.

Healthcare Volunteer Use Cases:

Login. The volunteers can access the system based on their assigned area (Radiology, Dentistry, OPD).

View Patient Records. It includes viewing general patient records, dental records, X-ray records, and family or barangay records.

Manage Consultation Requests. The volunteers can view, accept, or reject consultation requests.

Chat System. It enables communication with Admin, Staff, and patients.

Patient Use Cases:

Sign Up and Sign In. The patients can register and log in to access the system. **View Patient Health Portal.** It serves as the main interface where patients can access their information.

View Profile and Update Profile. The patients can check and update their personal details.

Request to View Records. The patients can request access to their medical records.

Request Consultation. It allows patients to request medical consultations.

Chat System. The patients can communicate with Admin, Staff, or Doctors.

The use of <<include>> and <<extend>> relationships ensures that the system processes are modular and efficient. For example, retrieving dashboard data is a required part of dashboard management, while actions such as requesting consultations or accessing records may extend depending on user needs. This structure helps improve system organization, usability, and overall healthcare service delivery.

System Flowchart

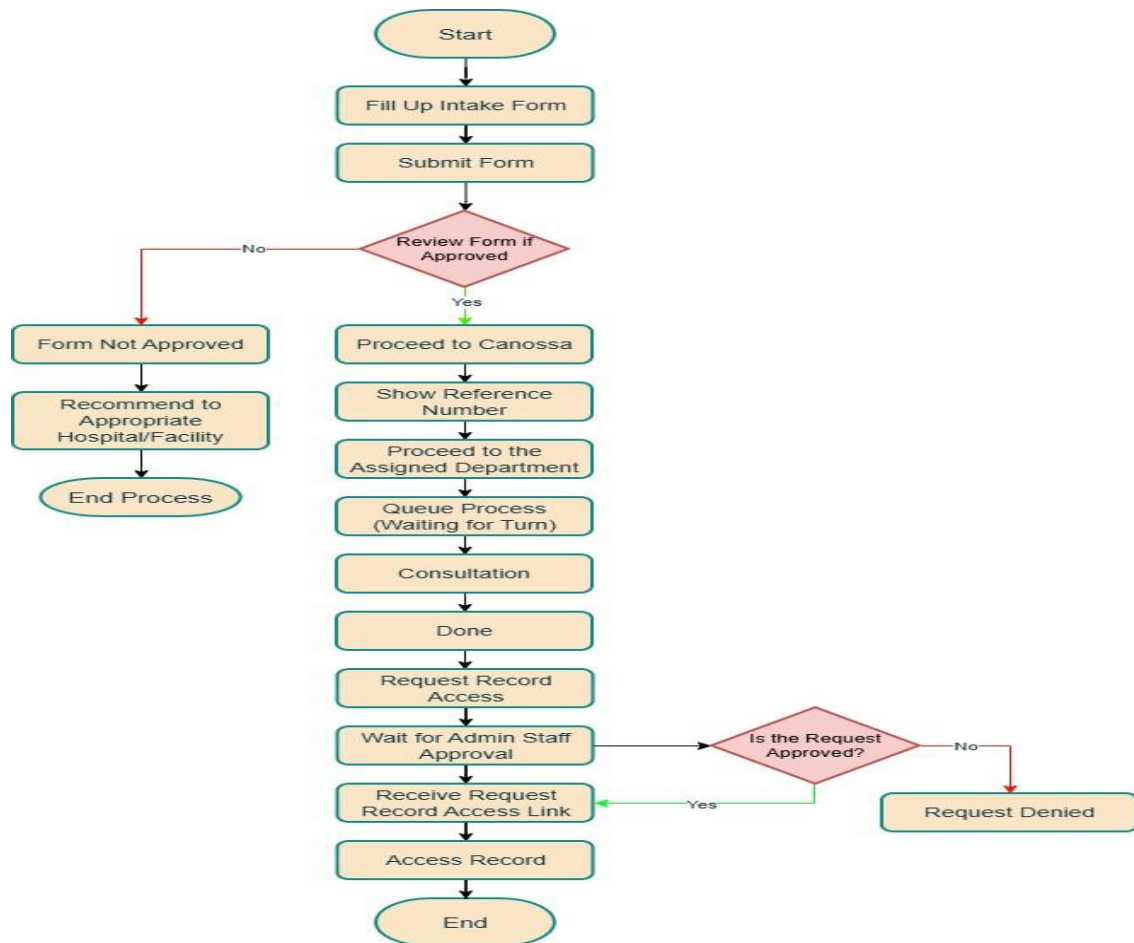


Figure 7. Patients Flowchart

Figure 7 outlines the end-to-end patient journey within the healthcare management system, from initial intake to record access. The process begins with the patient completing and submitting a digital intake form, which undergoes a formal review for approval. If the form is not approved, the system provides a recommendation to an appropriate hospital or facility, concluding the process. Upon approval, the patient proceeds to the facility, presents a reference number, and is directed to an assigned department to enter the real-time queue. Following the clinical consultation, the workflow transitions to administrative data management, where the patient may request access to their records. This request is subject to administrative staff approval; if granted, the patient receives a secure record access link to view their medical information, effectively closing the procedural loop.

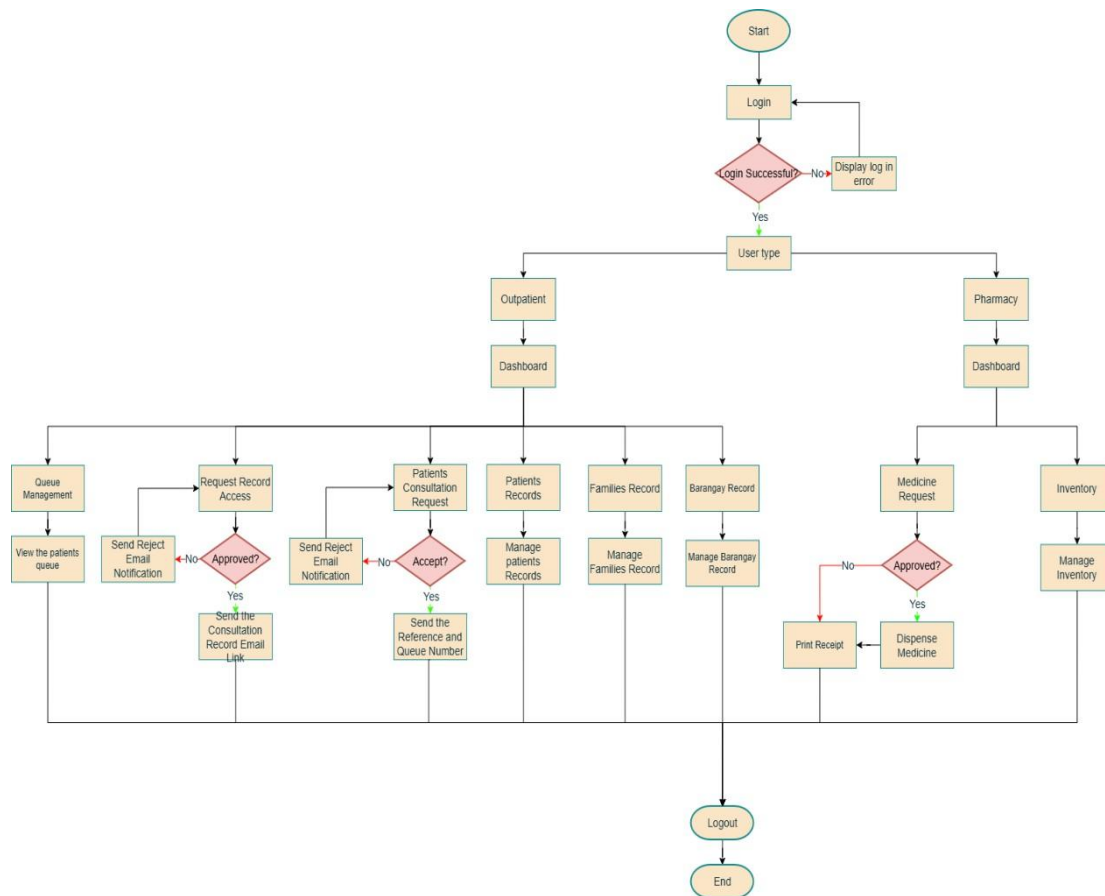


Figure 8. Staff Flowchart

Figure 8 illustrates the comprehensive system of workflow and decision logic for the healthcare management platform. It begins with a secure authentication process, branching into distinct pathways based on the User Type, specifically for Outpatient and Pharmacy roles. The Outpatient pathway details the administrative and clinical oversight of patient interactions, including Queue Management, Record Access authorization, and the processing of Consultation Requests via email notifications. Concurrently, the Pharmacy pathway governs the supply chain and fulfillment operations, managing Medicine Requests, the dispensing process, and Inventory maintenance. By mapping these interconnected procedures from login to logout, the diagram ensures a structured approach to patient flow, secure data handling, and resource management within the integrated system.

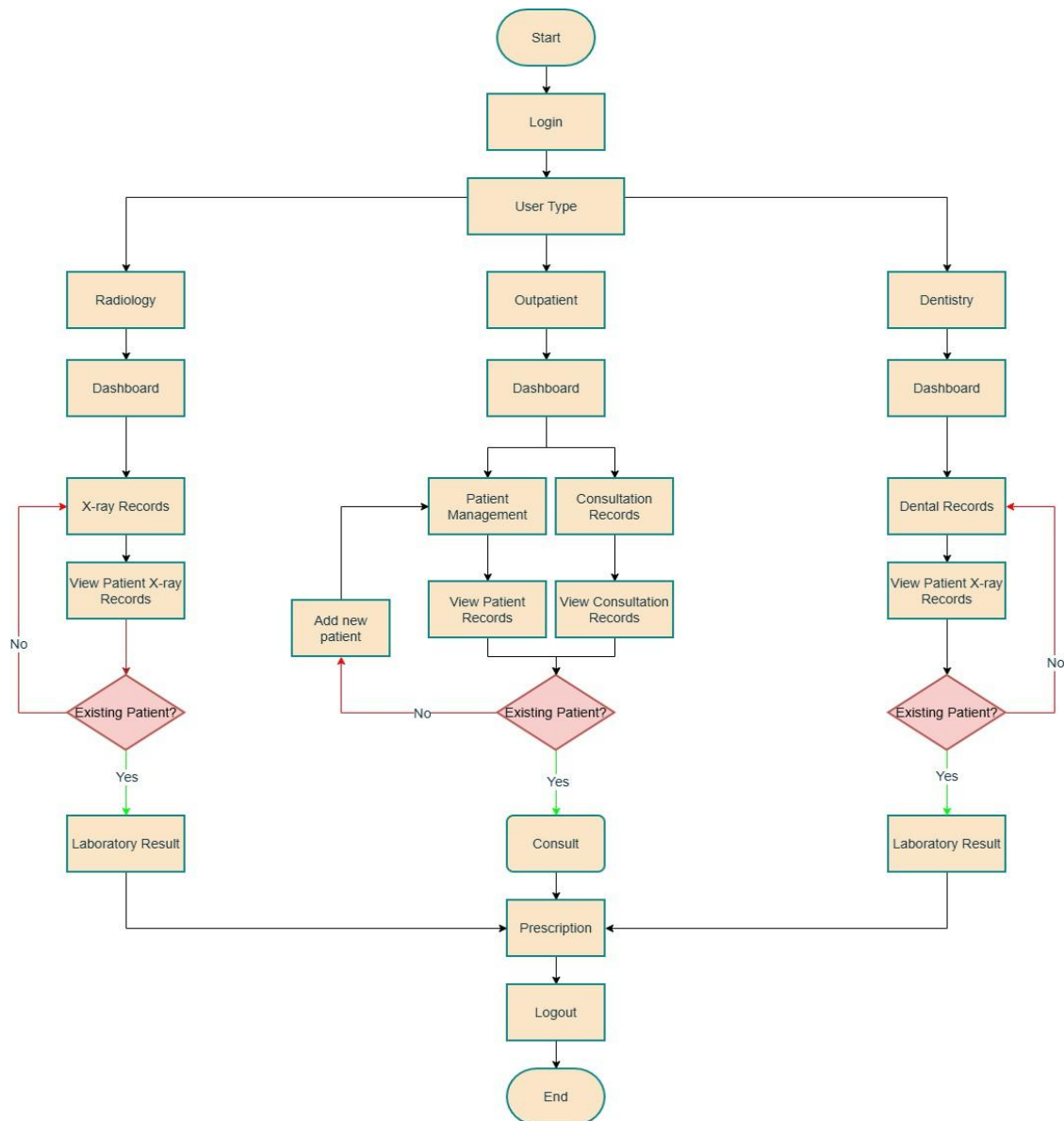


Figure 9. Healthcare Volunteers Flowchart

Figure 9 shows a role-based healthcare management system that begins with the user at the start point, followed by logging into the system. After a successful login, the system determines the user type, which directs the user to specific functionalities based on their role. If the user is a Patient Care Coordinator, they are taken to a dashboard where they can access and manage various records, including consultation records, patient records, families' records, barangay records, and record request access. Within the consultation records, they can manage consultations and generate prescriptions, while the other sections allow them to manage their respective records. On the other hand, if the user is part of the Pharmacy, they are directed to a separate dashboard where they can view inventory and manage inventory-related tasks. Both roles are interconnected, particularly through prescriptions and records, ensuring coordination within the system. After completing their tasks, users proceed to log out, which ends the process.

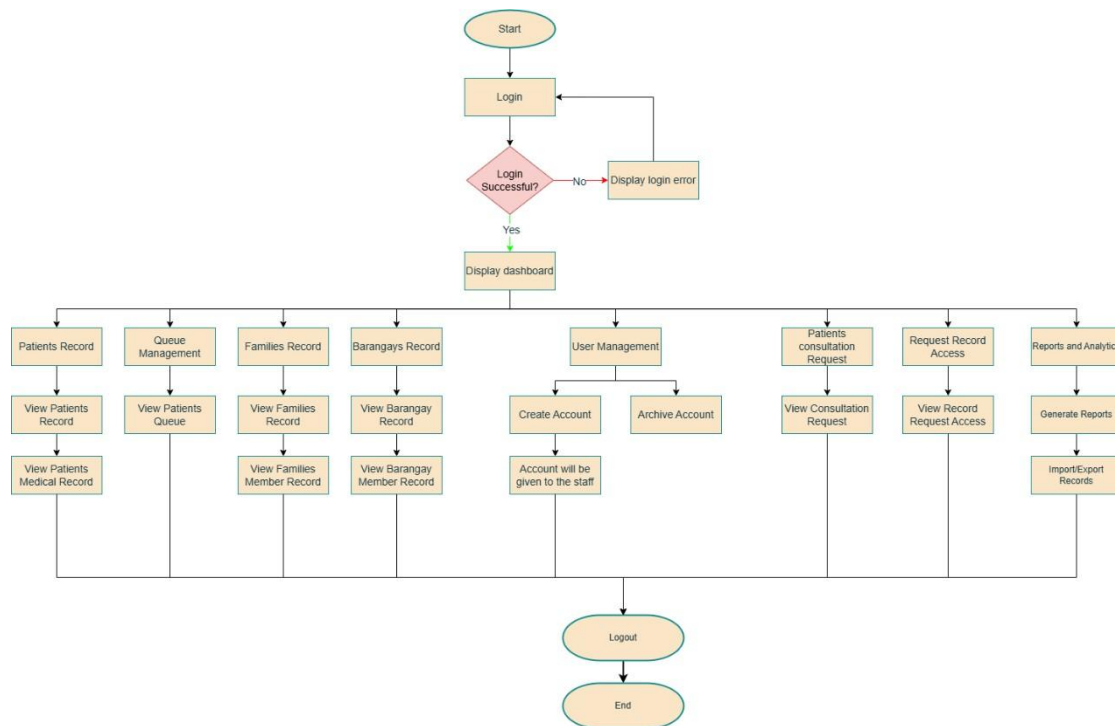


Figure 10. Admin Flowchart

Figure 10 shows how a healthcare system works in a simple and connected way, with the admin at the center managing everything. It starts with the Dashboard, where users log in and access the system. From there, the admin can view and handle important information like patient records, consultations, X-ray results, dental records, and family profiles. All this information is stored in one place—the Canossa Health Database—so it's easy to find and update when needed.

The admin is responsible for keeping the system organized. They control who can access records, manage users, and handle tasks like importing or exporting data. Other parts of the system also help in daily operations, such as checking barangay (community) records, monitoring inventory or medical supplies, and generating reports for better decision-making.

There is also a feature for requesting access to records, which allows users to ask for specific information. If needed, they can communicate through the chat system to send and receive messages.

