



Hospital Management System

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ABSTRACT: The Digital Patient Portal is a web-based application designed to streamline and modernize hospital-patient interactions. This system allows patients to conveniently book appointments, upload medical reports, send queries, and view essential information such as OPD timings and appointment details. Built using HTML, CSS, JavaScript, and PHP, and backed by a MySQL database, the portal aims to reduce hospital crowding, enhance communication, and maintain secure patient records. It provides international patients with dedicated services including online enquiry forms, language support, and treatment guidance. The system's usability and accessibility make it highly beneficial for both local and international patients. The project not only addresses the inefficiencies of manual hospital processes but also integrates features that enhance user experience and healthcare delivery. The result is a patient-friendly platform that aligns with the digital healthcare transformation and contributes to improved hospital management and patient satisfaction.

Keywords- Digital Patient Portal, Online Appointment Booking, Healthcare Web Application, International Patient Services, Hospital Management System.

INTRODUCTION

In today's digital age, the demand for fast, efficient, and user-friendly healthcare services is increasing rapidly. Traditional hospital systems often face challenges such as long queues, delayed appointments, and lack of proper communication between patients and doctors. To solve these issues, we have developed a **Digital Patient Portal**—a web-based system that enables patients to interact with hospitals more efficiently. The portal allows users to book appointments online, upload medical reports, view appointment and OPD details, and submit queries directly. It also includes special services for international patients, making the hospital more accessible globally. The system is built using modern web technologies such as HTML, CSS, JavaScript, PHP, and MySQL, ensuring a responsive and secure platform. By reducing manual work and improving service delivery, this project contributes to better hospital management and enhanced patient satisfaction. It also supports the shift toward smart healthcare and digital transformation in the medical field.

LITERATURE REVIEW.

In recent years, several studies have been conducted to improve hospital management systems through digital solutions. These studies focus on streamlining healthcare processes, enhancing patient experience, and improving data accuracy. Researchers have explored appointment scheduling, report uploading, and patient-doctor communication as key features of digital health platforms. One notable study by S. Sharma et al. (2022) introduced an online hospital management system with basic modules for doctor and patient records. However, the system lacked real-time appointment booking and user-friendly interfaces. Another study by A. Patel and R. Gupta (2021) discussed the integration of cloud computing for hospital data storage. While their solution ensured scalability, it requires complex backend integration.

A paper by T. K. Ahmed et al. (2020) emphasized mobile-based hospital applications to support remote patient care. It highlighted benefits like ease of access and quick communication but faced challenges in secure report sharing. Similarly, P. Roy and M. Jain (2019) developed a PHP-MySQL based management system, but it was limited to administrative tasks and did not provide patient-centred features like online consultations or report uploads.

Several international efforts have also explored Electronic Medical Records (EMRs) and patient portals. These systems often prioritize data management and regulatory compliance but may overlook patient engagement and ease of use.

The review reveals that most existing systems focus either on administrative efficiency or on technical robustness but fail to fully support patient-side needs in a simple and accessible way.

Identified Gap

There is a clear need for a web-based hospital management system that not only simplifies backend operations but also empowers patients with features like online appointment booking, medical report uploads, and personalized query handling. This project aims to fill this gap by creating a patient-friendly and efficient portal using widely used web technologies.

OBJECTIVE

To design and develop a user-friendly Hospital Management System that simplifies appointment booking, report uploading, and communication between patients and healthcare providers.

To create a centralized database for securely storing and managing patient details, appointments, queries, and medical records.

To ensure smooth access to OPD schedules and real-time availability of doctors to improve patient experience.

To implement a secure login system for patient authentication and protection of sensitive health data.

To automate routine administrative tasks such as report handling and query resolution, reducing manual errors and improving efficiency.

To provide patients with personalized access to their appointment details, medical history, and uploaded reports.

To improve transparency and reduce workload on hospital staff by digitalizing core patient interactions.