Entity Relationship Diagram (ERD)

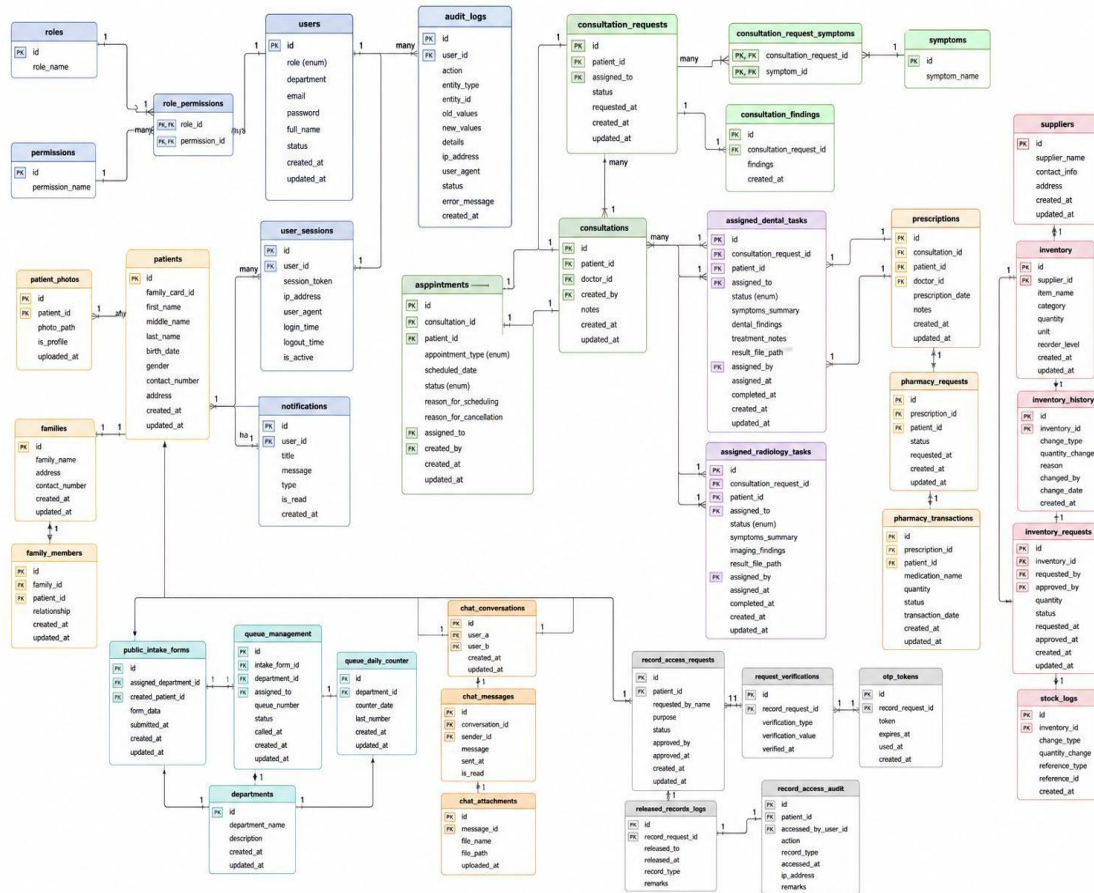


Figure 11. Entity Relationship Diagram of HIMS

The ERD presents the database structure of the Health Information Management System, showing the key entities and their relationships. At its core, the system manages users through role-based access control using the Users, Roles, and Permissions tables, with activities tracked via audit logs and sessions for security.

Patient information is centralized in the Patients module, which is connected to related data such as families, photos, and intake forms. Healthcare services are handled through Consultation Requests, Consultations, Appointments, and task-specific tables, along with recorded symptoms and findings.

The system also supports communication through notifications and chat features, while Queue Management and Departments help organize patient flow. Additionally, pharmacy and inventory modules manage prescriptions, medication requests, and stock monitoring.

To ensure data privacy, the system includes secure record access and verification mechanisms. Overall, the ERD reflects a structured and efficient design that supports healthcare operations, data security, and system scalability.

Project Development Cost

Hardware Cost

To handle the increasing healthcare needs in Tondo, Manila, an effective and dependable system was required for the construction of the Outpatient Health Record Management Information System at Canossa Health & Social Center Foundation, Inc., Tondo Branch. Managing patient records and tracking

medical supplies was challenging with the existing paper-based procedure, which caused delays and increased the possibility of information loss. To solve these problems, a computerized system was suggested that monitor the inventory and produce reports in addition to storing and organizing patient data, such as medical history, consultations, and prescriptions. This strategy, maintained availability and affordability without extra expenses while reducing errors, shortening procedures, and supporting improved healthcare services.

Table 2. Hardware Cost of the Proposed System

Classification	Specification	Cost
Processor	AMD Ryzen 5 (older gen)	₱4,800
Motherboard	Biostar A32MH	₱2,200
Memory	8GB RAM	₱900
SSD	256GB	₱1,200
HDD	500GB	₱1,200
GPU	GT 710	₱2,200
Power Supply	Intelligent 700 watts	₱500
Case	Neutron 2817 Mini Atx	₱1,000
TOTAL		₱14,000

These elements were chosen to ensure a balanced setup for creating and managing the Outpatient Health Record Management Information System, without including unnecessary resources on expensive technology that would not significantly advance the project. This system stays within an affordable budget while offering a fully functional development environment unique to the project's needs.

Software Cost

The Outpatient Health Record Management Information System uses a mix of paid tools to make sure it works well and is easy to use. It uses things like HTML, CSS, JavaScript, PHP, MySQL, and Bootstrap, which are all free, and lots of people use them so it does not cost a lot to develop. For storing patient records and inventory logs, the Outpatient Health Record Management

Information System uses MySQL, which is secure. The Outpatient Health Record Management Information System is hosted online. There is no need to use special tools like XAMPP on your own computer. A licensed operating system, such as Windows 10 or 11 Pro, is used for the Outpatient Health Record

Management Information System to be stable and secure, and this costs around

PHP 8,500 at one time. The Outpatient Health Record Management Information System also includes things like web hosting and a domain name, so it can be used by parts of the Tondo Branch, like the Pharmacy, Dental, and Laboratory. Some extra features, like sending SMS notifications or using payment gateways, might be free to set up. You might have to pay for them when you use them. The Outpatient Health Record Management Information System has a balance of free tools and paid services, which makes it affordable and easy to use, and it works well.

Table 3. Software Cost of the Proposed System

Category	Specification	Cost
Operating System	Windows 10/11 Pro	PHP 8,500.00
Web Server and Database	Hostinger Hosting with MySQL Support	PHP 312.00
Programming Languages and Frameworks	PHP, HTML, CSS, JavaScript, Bootstrap	Free
Domain Name (1 Year)	Hostinger Custom Domain	PHP 79.00
Professional mail 1 Year)	Hostinger Professional Email	Free
TOTAL		PHP 8,891

These elements come together to create a complete software stack that supports the Outpatient Health Record Management Information System at each phase of development, from coding and testing to deployment and servicing. The Windows operating system license is the main cost; all other parts are free and open source. This method offers strong capability for creating and maintaining a professional-grade system while keeping overall software expenses low **Summary Cost**

This document provides a thorough rundown of all the costs connected with creating the Outpatient Health Record Management Information System, including both software and hardware costs. The organization encourages awareness and helps everyone know the amount of money needed to make the project successful.

Table 4. Summary Cost of the Proposed System

Cost	Amount
Hardware Cost	PHP 14,000.00
Software Cost	PHP 8,891.00
Total	PHP 22,891

Hardware costs. This is the account for the purchase of essential devices for system development and operation, guaranteeing that developers have trustworthy resources to successfully develop and administer the system. **Software costs.** It refers to the payment for operating systems, development environments, and other software tools that help with system development, testing, and implementation.

CHAPTER 4

PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA

This chapter presents the analysis and interpretation of data gathered from respondents to the study, which focused on the development of the Outpatient

Health Record Management Information System at the Canossa Health & Social Center Foundation, Inc., Tondo Branch. The data were collected to assess the current state of the manual system and to evaluate the acceptability of the proposed information system based on the ISO/IEC 25010 software quality characteristics.

User Interface Design

The Canossa Health & Social Center Foundation, Inc., Tondo Branch's Outpatient Health Record Management Information System relies heavily on user interface (UI) design. In performing tasks that involve patients' record keeping, for instance, the program is user-friendly and easily comprehended. In terms of interface design, the user interface has been crafted to cater to the needs of both the administrator, doctor, and other personnel. This has been achieved using text, proper layout, and button placements.

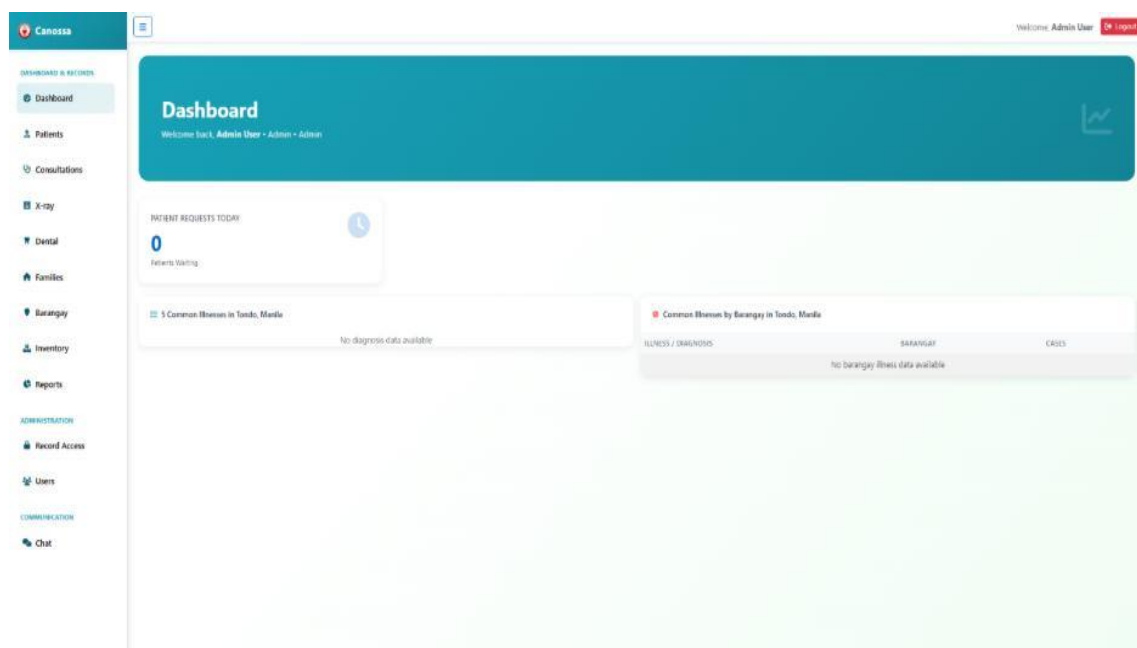


Figure 12. Admin Dashboard Interface

The interface has a green color scheme and a neat, well-organized layout. Easy access to many parts, including patients, consultations, and reports, is made possible by the sidebar on the left. Important data, such as low stock, expired items, and total records, are shown in straightforward cards on the main screen. Additionally, it displays barangay data and disease summaries. Users can immediately view crucial information and effectively handle tasks thanks to the layout's clarity.

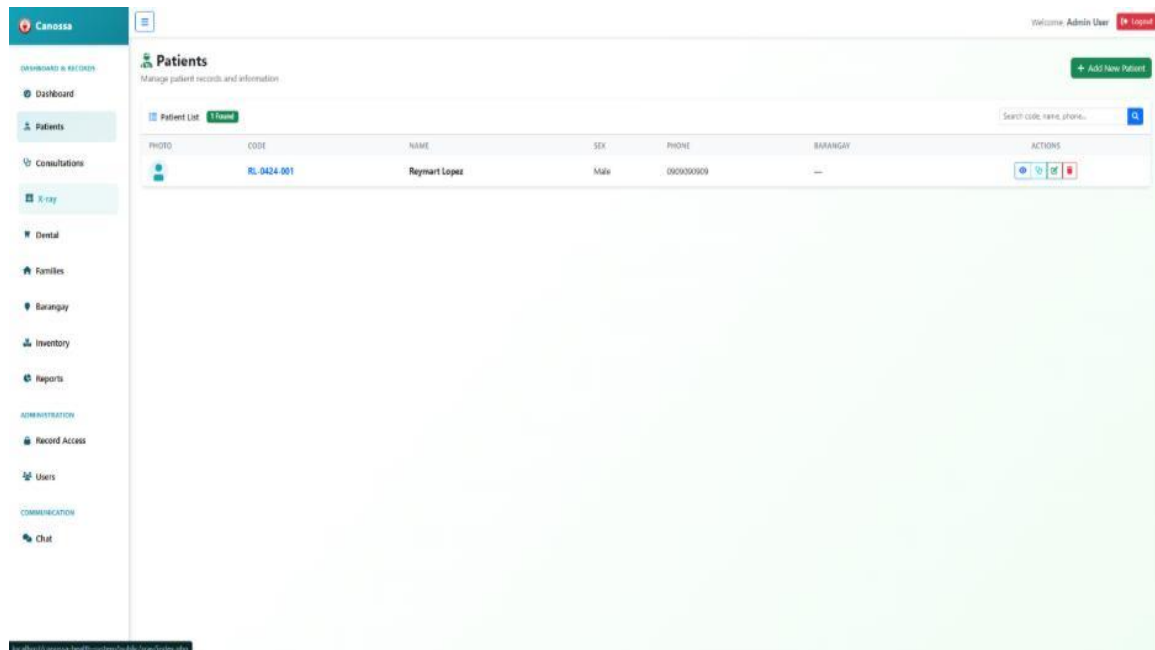


Figure 13. Patients' Interface

This figure has a neat and orderly design. A list of patients, including patient code, name, sex, phone number, family card, and barangay, is shown in the interface. Action options enable users to see, amend, and remove patient data, while a "Add New Patient" option facilitates simple record entry. Patient records can be effectively managed and accessed thanks to the straightforward table design and clear layout.

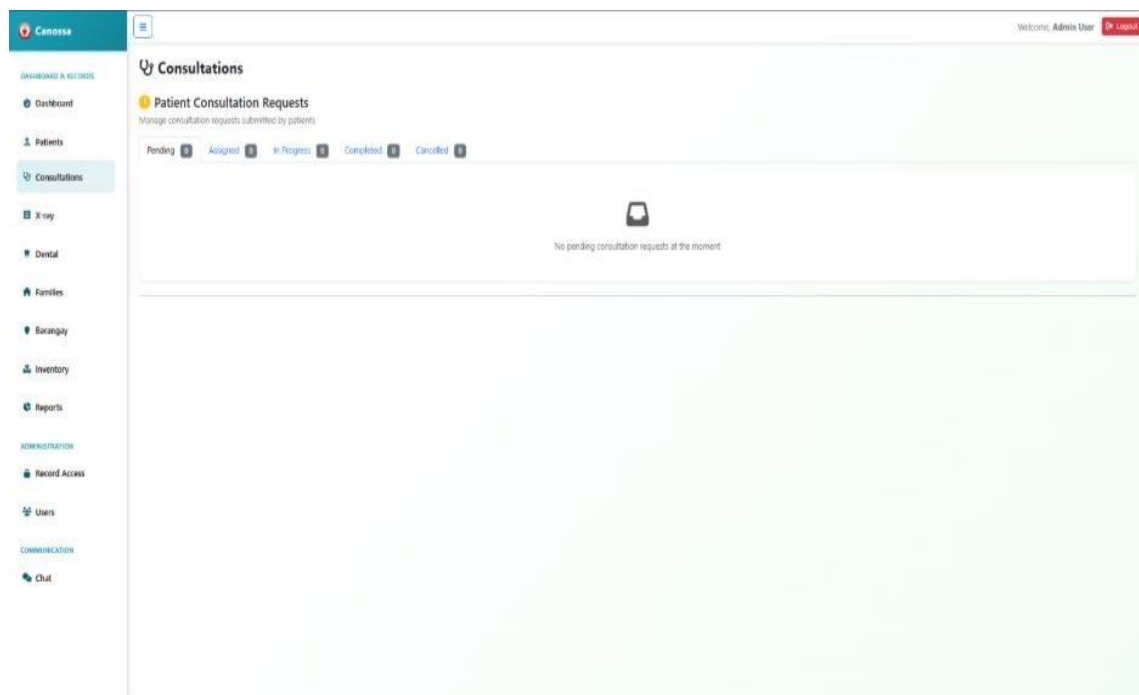


Figure 14. Consultations Interface

This provides a centralized interface for managing patient consultation requests. It allows users to view and organize requests by status—Pending, Assigned, In Progress, Completed, and Cancelled—with

counters for quick monitoring. The page also displays an empty state when no requests are available, supporting efficient workflow management and timely patient care.

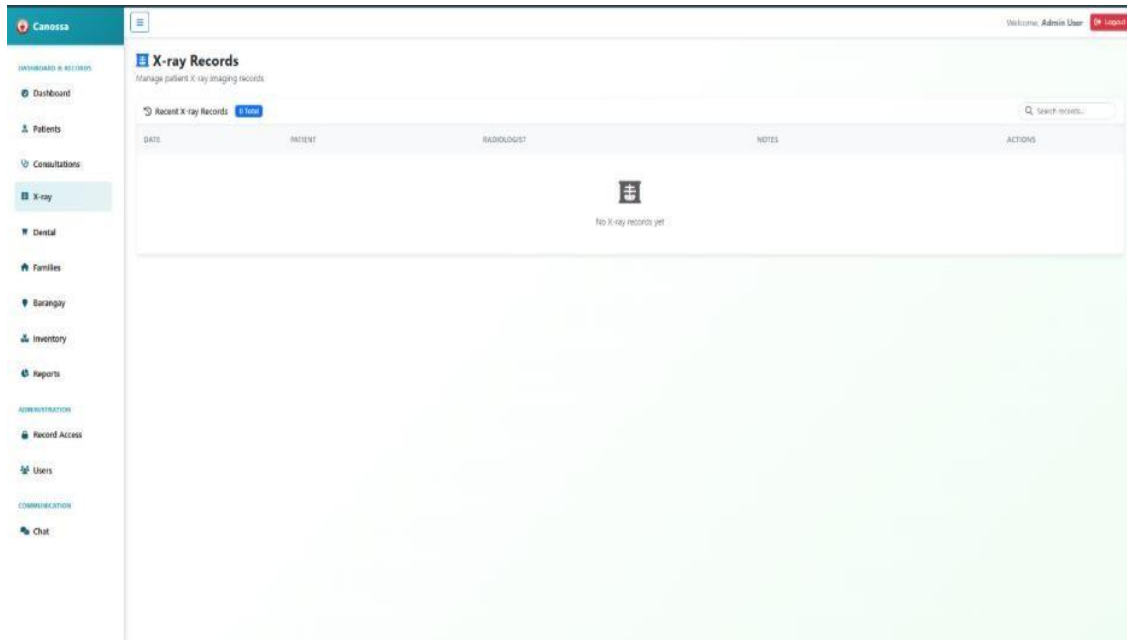


Figure 15. X-ray Records Interface

The interface maintains a uniform layout with the rest of the system while offering a consolidated view for handling patient imaging data. It has a table with columns for the date, patient name, radiologist, and remarks, a search bar for results filtering, and a "New X-ray Record" button for adding entries. Healthcare personnel can track and access diagnostic imaging records with ease because of the simplified design.

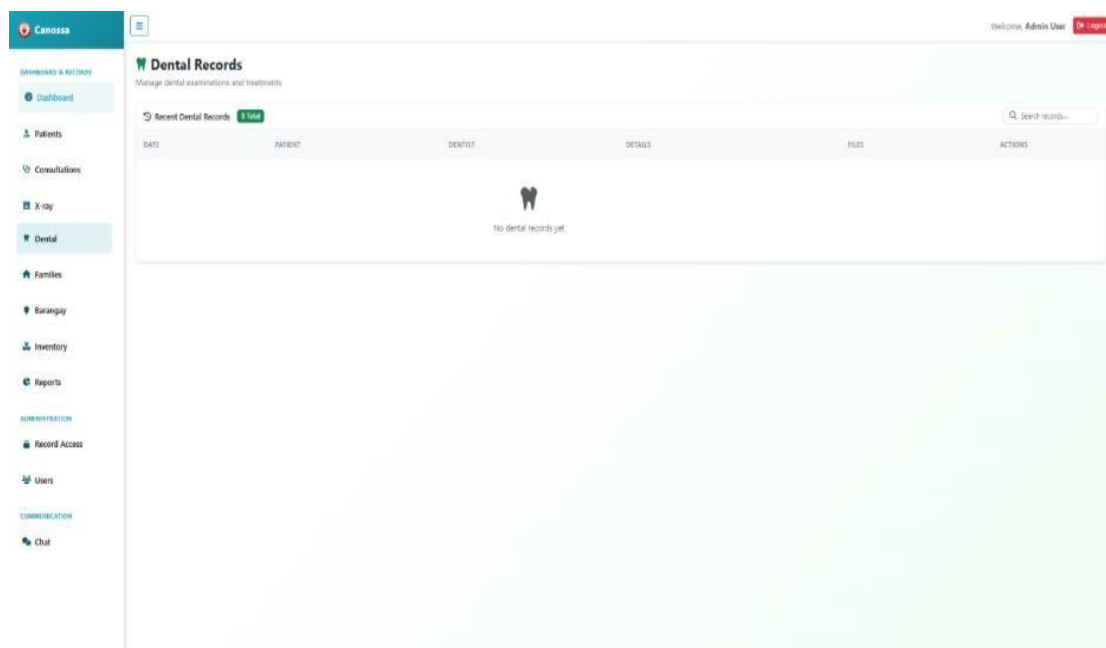


Figure 16. Dental Records Interface

This module has a "New Dental Record" button for quick data entry and is required to handle dental examinations and treatments. Columns for the treatment date, patient name, attending dentist, precise operation data, and related files are all included in the well-organized table style. Dental staff can effectively maintain oral health history and manage patient care data in a centralized digital environment thanks to the system's user-friendly interface and search capabilities.

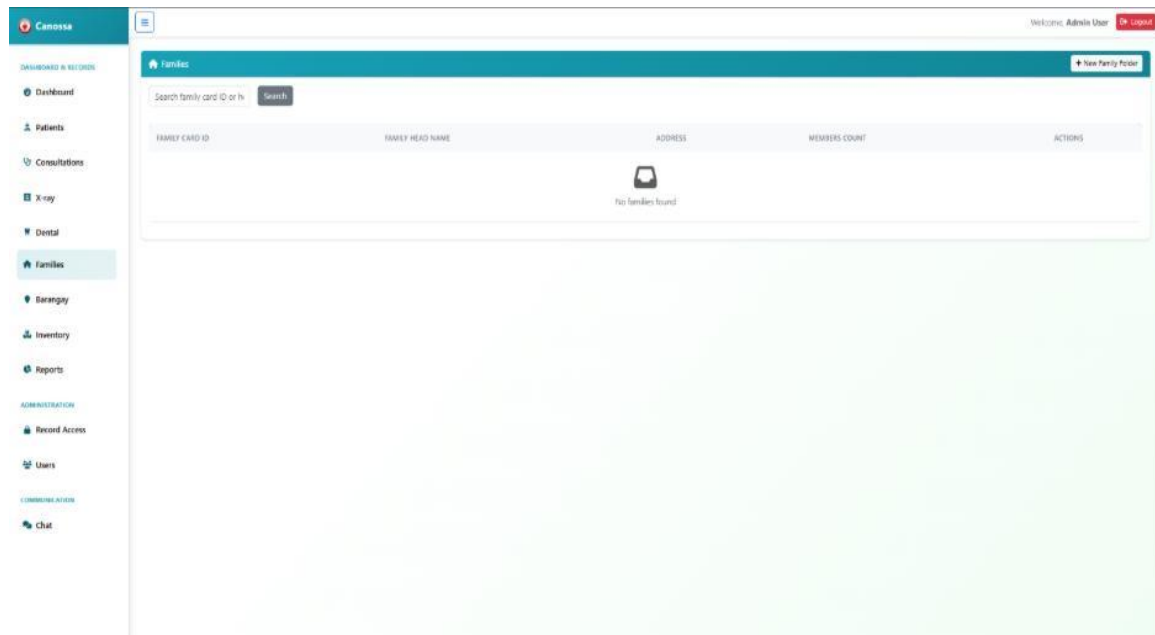


Figure 17. Families Interface

The "New Family Folder" feature of this interface enables staff to connect individual patient records into a household context. Each folder's Family Card ID, Family Head's name, address information, and member count are displayed in the list. To maintain the organization and accessibility of social and community health information, this consolidated view makes it simple for users to search for certain households and manage family-based health data using the "View" or "Delete" options.

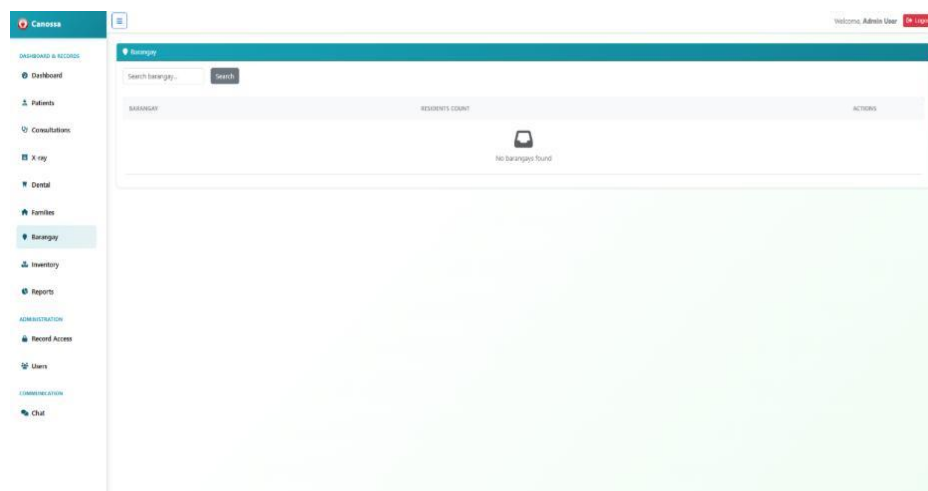


Figure 18. Barangay Management Interface

Patient data is arranged in terms of location, by barangay, in this managing section. To find specific places, users can utilize a search bar or filter by range in the user interface. With a "View Residents" action that allows personnel to access a comprehensive list of patients registered inside each barangay, the table shows the barangay name or number along with the current resident count. This feature facilitates effective demographic reporting and localized community health monitoring.

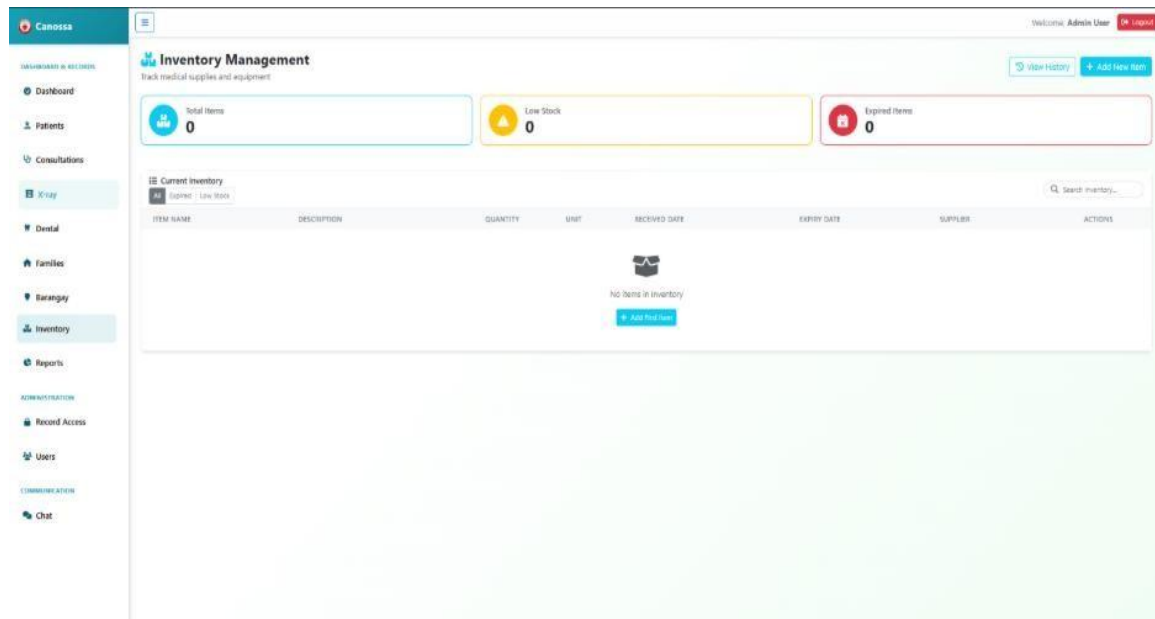


Figure 19. Inventory Management Interface

This module offers a thorough dashboard for monitoring medical equipment and supplies. To guarantee fast restocking, alert cards at the top focus on Low Stock and Expired Items. For easy monitoring, the interface has report widgets for Total Items, Low Stock count, and Expired Items. The item names, descriptions, numbers, expiration dates, and supplier data are listed in the current inventory table below. Staff can easily update stock levels thanks to integrated "In" and "Out" action buttons, which promote effective resource management and discourage the use of out-of-date medical goods.

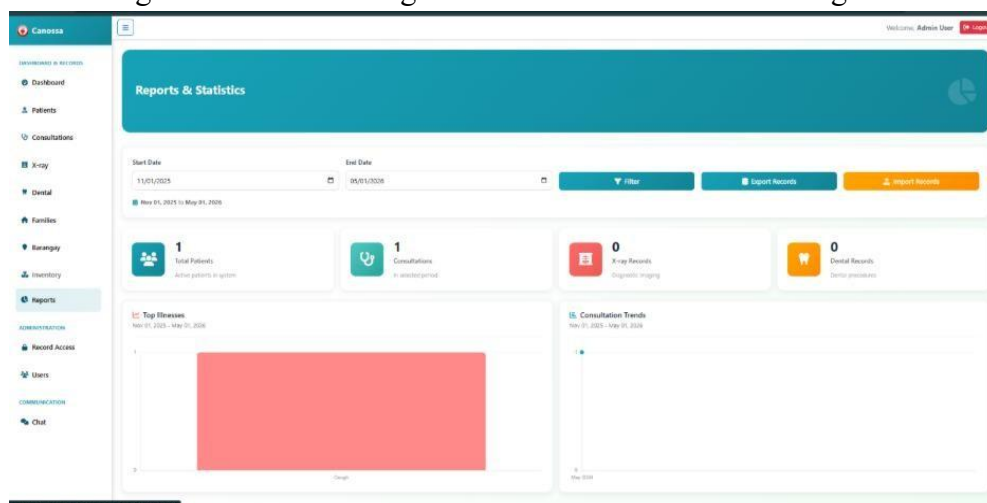


Figure 20. Reports & Statistics Interface

This admin dashboard offers healthcare insights and advanced analysis. For data protection, it has a "Backup All" tool and date-range filters. Summary cards for important data, such as Total Patients, Consultations, X-ray Records, and Dental Records, are included in the interface. Additionally, graphic charts for "Top Illnesses" and "Consultation Trends" enable admins to track system operation and public health trends across certain time periods, assisting the foundation in making decisions based on information.

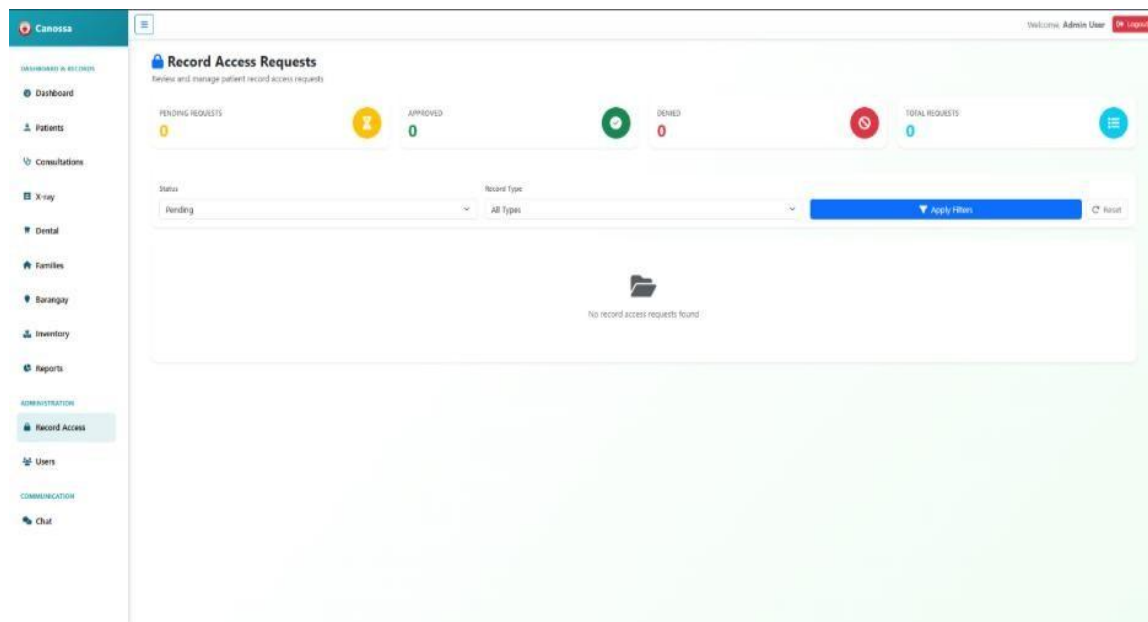


Figure 21. Record Access Requests

This page provides a centralized interface for reviewing and managing requests to access patient records. It displays request summaries, including Pending, Approved, Denied, and Total Requests, allowing users to quickly monitor access activities. The page also includes filtering options by status and record type to easily locate specific requests. An empty state is shown when no requests are available, supporting efficient tracking and secure handling of patient information.

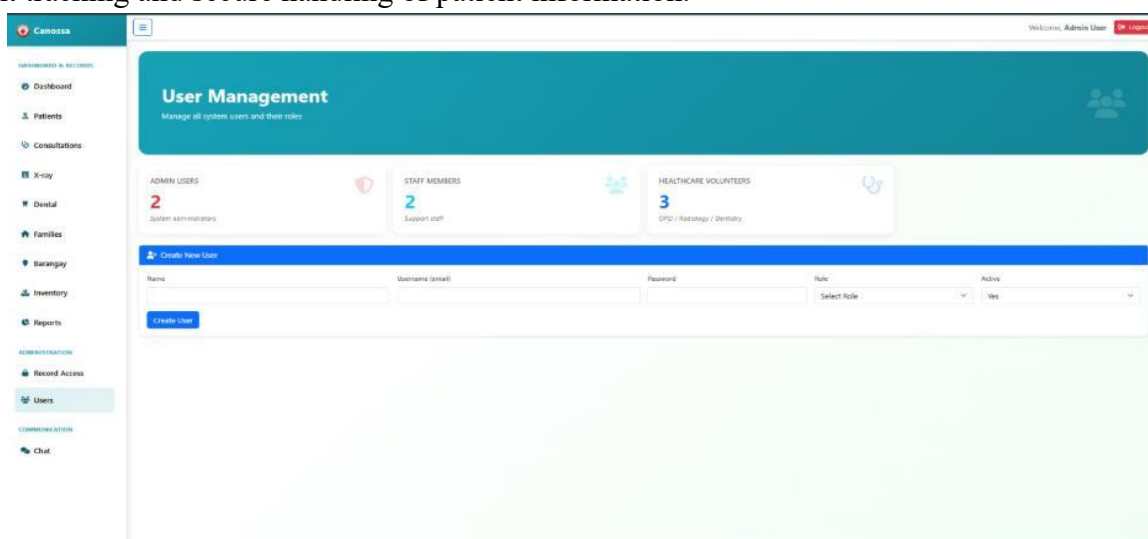


Figure 22. User Management Interface

System admins can monitor and manage platform access with this interface. Report cards showing the number of administrative users, staff members, healthcare volunteers, and patient accounts are in the top part. The "Create New User" form, which is located after these measures, enables new employees to register by entering their name, email address (username), and password. They can also be assigned specific jobs with their account status changed to either active or inactive. Within the foundation's computer facilities, this organized management enables safe access control and different roles assigned.

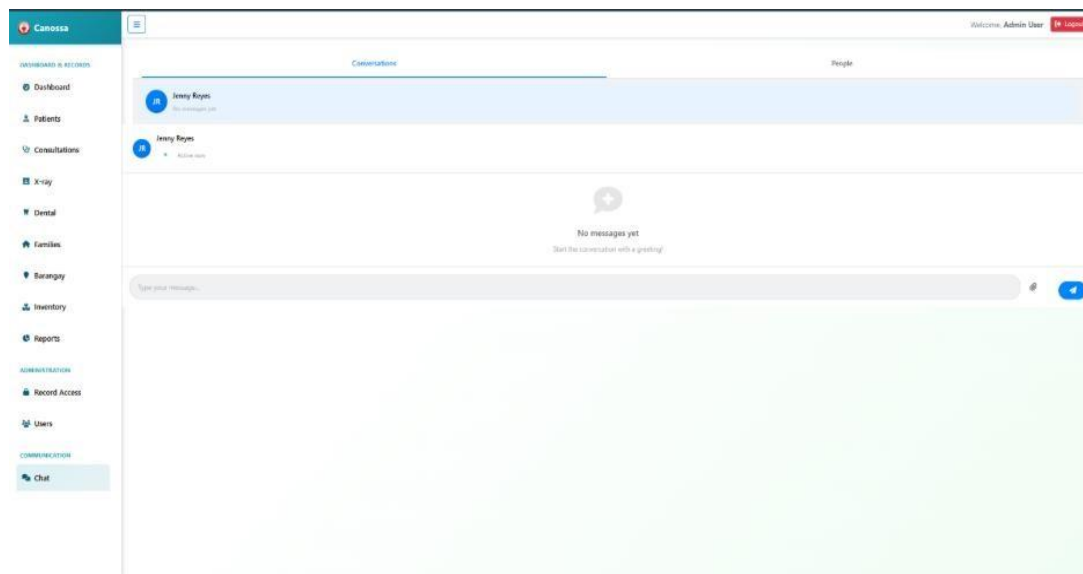


Figure 23. Chat Interface

This communication module allows patients and healthcare providers to communicate in real time. To ensure correct identity, the interface has a sidebar that divides contacts into "Conversations" and "People," clearly marking users as "Staff" or "Patient." Within the foundation's digital environment, the central messaging pane offers a safe setting for coordinating treatment and discussing medical questions, helping improve patient participation and efficient communication.

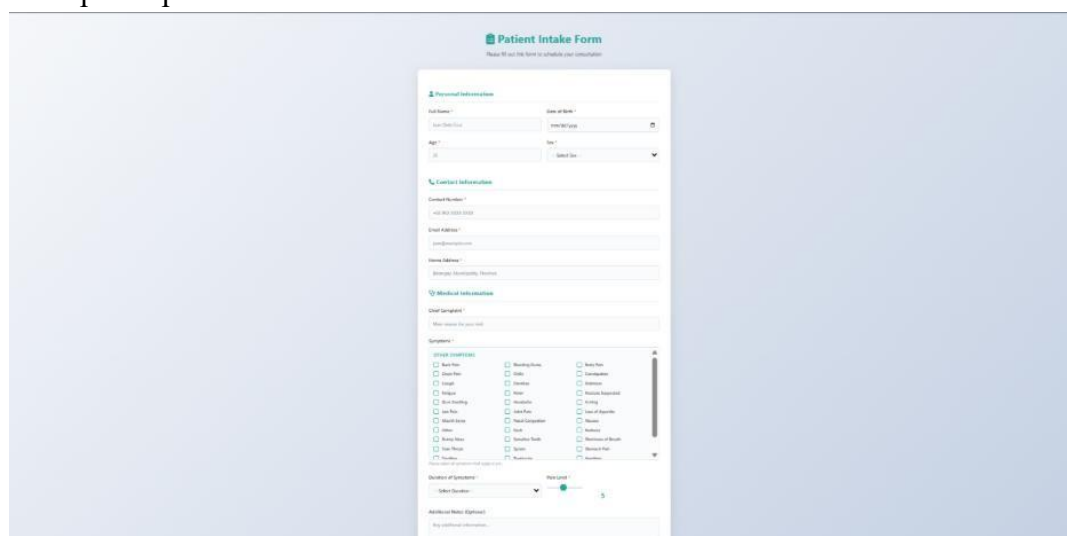


Figure 24. Patient Intake Form

To collect vital patient data before clinical consultations, the Patient Intake Form interface functions as a simplified digital portal. It gathers Personal Information, Contact Details, and Medical History using a

logical, three-tier structure, guaranteeing a thorough basis for every patient's record. The page includes specific input fields, such as an interactive Pain Level slider and a multiselect symptoms checklist, to improve clinical accuracy. These fields enable accurate measurement of a patient's physical condition. The interface, which offers an effective and safe setting for handling intake procedures within a professional healthcare system, is constructed with a clear visual hierarchy and responsive design features.

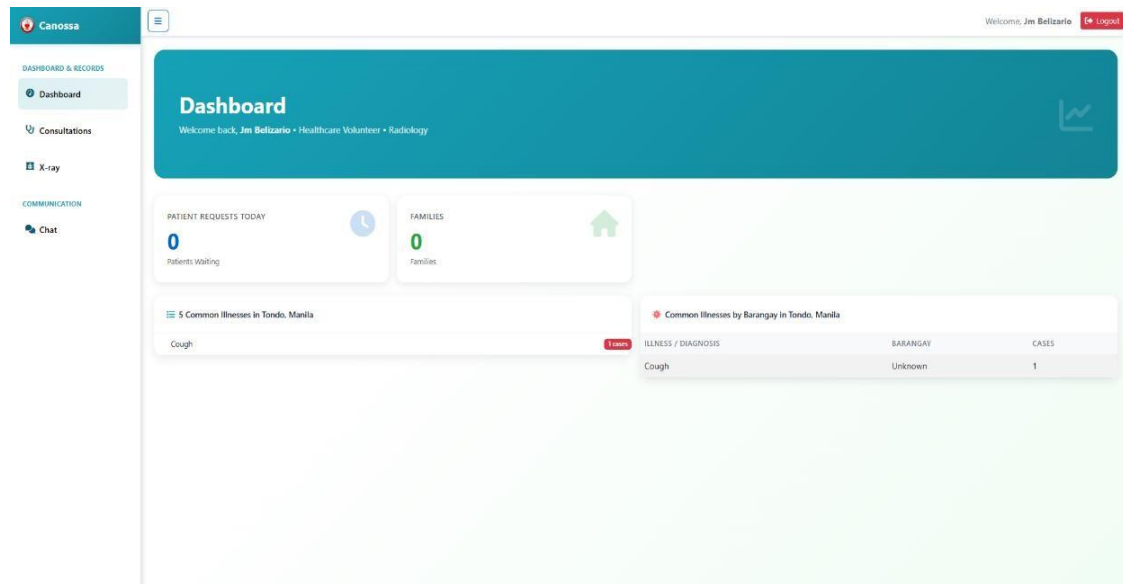


Figure 25. Healthcare Volunteer (Radiology) Dashboard Interface

It has a simple structure. The interface shows important data in easily readable charts, like the total number of patients, consultations, X-ray records, and families. Also, it displays barangay data and summaries of the most common health problems. Users may easily explore and effectively manage their duties because of the sidebar's quick access to the main parts.

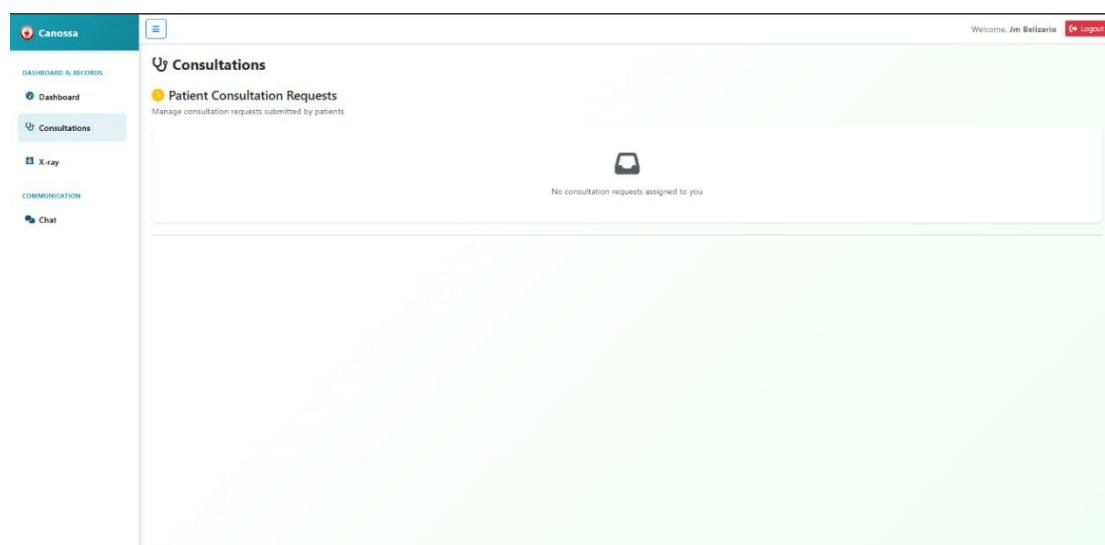


Figure 26. Consultation Interface

The Consultations page functions as a specialized interface for managing Patient Consultation Requests submitted through the system. This module is designed to provide healthcare staff with a clear overview of their current workload, facilitating the systematic review and processing of medical inquiries. Currently, the page displays an empty state with the message, "No consultation requests assigned to you," indicating a streamlined queue where tasks appear only when specifically allocated to the logged-in user. By integrating this request-handling capability directly alongside the Dashboard and X-ray modules, the interface ensures that patient needs are prioritized and addressed within a secure, organized clinical environment.

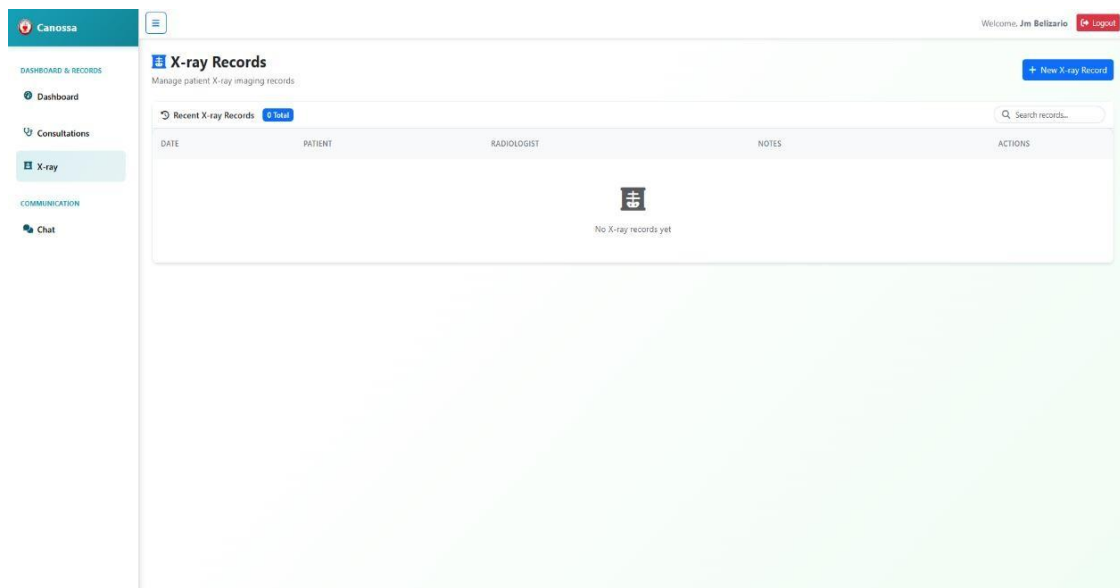


Figure 27. X-ray Records Interface

Patient imaging results can be tracked and managed by this feature. It has a table to arrange records by date, patient, and radiologist, and a "New X-ray Record" button for adding information. When records are added, the interface remains blank and shows a blank icon.

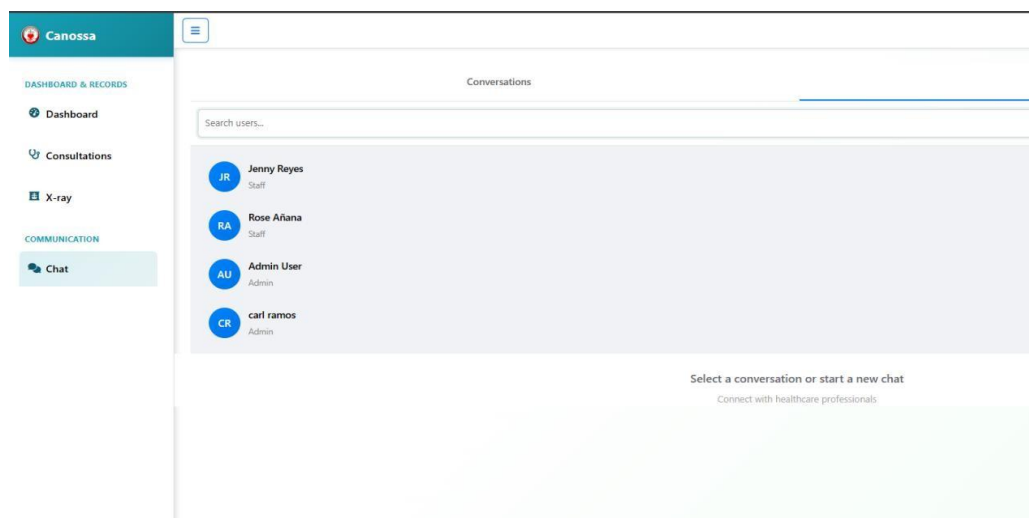


Figure 28. Chat Interface

The Chat page, which enables real-time communication within the system. It has a contact list that makes it simple to locate healthcare workers or patients, as well as a sidebar for managing current conversations. To manage healthcare services or respond to health concerns, users can communicate with healthcare providers using the primary messaging part of the user interface.

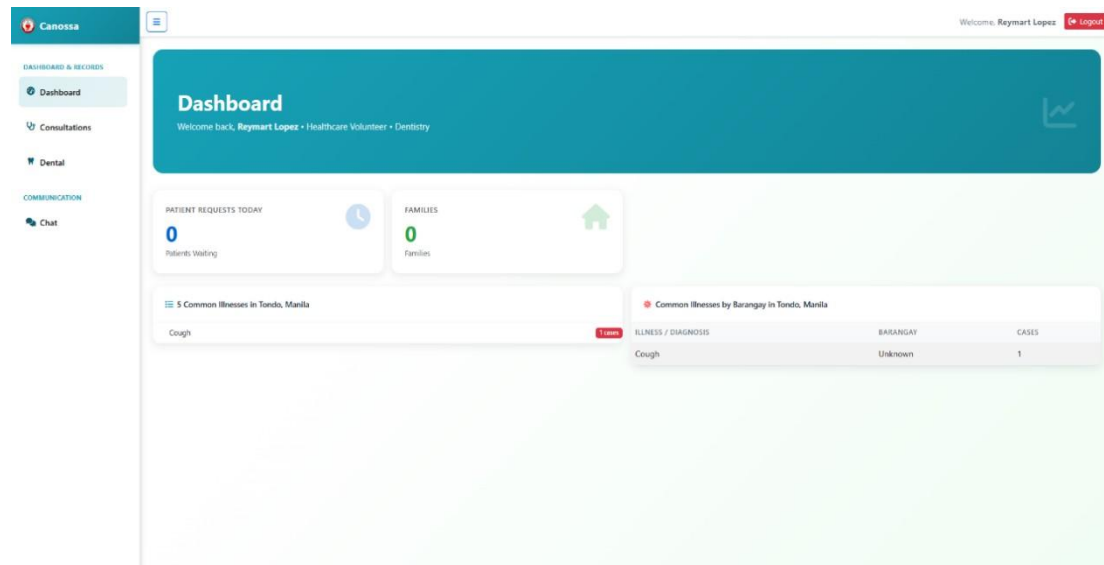


Figure 29. Healthcare Volunteer (Dentistry) Dashboard

The Dashboard interface, as illustrated in the figure, serves as a centralized analytical hub for healthcare volunteers to monitor local health trends and administrative metrics. The page features a series of high-level data cards, including Patient Requests Today and Families registered, providing an immediate snapshot of the current workload and community reach. A significant portion of the dashboard is dedicated to public health surveillance, specifically tracking Common Illnesses in Tondo, Manila, and breaking down cases by Barangay to identify geographical health clusters. By synthesizing real-time patient data with regional health statistics, the interface enables informed decision-making and efficient resource allocation for community-based medical and dental services.

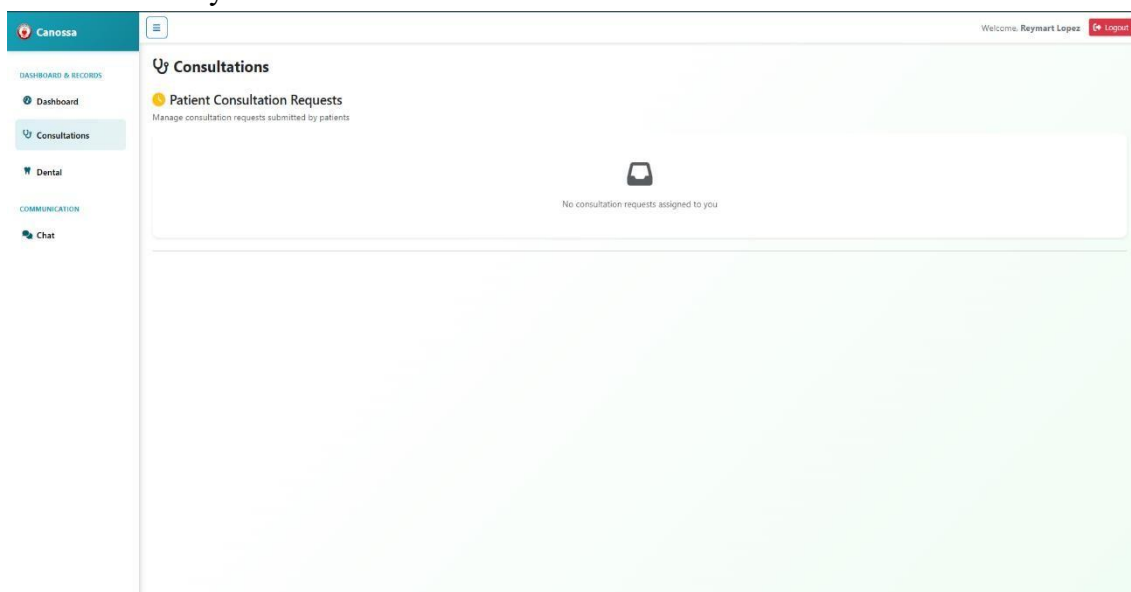


Figure 30. Consultations Interface

The Consultations page, as shown in the figure, functions as a specialized interface for managing Patient Consultation Requests submitted through the system. This module is designed to provide healthcare staff with a clear overview of their current workload, facilitating the systematic review and processing of medical inquiries. Currently, the page displays an empty state with the message, "No consultation requests assigned to you," indicating a streamlined queue where tasks appear only when specifically allocated to the logged-in user. By integrating this request-handling capability directly alongside the Dashboard and Dental modules, the interface ensures that patient needs are prioritized and addressed within a secure, organized clinical environment.

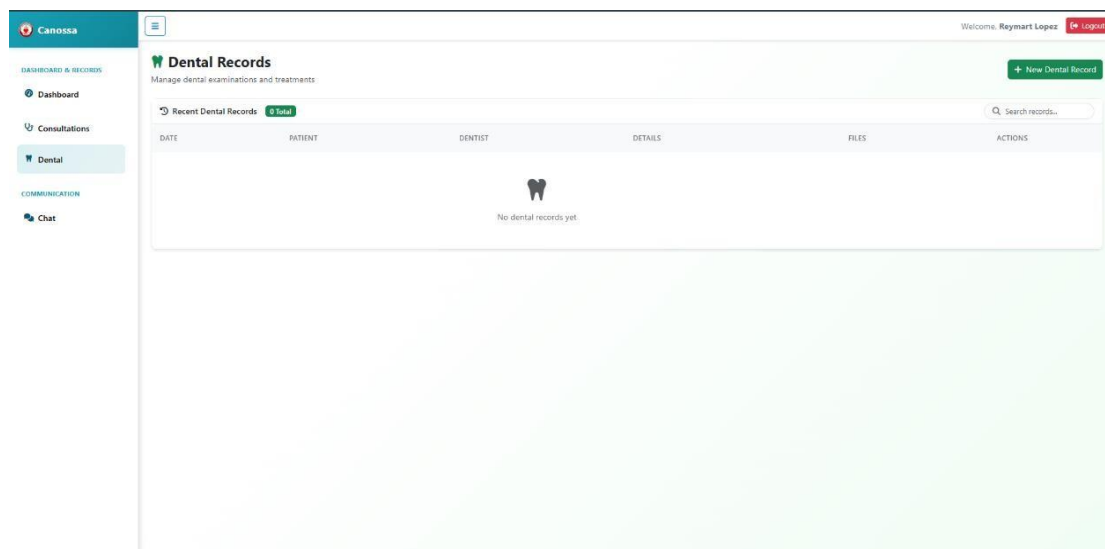


Figure 31. Dental Records Interface

The Dental Records page is used to track dental checkups and procedures. It has a table to maintain information such as the date, patient, dentist, and specific dental treatment information, and it also has a "New Dental Record" option for adding data. As of right now, the page shows an empty icon, meaning that no entries have been added.

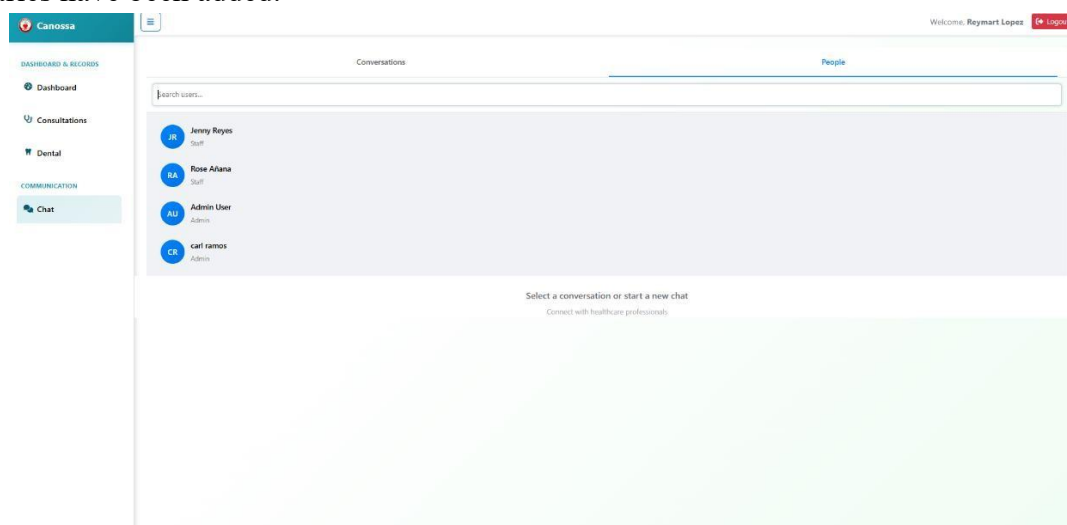


Figure 32. Chat Interface

The Chat page allowing real-time communication within the system. It has a contact list that makes it simple to locate healthcare workers or patients, in addition to a sidebar for managing current conversations. To manage healthcare services or respond to health concerns, users can communicate with healthcare professionals using the primary messaging part of the user interface.

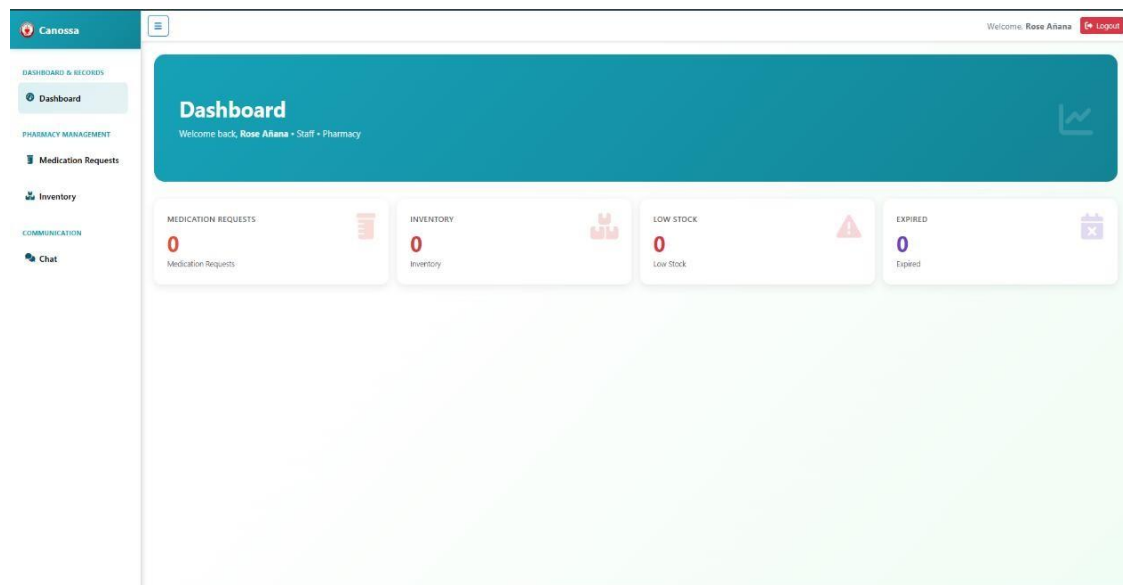


Figure 33. Staff (Pharmacy) Dashboard Interface

Important data is shown in clear cards on the user interface, like limited supply, product expiration, and inventory status. An overview of the supplies that are required and available is also displayed. Users may easily monitor inventory and handle duties effectively due to the clear sections and clean structure.

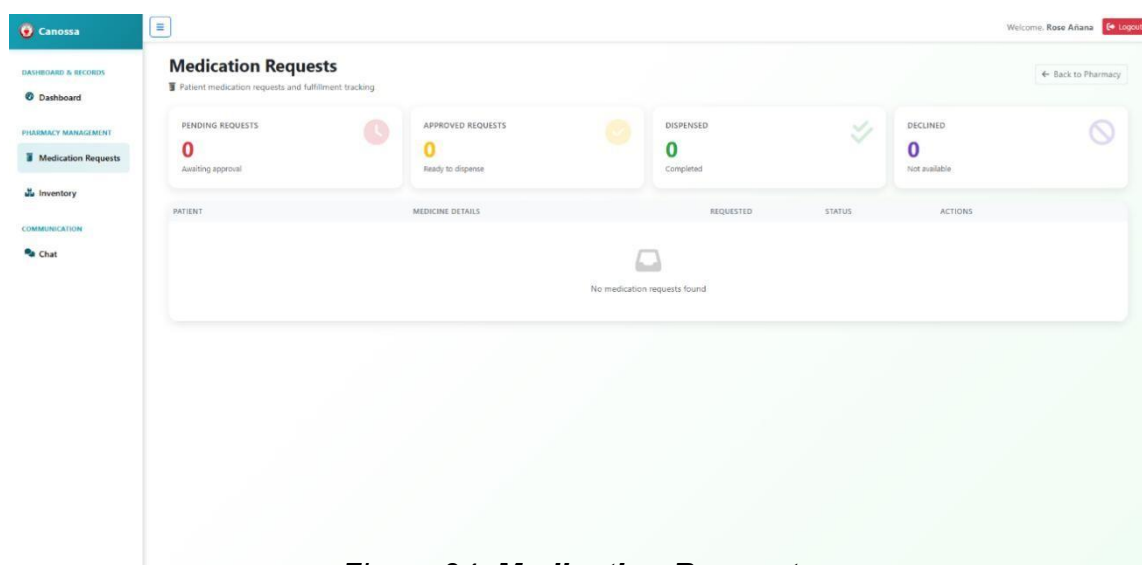


Figure 34. Medication Requests

The Medication Requests page, as illustrated, serves as a comprehensive management system for patient prescriptions and fulfillment tracking. The interface features a series of high-level status cards that provide an immediate snapshot of the pharmacy workflow, specifically tracking Pending Requests, Approved Requests, Dispensed medications, and Declined entries. Below these metrics, a detailed management table

is organized to display critical data such as Patient names, Medicine Details, the time the item was requested, and the current Status, while also providing Actions for staff to process each request. Although the current view shows an empty state with no medication requests found, the design ensures that pharmacy personnel can efficiently approve and dispense medicine while maintaining an organized digital record of all clinical transactions.

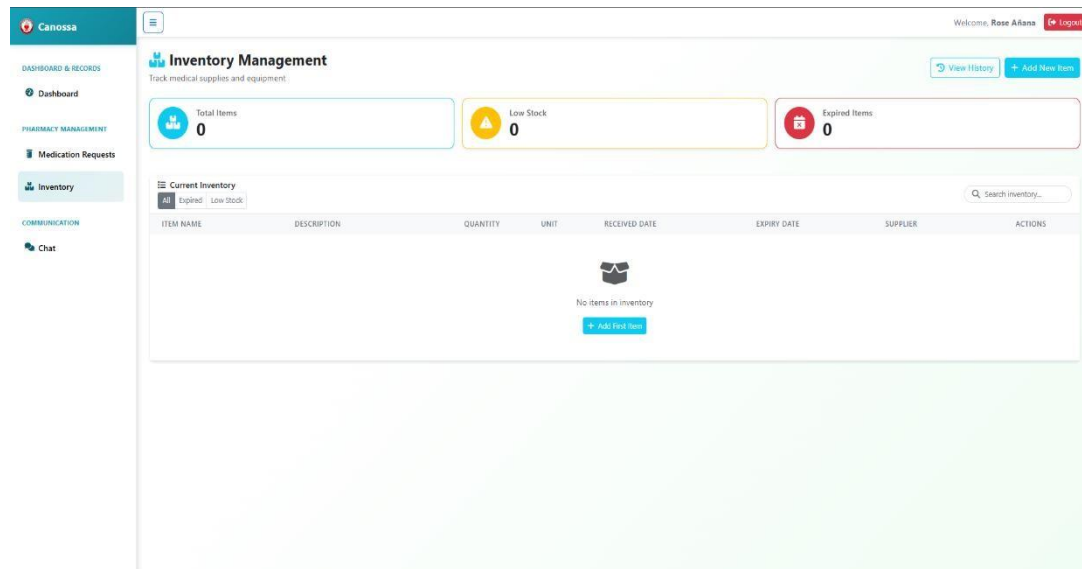


Figure 35. Inventory Management Interface

Important data like limited stock, total inventory, and expired products are shown on the user interface. A table of products with details such as item name, quantity, unit, expiration date, and supplier is also displayed. There are options to update stock, view history, and add new items. Monitoring and managing medical supplies are made simple by the visible design.

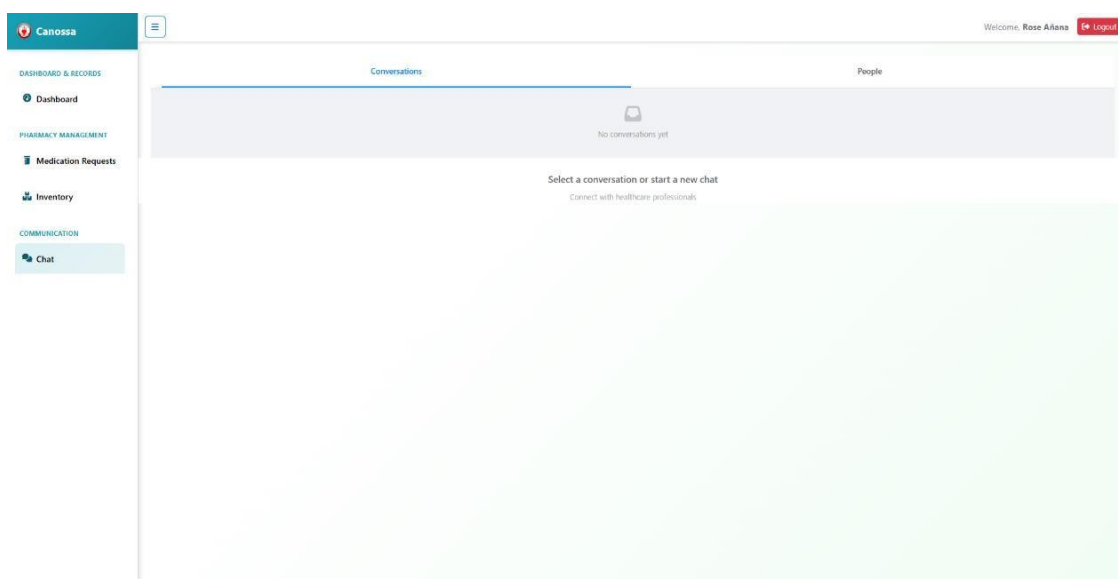


Figure 36. Chat Interface

The interface has a message section on the right and a list of chats on the left. Users have the option to start a new chat or choose an existing chat. Communicating and chatting with patients or healthcare staff is made easier by the design.

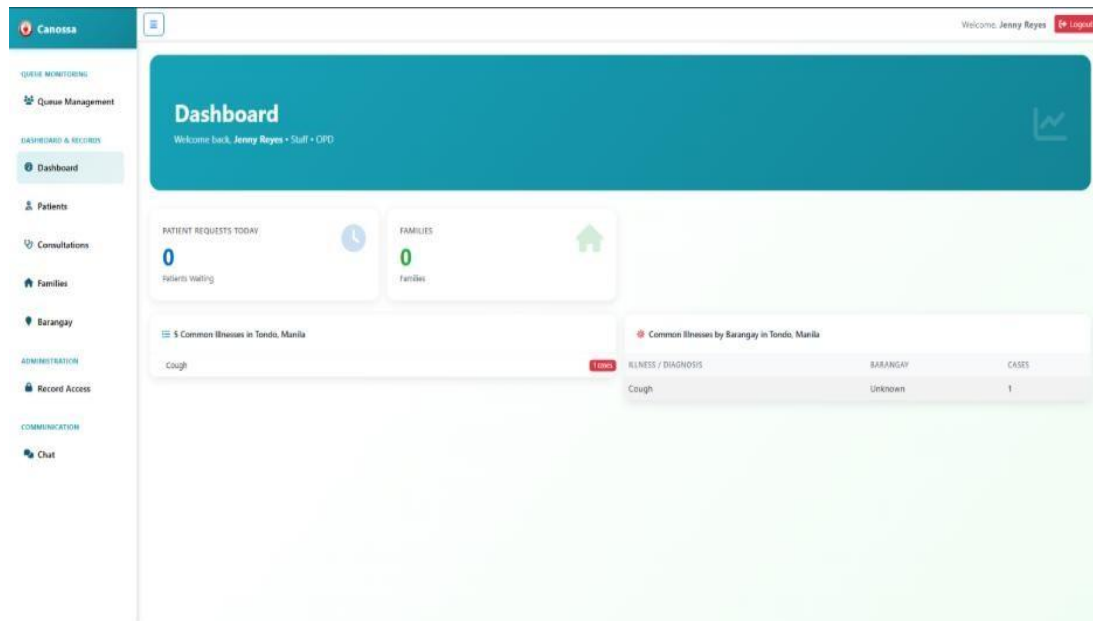


Figure 37. Staff (OPD) Dashboard Interface

This displays the Dashboard for staff members, providing a high-level overview of system data. Summary cards for every patient, consultations, and families are included. The interface also has analytic sections like "Top 5 Illnesses" and "Top Illnesses by Barangay," which assist staff in tracking cases, places of residence, and health conditions in real time across different areas.

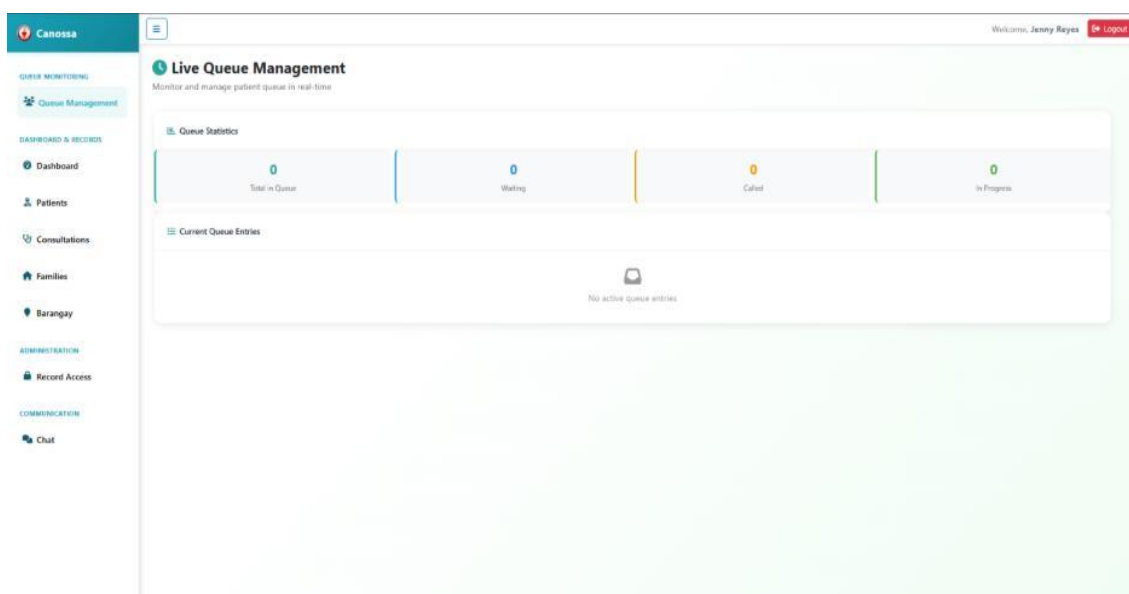


Figure 38. Queue Management

The Queue Management page is a centralized dashboard for real-time monitoring of patient flow. It displays key metrics—Total in Queue, Waiting, Called, and In Progress—under Queue Statistics to provide a quick overview of clinic activity. The Current Queue Entries section lists active patients but is currently empty. This module is integrated with the Patients, Consultations, and Record Access systems to support efficient workflow and secure data management.

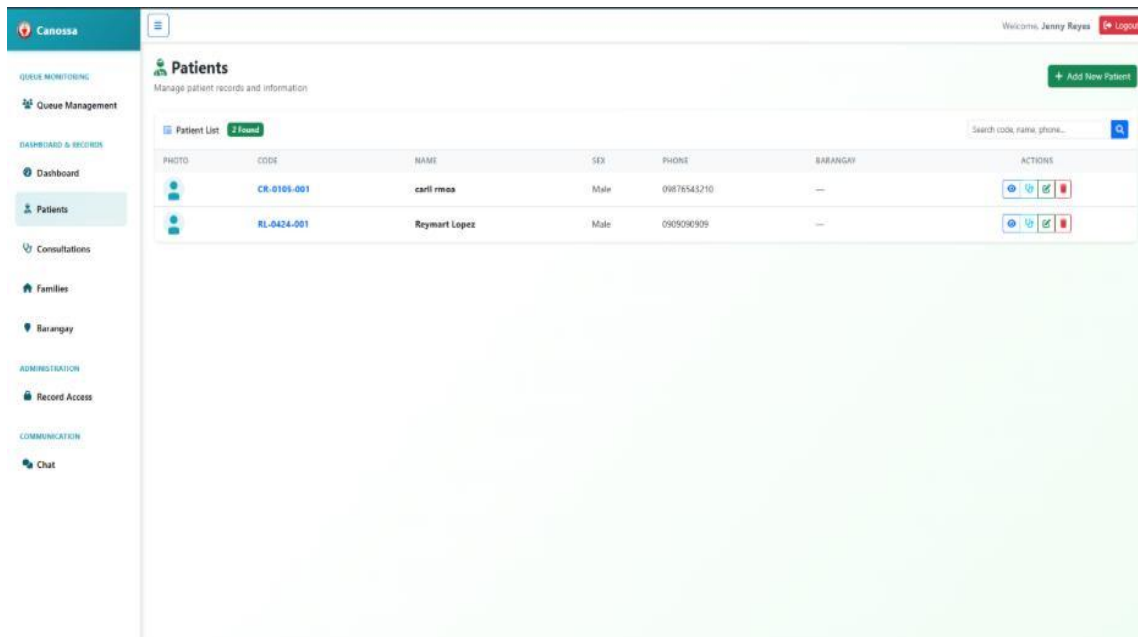


Figure 39. Patient Management Interface

A list of registered patients is shown, along with their assigned barangays and contact information, unique patient codes, and profile pictures. While the action options on the right allow staff to view, update, or remove specific information to keep the database up to date, the "Add New Patient" feature provides a quick registration.

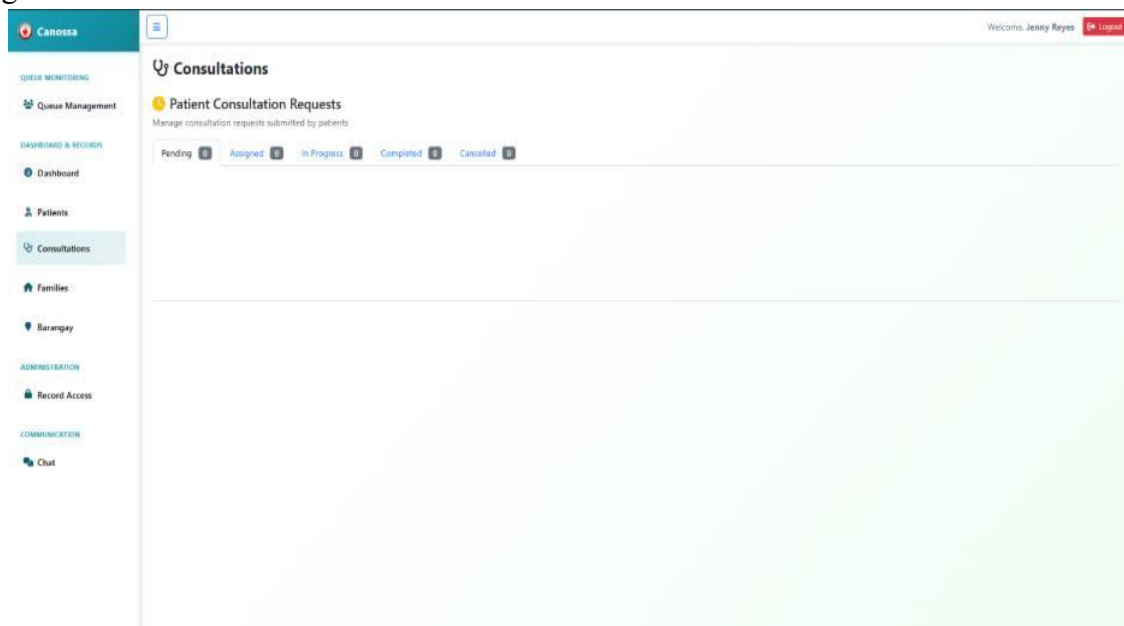


Figure 40. Consultations Interface

The primary center for handling patient consultation requests is the Consultations site. Requests are arranged by status (Pending, Assigned, In Progress, Completed, and Cancelled) using a tab-based system with count indicators for easy tracking. This framework facilitates effective patient appointment tracking, processing, and coordination within the clinic and offers a clear view of the consultation workflow.

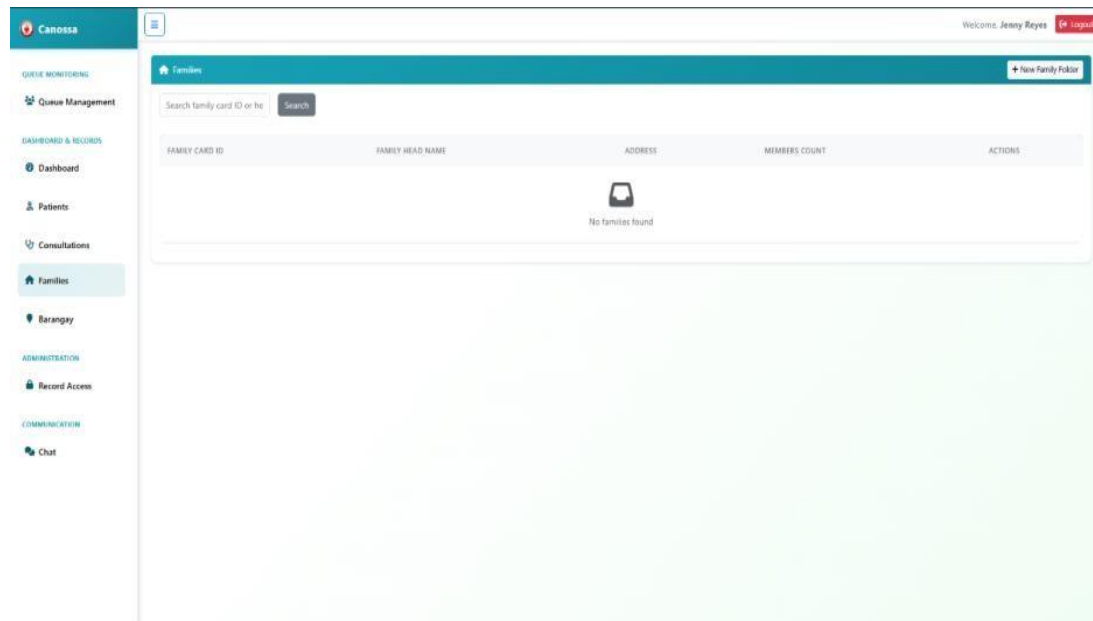


Figure 41. Families Interface

The figure shows the Families page, which organizes patient records by household. It has a list that shows family card IDs, family head names, addresses, and total member counts, as well as a "New Family Folder" option for adding new entries. Using basic tools to access or remove specific personal documents, this section assists staff in managing medical records in a properly organized, familybased in the surrounding area.

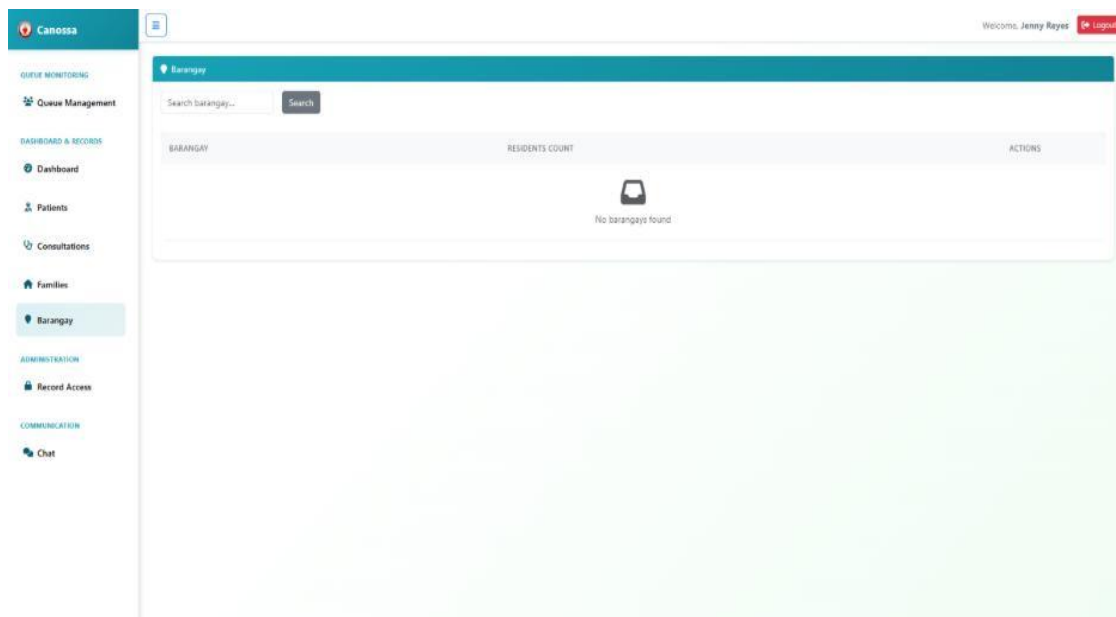


Figure 42. Barangay Management Interface

This shows the Barangay Management page, which organizes patient data by location. It presents a list of different barangays with an estimate of the population of each. The "View Residents" function, which enables workers to access a full set of patients registered in a specific area, makes the health care monitor easier.

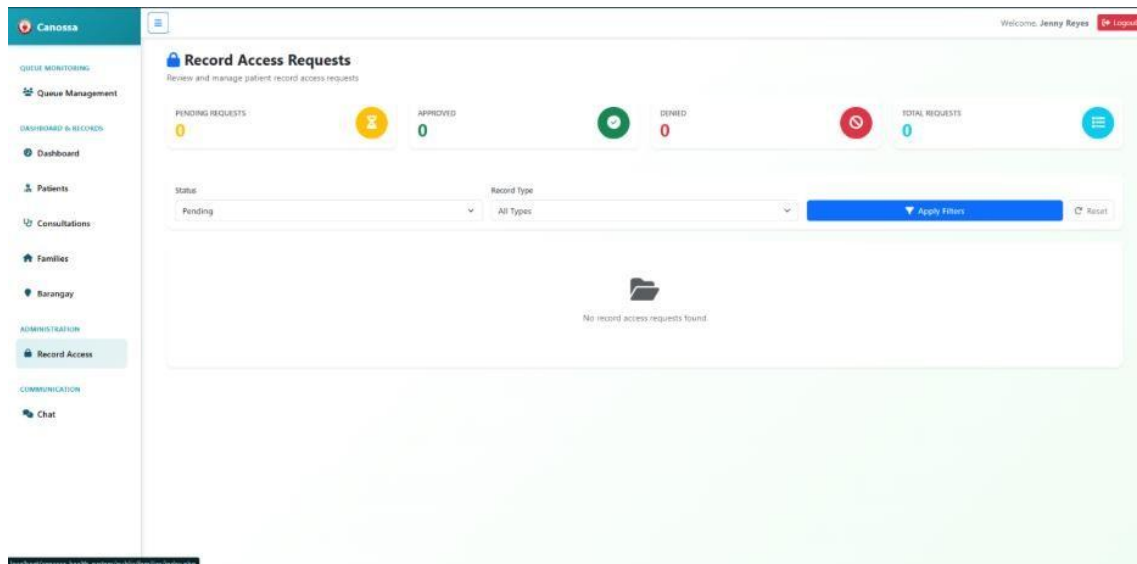


Figure 43. Record Access Requests

The Record Access Requests page provides a unified interface for reviewing and managing requests to access sensitive patient records. It includes a summary dashboard displaying key metrics such as Pending, Approved, Denied, and Total Requests for quick monitoring. Filtering options by Status and Record Type allows efficient retrieval of specific entries. When no data is available, an empty state is shown, ensuring a structured and secure approach to handling patient information.

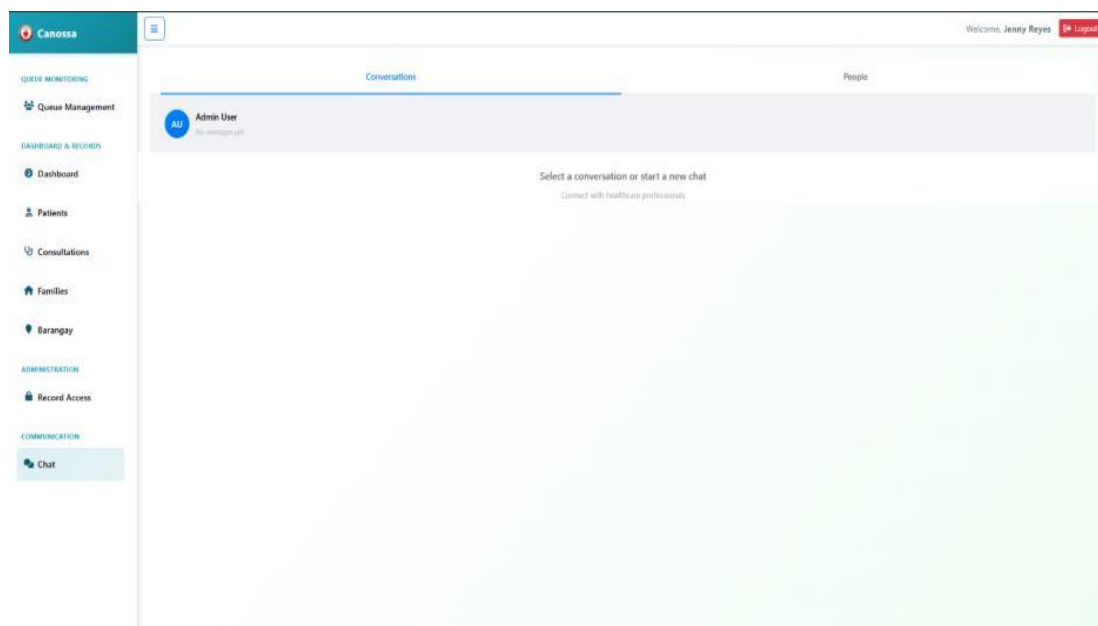


Figure 44. Chat Interface

This shows the Chat page, which enables real-time conversation within the system. It has a contact list to quickly locate healthcare workers or admin users, including a sidebar for managing ongoing chats. To organize health services or respond to health concerns, users can communicate with doctors using the primary messaging part of the user interface.

Development and Testing

The Agile technique was used to create the Outpatient Health Record Management Information System (OHRMIS) for Canossa Health & Social Center Foundation, Inc., Tondo Branch. This allowed for continuous creation through planning, design, implementation, testing, and feedback. To uncover prevalent problems with the manual paper-based record and inventory procedures, the center's healthcare workers and administrators were interviewed to identify system needs. The system's features, including patient medical history monitoring, prescription and consultation management, medical supply inventory, and automated report production, were inspired by the data collected. Deliverables from system design, such as entity-relationship diagrams (ERDs), flowcharts, and data flow diagrams (DFDs), were used as visual aids to arrange data flow and functionality. In high-demand environments like Tondo, the development approach focused on producing features that specifically address the needs of clinic staff and healthcare workers. The system was developed to be used on different kinds of devices within the institution and is accessible over the internet. Every important function, such as digital patient registration, historical record retrieval, real-time stock monitoring, and medication dispensing records, was gradually created and enhanced. Role-based security measures and data encryption systems were put in place to maintain secure medical information and protect patient privacy.

According to the ISO/IEC 25010 software quality model, the system was built to provide critical features such as functionality, usability, dependability, performance efficiency, and security.

To make sure the system maintained the required quality features for providing health services, testing was done at different stages. While testing for integration confirmed interactions between the patient records and the medical supply modules, unit testing tested the proper operation of specific units, such as the inventory alert system. System testing looked at the center's hardware's general operation, quickness, and compatibility. To ascertain practical applicability in a hectic outpatient scenario, the clinic staff and healthcare workers participated in acceptance testing.

The OHRMIS is a suitable system to adopt at Canossa Health & Social Center to improve healthcare services and streamline record-keeping because the test results verified that it satisfied user needs and met ISO 25010 quality requirements.



Figure 45. Unit Testing

Examining every part of a software program to ensure it functions as designed is known as unit testing. It improves the overall quality of the code by finding and fixing flaws early in the development process.

Table 5. Unit Testing Test Case

Test Case	Test Scenario	Test Case Result
User Authentication	Verify that staff/admin can log in with valid credentials.	Successful
	Verify that invalid login credentials are rejected.	Successful
Patient Record Management	Verify that staff can add new patient records.	Successful
	Verify that staff can update patient information.	Successful
	Verify that patient records are stored securely.	Successful
Medical Consultation	Verify that consultations can be recorded properly.	Successful
	Verify that prescriptions are saved and updated.	Successful
Inventory Management	Verify that staff can add and update medical supplies.	Successful
	Verify that supply levels are tracked accurately.	Successful
Report Generation	Verify that the system can generate patient and inventory reports.	Successful

The test case data shown above demonstrated that many system functionalities have been successfully validated. Every test case, from report production to user verification, produced positive results. This shows that the system satisfies the necessary operational standards and operates effectively. The system's reliability and effectiveness in supporting healthcare services were demonstrated by consistent outcomes across several test situations.



Figure 46. Integration Testing

Integration testing checked how the different modules of the Outpatient Health Record Management Information System work together. It ensured that the system runs smoothly when combined and helps identify issues in data flow, communication, and processes, especially in handling patient records, consultations, inventory, and report generation

Table 6. Integration Testing Test Case

Test Case	Test Scenario	Test Case Result
Authentication & Dashboard	Verify that users are redirected to their dashboard after logging in.	Successful

Patient Record Integration	Verify that patient data is shared across modules.	Successful
Medical Consultation	Verify that consultation records are saved and updated.	Successful
Inventory Management	Verify that medicine usage updates inventory records.	Successful
Report Generation	Verify that reports are generated from system data.	Successful

Test results showed that the system works properly on integrated modules. After logging in, users were directed to their dashboards, patient data is continuously shared, consultations were recorded, inventory updates and reports were generated accurately. These results confirmed that the Outpatient Health Information System supports smooth and reliable system integration.



Figure 47. System Testing

System tests ensured that the Outpatient Health Record Management Information System meets the system specifications required. It evaluated the system as a whole and focused on overall functionality, performance, and reliability to ensure that all functions work properly in a complete environment.

Table 7. System Testing Test Case

Test Case	Test Scenario	Test Case Result
End-to-End Functionality	Verify that users can manage patient records and consultations.	Successful
User Interface (UI)	Verify that the system is responsive and user-friendly.	Successful
Performance Testing	Verify that the system responds within an acceptable time.	Successful
Data Accuracy	Verify that patient records and reports are accurate.	Successful
Data Security	Verify that patient data is securely stored and accessed.	Successful

Test results showed that the system is effective in all important areas. Users can perform tasks efficiently, interfaces react, and data is accurate and secured.

The results confirmed that the Outpatient Health Record Management Information System meets the required system standards and is ready for deployment.

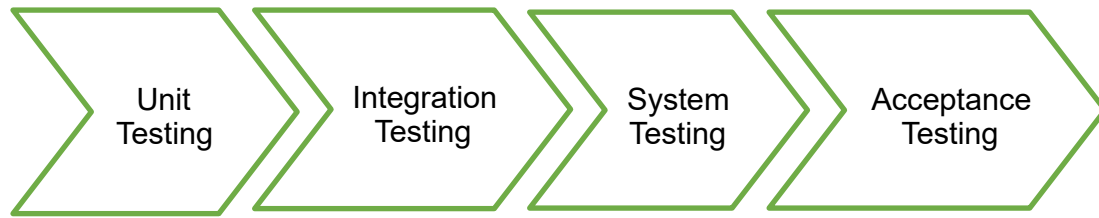


Figure 48. Acceptance Testing

Acceptance testing ensured that the system is ready for deployment and meets business requirements. It is performed by end-users to ensure that the system operates correctly and effectively in a real-world environment.

Table 8. Acceptance Testing Test Case

Test Case	Test Scenario	Expected Result	Test Case Result
Patient Registration	Patients enter their information.	The patient record is saved in the system.	Successful
Medical Record Entry	Staff records consultation details.	The medical record is updated accurately.	Successful
Record Retrieval	Staff search for patient data.	Patient information is displayed quickly.	Successful
Inventory Management	Staff updates supply records.	Stock levels are updated correctly.	Successful
Report Generation	Staff generate reports.	Reports are accurate and complete.	Successful

The data showed that all test scenarios related to Patient Registration, Medical Record Entry, Record Retrieval, Inventory Management, and Report Generation were successfully executed, and the expected outcomes were achieved. The results indicated that the system operates efficiently and meets the required performance and operational standards for deployment.

Implementation Plan

The Implementation Plan outlines the key steps for deploying and integrating the Outpatient Health Record Management Information System, ensuring a smooth transition from development to actual use by defining the project phases, tasks, and responsible personnel. The system was implemented at Canossa Health & Social Center Foundation, Inc. in Tondo. It was designed to be simple and efficient, focusing on system deployment, testing, and user training to ensure proper integration and effective adoption by healthcare staff.

Table 9. Implementation Plan

Stage	Activities	Person Involved	Duration
Preparation	Conduct final system review, check for errors, and ensure all required features are implemented.	Programmer	3–5 days
Deployment	Install the system on the online server, set up the database, and configure system settings.	Programmer	3–5 days
User Testing	Test system functionalities, identify issues, and ensure smooth operation.	Project Manager & Programmer	1 week
Training & Documentation	Prepare a user guide and train staff on how to use the system.	Documentation Team	3–5 days
System Launch	Deploy the system for actual use, monitor performance, and apply minor fixes if necessary.	Project Manager & Programmer	Ongoing
Maintenance & Updates	Fix bugs, improve system features, and ensure continuous operation based on feedback.	Programmer	As needed

System Overview

The Outpatient Health Record Management Information System (OHRMIS) is a web-based system that improves outpatient record management by automating tasks like patient registration and documentation. It replaces manual processes to reduce errors, improve data accuracy, and increase efficiency while keeping patient information secure and centralized.

System Description

OHRMIS helps healthcare providers manage patient records, including medical history, diagnosis, and prescriptions in real time. It allows easy patient registration, while Staff can handle patient information and reports. The system also includes safekeeping of records, role-based access, and automated notifications, improving coordination and overall healthcare service delivery.

Table 10. Roles in the System

User Type	Role in the System
Administrator/Staff	Manage patient records and generate reports. Responsible for maintaining system data, ensuring data accuracy, and overseeing system operations.
Healthcare Volunteer (Doctor)	Records patient consultations, updates medical histories, diagnoses conditions, prescribes treatments, and reviews patient records for continuity of care.

Findings and Interpretation

This part shows the results and meaning of the data gathered in checking out the Outpatient Health Record Management Information System (OHRMIS). The researchers used surveys and feedback from users to determine if the system is effective and easy to use.

A set of questions was given to the respondents to check different parts of the system, like how it works, how easy it is to use, how reliable it is, how fast it performs, and how safe it is. The answers were based on a five-point scale to see if they agreed or disagreed with the statements about the system.

The answers were computed using an average method called weighted mean. The results showed that the system is very helpful in making record management faster, reducing waiting time, and improving the accuracy of data. Users also said that the system is easy to use and works well in handling patient information. Therefore, the results showed that the OHRMIS successfully meets its goal of improving patient record management and helping healthcare workers give faster and better service to patients.

Formula:

$$\bar{x} = \Sigma (f \cdot w) / n$$

Where:

$\bar{x}$ = Weighted mean Σ = Total summation

f = Frequency of responses

w = Weight of each scale value (e.g., 4, 3, 2, 1)

n = Total number of respondents

Table 11. Interpretation of the Likert Scale

Scale	Range	Interpretation
4	3.25 – 4.00	Very high / Excellent
3	2.50 – 3.24	High / Good
2	1.75 – 2.49	Low / Poor
1	1.00 – 1.74	Very Low / Very Poor

Table 11 shows the interpretation of responses using the Likert scale. Scores from 3.25 to 4.00 mean “Very High / Excellent” and are interpreted as very positive, while scores from 2.50 to 3.24 mean “High / Good” and are considered positive. Scores from 1.75 to 2.49 mean “Low / Poor,” and scores from 1.00 to 1.74 mean “Very Low / Very Poor,” both of which are interpreted as negative responses.

Demographic Profile of the Respondents

Table 12. Profile of the Respondents (Age)

Age	Frequency	Percentage
18-29	3	21.43%
30-44	3	21.43%
45-59	5	35.71%
60+	3	21.43%
Total	14	100%

Table 12 presents the age profile of the respondents. The data show that the majority of the respondents belong to the age group 45–59 years old, with a frequency of 5 respondents or 35.71% of the total population. Meanwhile, the age groups 18–29, 30–44, and 60 years old and above each recorded 3 respondents, representing 21.43% each. This indicates that middle-aged adults comprised the largest portion of the respondents, while the other age groups were equally represented in the study.

Table 13. Profile of the Respondents (Gender)

Gender	Frequency	Percentage
Male	4	28.57%
Female	10	71.43%
Total	14	100%

Table 13 shows the number of respondents based on gender. Out of 14 respondents, 28.57% are male and 71.43% are female. This means that most of the respondents are female. It shows that more females are working as healthcare volunteers and staff in the study. This may also show that in many health centers, there are more female workers than male workers.

Table 14. Response of the Participants: Section 1: Question No.1

Statement	Interpretation	Frequency	Percentage
What type of respondent are you?	Healthcare Volunteer	2	14.3%
	Administrative Staff	2	14.3%
	Outpatient	10	71.4%
	Total	14	100%

Table 14 shows the distribution of respondents by job position at the health center. Most of the respondents (71.4%) were Outpatients, while Healthcare Volunteers and Administrative Staff each made up 14.3%. Including both staff and patients helped provide different views that improved the accuracy of the study.

Table 15. Response of the Participants: Section 1: Question No.2

Statement	Interpretation	Frequency	Percentage
How long have you been visiting or working at the health center?	Less than 6 months	10	71.4%
	6 months – 1 years	2	14.3%
	1 – 3 years	2	14.3%
	More than 3 years	0	0%
TOTAL		14	100%

Table 15 shows the distribution of respondents based on how long they have been visiting or working at the health center. Most respondents (71.4%) had been connected to the health center for less than six months, while 14.3% had been there for six months to one year and another 14.3% for one to three years. The results show that most respondents are still new to the health center, so their answers are based on recent experiences and observations.

Table 16. Response of the Participants: Section 1: Question No.3

Statement	Interpretation	Frequency	Percentage
How are patient record-related activities currently managed in your experience (e.g., fill up form, record retrieval, updating information)?	Manual Recording	10	71.4%
	Paper-based filing	4	28.6%
	Logbooks	0	0%
TOTAL		14	100%

Table 16 shows how participants manage patient record-related activities such as filling out forms, retrieving records, and updating information. Most respondents (71.4% or 10 respondents) use manual recording, while 28.6% (4 respondents) use paper-based filing. None of the respondents reported using logbooks for managing patient records.

Table 17. Response of the Participants: Section 2: Question No.4

Statement	Interpretation	Frequency	Percentage
Are you aware of Health Record Management Information Systems (HRMIS)?	Yes	10	71.4%
	No	4	28.6%
TOT	AL	14	100%

Table 17 displays the data gathered regarding the participants' awareness of Health Record Management Information Systems (HRMIS). The sample size for this query consists of 14 respondents. As shown in the table, a significant majority of the respondents, corresponding to 71.4% (10 individuals), stated that they are aware of HRMIS. Conversely, the remaining 28.6% (4 individuals) indicated that they have no prior awareness or knowledge of such systems.

Table 18. Response of the Participants: Section 2: Question No.5

Statement	Interpretation	Frequency	Percentage
Have you used a digital health record system in the past?	Yes	5	35.7%
	No	9	64.3%
TOTAL		14	100%

Table 18 shows the survey results about the participants' previous experience with digital health record systems. Most respondents (64.3% or 9 individuals) said they had never used a digital health record system before. Meanwhile, 35.7% (5 individuals) reported that they already had experience using computerized health record systems.

Table 19. Response of the Participants: Section 2: Question No.6

Statement	Interpretation	Frequency	Percentage
How comfortable are you using digital platforms for managing patient records and health information?	Very Comfortable	9	64.3%
	Comfortable	5	35.7%
	Uncomfortable	0	0%
	Very Uncomfortable	0	0%
TOTAL		14	100%

Table 19 presents the respondents' level of comfort in using digital platforms for managing patient records and health information. Most respondents (64.3% or 9 respondents) said they were "Very Comfortable," while 35.7% (5 respondents) said they were "Comfortable." None of the respondents reported feeling uncomfortable with using computerized health systems.

Table 20. Response of the Participants: Section 3: Question No.7

Statement	Interpretation	Frequency	Percentage
Which features would you find most useful in an outpatient health	Digital storage of medical history	2	14.3%
	Easy access to lab results	5	35.7%

record management system?	Prescription and medicine dispensing	5	35.7%
	Quick retrieval of patient records	2	14.3%
TOTAL		14	100%

Table 20 presents the features that respondents find most valuable in an outpatient health record management system. The most preferred features were “Easy access to lab results” and “Prescription and medicine dispensing,” each chosen by 35.7% (5 respondents). Meanwhile, “Digital storage of medical history” and “Quick retrieval of patient records” were each selected by 14.3% (2 respondents).

Table 21. Response of the Participants: Section 3: Question No.8

Statement	Interpretation	Frequency	Percentage
How important is quick and secure access to patient health records to you?	Very Important	14	100%
	Important	0	0%
	Less Important	0	0%
	Not Important	0	0%
TOTAL		14	100%

Table 21 shows the respondents’ views on the importance of quick and secure access to patient health records. All 14 respondents (100%) rated it as “Very Important.” No respondents selected “Important,” “Less Important,” or “Not Important.”

Table 22. Response of the Participants: Section 3: Question No.9

Statement	Interpretation	Frequency	Percentage
Would you prefer to use a health record management system, given that it aims to improve healthcare service efficiency?	Yes	14	100%
	No	0	0%
TOTAL		14	100%

Table 22 shows the respondents’ preference for using a health record management system to improve healthcare service efficiency. All respondents (100% or 14 respondents) answered “Yes,” showing full support for using an automated record management system. No respondents selected “No.”

Table 23. Response of the Participants: Section 3: Question No.10

Statement	Interpretation	Frequency	Percentage
If a health record management system were introduced, what concerns might you have?	Privacy and confidentiality	10	71.4%
	Loss of paper records	0	0%
	Longer waiting time	3	21.4%
	Staff training and adoption	1	7.1%
TOTAL		14	100%

Table 23 shows the respondents' main concerns about using a digital health record management system. Most respondents (71.4% or 10 individuals) were concerned about privacy and confidentiality, while 21.4% (3 individuals) were worried about longer waiting times, and 7.1% (1 individual) about staff training and adoption. None of the respondents was concerned about the loss of paper records.

Table 24. Response of the Participants: Section 4: Question No.11

Statement	Interpretation	Frequency	Percentage
What preparations do you think are needed before the implementation of the health record management system?	System orientation/Training	14	100%
	User Manual	0	0%
	None	0	0%
TOTAL		14	100%

Table 24 shows the respondents' views on the preparations needed before implementing the proposed health record management system. All respondents (100% or 14 individuals) said that system orientation and training are necessary before using the system. No respondents selected "User Manual" only or "None" as their answer.

Table 25. Acceptability Ratings in Terms of Functionality (Patient)

Statement	4	3	2	1	Mean	Interpretation
The paper-based system causes delays during patient transactions.	4	5	1	0	3.30	Very high / Excellent

Long waiting times are experienced due to manual record handling.	2	8	0	0	3.20	High / Good
Manual recording of patient information affects the efficiency of healthcare services.	3	6	1	0	3.20	High / Good
Patients experience inconvenience when records are manually processed.	2	7	1	0	3.10	High / Good
Overall Weighted Mean					3.20	High / Good

Table 25 presents the respondents' assessment of the problems in the existing paper-based system from the patients' perspective. The statement "The paper-based system causes delays during patient transactions" received the highest weighted mean of 3.30, interpreted as "Very High / Excellent." Overall, the results show that the current manual system affects the speed, efficiency, and convenience of healthcare services, showing the need for a computerized system.

Table 26. Acceptability Ratings in Terms of Performance (Patient)

Statement	4	3	2	1	Mean	Interpretation
The system helps reduce waiting time.	6	4	0	0	3.60	Very high / Excellent
The system allows healthcare staff to retrieve my records quickly.	5	5	0	0	3.50	Very High / Excellent
The system improves the speed of healthcare services in the health center.	6	4	0	0	3.60	Very High / Excellent
Overall Weighted Mean					3.57	Very High / Excellent

Table 26 presents the respondents' assessment of the existing paperbased system in terms of service efficiency. The results showed high mean ratings ranging from 3.50 to 3.60, with an overall weighted mean of 3.57, interpreted as "Very High / Excellent." This indicates that respondents believe the system helps improve workflow efficiency, reduce waiting time, and provide faster healthcare services compared to traditional processes.

Table 27. Acceptability Ratings in Terms of Usability (Patient)

Statement	4	3	2	1	Mean	Interpretation
The healthcare process feels more organized with the system.	5	5	0	0	3.50	Very High / Excellent
The services provided using the system are easier and more convenient.	5	5	0	0	3.50	Very High / Excellent
The system helps make transactions and consultations smoother.	2	8	0	0	3.20	High / Good
Overall Weighted Mean					3.40	Very High / Excellent

Table 27 presents the respondents' assessment of the usability of the system in improving healthcare service processes. The results showed an overall weighted mean of 3.40, interpreted as "Very High /Excellent," indicating that the system is effective, easy to use, and helps improve healthcare transactions and consultations. This suggests that the system improves efficiency and user experience, although some areas may still need improvement.

Table 28. Acceptability Ratings in Terms of Reliability (Patient)

Statement	4	3	2	1	Mean	Interpretation
The system appears reliable during healthcare services.	4	6	0	0	3.40	Very High / Excellent
My records are properly available whenever needed by the staff.	5	5	0	0	3.50	Very High / Excellent
The system helps avoid lost or misplaced patient records.	2	8	0	0	3.20	High / Good

Overall Weighted Mean	3.37	Very High / Excellent
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Table 28 presents the respondents' assessment of the system's reliability in supporting healthcare services. The system received an overall weighted mean of 3.37, interpreted as "Very High / Excellent." The findings show that the system is highly reliable in providing accessible patient records, although preventing lost or misplaced records may still need improvement.

Table 29. Acceptability Ratings in Terms of Overall Evaluation (Patient)

Statement	4	3	2	1	Mean	Interpretation
The system improves the overall quality of healthcare services.	5	5	0	0	3.50	Very High / Excellent
The system provides a better experience compared to the previous paperbased process.	3	7	0	0	3.30	Very High / Excellent
I am satisfied with the healthcare services supported by the system.	4	6	0	0	3.40	Very High / Excellent
I would support the continued use of the system in the health center.	4	6	0	0	3.40	Very High / Excellent
Overall Weighted Mean	an				3.40	Very High / Excellent

Table 29 presents the respondents' overall evaluation of the system's impact on healthcare service delivery compared to the paper-based process. All indicators received ratings of "Very High / Excellent," with an overall weighted mean of 3.40. The results show that respondents strongly believe the system improves service quality, user experience, and overall satisfaction compared to the manual process.

Table 30. Overall Ratings of the Proposed System (Patient)

Criteria	Weighted Mean	Interpretation
Functionality	3.20	High / Good
Performance	3.57	Very High / Excellent
Usability	3.40	Very High / Excellent
Reliability	3.37	Very High / Excellent

Overall Evaluation	3.40	Very High / Excellent
Overall Weighted Mean	3.39	Very High / Excellent

Table 30 presents the overall evaluation of the proposed system by patient respondents. Most indicators received ratings from 3.37 to 3.57, interpreted as “Very High / Excellent,” while functionality received 3.20, interpreted as “High / Good.” The overall weighted mean of 3.39 shows that respondents strongly approved the system and found it effective in improving healthcare service delivery compared to traditional methods.

Table 31. Problems with the Existing Paper-Based System (Staff and Healthcare Volunteers)

Statement	4	3	2	1	Mean	Interpretation
The paper-based system makes it difficult for staff to quickly locate patient records.	2	2	0	0	3.50	Very High / Excellent
Patient records are sometimes misplaced or difficult to locate.	2	2	0	0	3.50	Very High / Excellent
The manual recording of patient information is time-consuming.	2	2	0	0	3.50	Very High / Excellent
The manual filing system affects the efficiency of healthcare services.	3	1	0	0	3.75	Very High / Excellent
Retrieving patient files takes a considerable amount of time for staff.	4	0	0	0	4.00	Very High / Excellent
Overall Weighted Mean					3.65	Very High / Excellent

Table 31 presents the system’s acceptability in terms of performance, as evaluated by staff and healthcare volunteers. Ratings ranged from 3.50 to 3.75, interpreted as “Very High / Excellent.” The overall weighted mean of 3.65 indicates improved efficiency and faster access to patient information.

Table 32. Acceptability Ratings in Terms of Functionality (Administrative staff and Healthcare Volunteer)

Statement	4	3	2	1	Mean	Interpretation
The system accurately stores patient demographic and medical information.	4	0	0	0	4.00	Very High / Excellent

The system provides complete patient records needed for healthcare services.	4	0	0	0	4.00	Very High / Excellent
The system supports proper recording of laboratory results and prescriptions.	2	4	0	0	3.33	Very High / Excellent
The system helps reduce errors compared to the paper-based system.	3	1	0	0	3.75	Very High / Excellent
Overall Weighted Mean					3.77	Very High / Excellent

Table 32 presents the acceptability of the proposed system in terms of functionality as evaluated by staff and healthcare volunteers. All indicators received high ratings from 3.33 to 4.00, interpreted as Very High / Excellent. The overall weighted mean of 3.77 shows that the system is highly functional and improves accuracy, efficiency, and reliability in healthcare services.

Table 33. Acceptability Ratings in Terms of Performance (Administrative staff and Healthcare Volunteer)

Statement	4	3	2	1	Mean	Interpretation
The system allows faster retrieval of patient records compared to manual searching.	3	1	0	0	3.75	Very High / Excellent
The system responds quickly when searching for patient information.	2	2	0	0	3.50	Very High / Excellent
The system improves the efficiency of daily health center operations.	3	1	0	0	3.75	Very High / Excellent
Overall Weighted Mean					3.67	Very High / Excellent

Table 33 presents the acceptability of the proposed system in terms of performance, as evaluated by staff and healthcare volunteers. The results yielded high ratings ranging from 3.50 to 3.75, interpreted as Very High / Excellent, reflecting strong approval of the system's speed and efficiency. The overall weighted mean of 3.67 indicates that the system enhances operational efficiency and enables faster, more convenient access to patient information.

Table 34. Acceptability Ratings in Terms of Usability (Administrative staff and Healthcare Volunteer)

Statement	4	3	2	1	Mean	Interpretation
The system is easy to use for healthcare volunteers and administrative staff.	2	2	0	0	3.50	Very High / Excellent

The system interface is clear and understandable.	3	1	0	0	3.75	Very High / Excellent
Users can quickly learn how to operate the system with minimal training.	3	1	0	0	3.75	Very High / Excellent
The system helps staff perform tasks more easily compared to the paperbased system.	3	1	0	0	3.75	Very High / Excellent
Overall Weighted Mean					3.69	Very High / Excellent

Table 34 presents the acceptability of the proposed system in terms of usability as evaluated by staff and healthcare volunteers. The results show high ratings ranging from 3.50 to 3.75, interpreted as “Very High / Excellent,” indicating that the system is user-friendly and easy to use. The overall weighted mean of 3.69 suggests that the system is highly usable and improves convenience and efficiency in healthcare operations.

Table 35. Acceptability Ratings in Terms of Reliability (Administrative staff and Healthcare Volunteer)

Statement	4	3	2	1	Mean	Interpretation
The system operates consistently without frequent errors or crashes.	2	2	0	0	3.50	Very High / Excellent
The system reliably stores and retrieves patient data without data loss.	3	1	0	0	3.75	Very High / Excellent
The system maintains stable performance during daily use.	3	1	0	0	3.75	Very High / Excellent
Overall Weighted Mean					3.67	Very High / Excellent

Table 35 presents the acceptability of the proposed system in terms of reliability as evaluated by staff and healthcare volunteers. The results show high ratings from 3.50 to 3.75, interpreted as “Very High / Excellent,” indicating strong approval of the system’s stability and dependability. The overall weighted mean of 3.67 suggests that the system is highly reliable and supports continuous and efficient healthcare service delivery.

Table 36. Acceptability Ratings in Terms of Security (Administrative staff and Healthcare Volunteer)

Statement	4	3	2	1	Mean	Interpretation
The system protects patient records from unauthorized access.	4	0	0	0	4.00	Very High / Excellent
User login and authentication ensure data confidentiality.	4	0	0	0	4.00	Very High / Excellent
Access control prevents users from viewing or editing restricted information.	3	1	0	0	3.75	Very High / Excellent
Overall Weighted Mean					3.92	Very High / Excellent

Table 36 presents the acceptability of the proposed system in terms of security as evaluated by staff and healthcare volunteers. The results show very high ratings from 3.75 to 4.00, interpreted as “Very High / Excellent,” indicating strong confidence in the system’s data protection features. The overall weighted mean of 3.92 suggests that the system is highly secure and effectively protects patient information.

Table 37. Acceptability Ratings in Terms of Inventory and Monitoring (Administrative staff and Healthcare Volunteer)

Statement	4	3	2	1	Mean	Interpretation
The system helps in monitoring medicine stock levels accurately.	3	1	0	0	3.75	Very High / Excellent
The system reduces the risk of errors in inventory tracking.	2	2	0	0	3.50	Very High / Excellent
The system helps identify low-stock and expired medicines effectively.	2	2	0	0	3.50	Very High / Excellent
Overall Weighted Mean					3.58	Very High / Excellent

Table 37 presents the acceptability of the proposed system in terms of inventory and monitoring as evaluated by staff and healthcare volunteers. The results show high ratings from 3.50 to 3.75, interpreted

as “Very High / Excellent,” indicating strong approval of its inventory management features. The overall weighted mean of 3.58 suggests that the system is highly acceptable and improves efficiency and accuracy in managing medical supplies.

Table 38. Acceptability Ratings in Terms of Overall Evaluation (Administrative staff and Healthcare Volunteer)

Statement	4	3	2	1	Mean	Interpretation
The system improves the overall quality of health record management.	4	0	0	0	4.00	Very High / Excellent
The system helps staff provide faster and better healthcare services.	3	1	0	0	3.75	Very High / Excellent
The system is better than the current paperbased system.	4	0	0	0	4.00	Very High / Excellent
Overall Weighted Mean					3.92	Very High / Excellent

Table 38 presents the overall acceptability of the proposed system as evaluated by staff and healthcare volunteers. The results show high ratings from 3.75 to 4.00, interpreted as “Very High / Excellent,” indicating strong approval of the system’s performance. The overall weighted mean of 3.92 suggests that the system is highly acceptable and is a more efficient and effective alternative to the paper-based process.

Table 39. Overall Ratings of the Proposed System (Staff and Healthcare Volunteers)

Criteria	Weighted Mean	Interpretation
Functionality	3.77	Very High / Excellent
Performance	3.67	Very High / Excellent
Usability	3.69	Very High / Excellent
Reliability	3.67	Very High / Excellent
Security	3.92	Very High / Excellent
Inventory and Monitoring	3.58	Very High / Excellent
Overall Evaluation	3.92	Very High / Excellent
Overall Weighted Mean	3.72	Very High / Excellent

Table 39 presents the overall evaluation of the proposed system as assessed by staff and healthcare volunteers. All criteria received high ratings ranging from 3.58 to 3.92, interpreted as “Very High / Excellent.” Security and overall evaluation were rated highest, while inventory and monitoring received

the lowest, but still a high rating. The overall weighted mean of 3.72 shows that the system is highly acceptable and effective in improving healthcare service delivery and record management.

CHAPTER 5

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

This chapter presents the final evaluation of the capstone project titled “Outpatient Health Record Management Information System at Canossa Health & Social Center Foundation, Inc., Tondo Branch.” It highlights the key findings based on the data gathered from healthcare volunteers and administrative staff, as well as the system testing conducted during the evaluation phase. The system was developed to address inefficiencies in the existing paper-based record management, particularly in terms of data retrieval, organization, security, and workflow. This chapter ensures that the objectives of the study were achieved and identifies areas for further improvement and development.

Summary of Findings

A high degree of success in accomplishing the study's goals is shown by the evaluation of the created outpatient health record management system through user testing and input from healthcare providers. The data gathered clearly demonstrates that the technology significantly enhances patient record management and supports healthcare operations.

1. In terms of functional suitability, respondents agreed that the system provides an organized and reliable method of handling patient information and records. The findings revealed that the problems commonly experienced in the paper-based system, such as delays in transactions, misplaced records, and slow retrieval of patient files were minimized. The system improved the speed and accuracy of retrieving patient information, resulting in more efficient healthcare services.
2. The system interface enabled healthcare staff to easily access and retrieve patient records, which improved workflow and reduced delays commonly experienced in manual processes. Respondents also agreed that the system effectively secured patient information through authentication and access control features, ensuring that only authorized individuals could access the data. In addition, the system was considered user-friendly, easy to learn, and helpful in performing daily healthcare tasks.
3. In terms of performance and administrative efficiency, the system improved daily operations such as data processing, report preparation, and record maintenance. Time-consuming tasks became faster and easier to accomplish, reducing workload and improving productivity. Respondents also found the system effective in improving the retrieval and management of patient information compared to the manual paper-based process.
4. The findings also showed that the system effectively improved medicine inventory monitoring by helping staff monitor medicine stock levels and identify low supplies more efficiently. Respondents agreed that the system reduced errors in inventory tracking and provided a more organized way of managing medical supplies. Overall, users gave the system a Very High / Excellent evaluation, indicating that it successfully addressed the problems of the previous manual system and improved healthcare service delivery.

Conclusions

The study findings confirm the accomplishment of the main goal of creating an outpatient health record management information system for the Tondo branch of Canossa Health & Social Center Foundation, Inc.

1. The solution improves accuracy and lessens the downsides of manual operations by offering a productive and structured platform for handling patient information. By facilitating better access to patient data and reducing administrative duties, the technology improves workflow. By using appropriate authentication and access control procedures, it also guarantees the security and privacy of patient data.
2. Additionally, the system exhibits great usability and dependability, making it appropriate for healthcare workers to utilize regularly.
3. Its maintainability guarantees that it can be maintained and enhanced throughout time.
4. Even though the system accomplished its goals, there were a few small problems, such as the requirement for more advanced functions and system improvements. These offer chances for further growth but have little impact on the system's overall performance. All things considered, the system that was created is a practical, dependable, and efficient way to enhance outpatient record management and promote improved healthcare service delivery.

Recommendations

The recommendations that follow have been put up to improve the system even further and guarantee its ongoing performance:

1. The administration of the Tondo branch of Canossa Health & Social Center Foundation, Inc. is urged to replace the current paper-based record system with a fully functional system. This will greatly enhance the organization's workflow, accuracy, and efficiency.
2. It is advised that healthcare staff receive enough training and orientation so they can make the most of all the system's capabilities. This will optimize its advantages and enhance user experience in general.
3. Improving features like enhanced reporting, information analysis, and standard communication with other healthcare systems should be the main emphasis of future system development. These enhancements will improve the system's usefulness and functionality even further.
4. To guarantee the best performance and handle any potential technical problems, assigned IT workers should perform regular system maintenance and monitoring. Maintaining system security and dependability will also be aided by ongoing enhancements. The company should implement strict data security guidelines and regularly monitor system access to improve data protection. The confidentiality of patient data will be further guaranteed by putting additional security measures into place. Finally, to validate the findings in general, future researchers are urged to extend the study by assessing other system characteristics, including performance efficiency, scalability, and interoperability.

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