To evaluate the performance and usability of the system through testing and user feedback

RESEARCH METHODOLOGY

The development of the Digital Patient Portal followed a structured approach using the **Waterfall Model** of software development. The methodology included the following phases:

Requirement Gathering: Functional and non-functional requirements were collected through discussions with hospital staff and patients. The focus was on appointment booking, medical report uploading, query handling, and secure data storage.

System Design: The system was designed using HTML, CSS, and JavaScript for the front-end interface. The backend was planned using PHP, and the MySQL database was designed to store patient data, appointments, reports, and queries securely.

Implementation: The website was developed with multiple modules, including patient login, OPD timings, appointment booking, and online query submission. Data was stored in the hospital_management_system MySQL database using secure connections.

Testing: Unit testing and integration testing were carried out to verify the functionality of each module. The form submissions, database connections, and report uploads were tested to ensure accuracy and reliability.

Deployment: The system was deployed on a local Apache server running on ports 443 and 8080. MySQL operated on port 3308 to manage all backend data interactions.

Evaluation: User feedback was collected from a small group of testers, including students and staff, to evaluate the system's usability, speed, and accuracy. Changes were made based on their suggestions to improve the user experience

PROPOSED SYSTEM

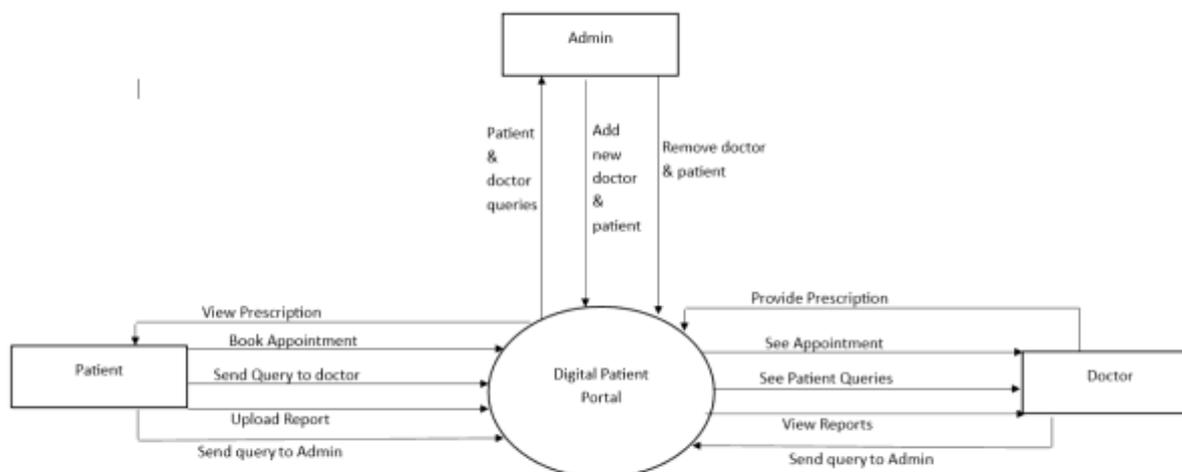
The proposed system is a web-based **Digital Patient Portal** designed to streamline hospital operations and enhance patient engagement. The portal allows patients to register, book appointments, upload medical reports, and access their health records online. Doctors and hospital staff can manage schedules, respond to patient queries, and maintain medical histories through a secure backend interface.

The system is built using **HTML, CSS, and JavaScript** for the frontend to ensure a responsive and user-friendly interface. The backend is developed using **PHP**, with **MySQL** serving as the database to securely store and manage patient information, appointment data, billing details, and report files. Authentication features are implemented to restrict unauthorized access and maintain data privacy.

By digitizing manual hospital processes, the proposed system aims to reduce administrative workload, improve communication between patients and healthcare providers, and ensure timely access to services. It also promotes transparency and efficiency in healthcare delivery. The portal is scalable, cost-effective, and adaptable for use in small to medium healthcare institutions, especially those seeking affordable digital solutions.

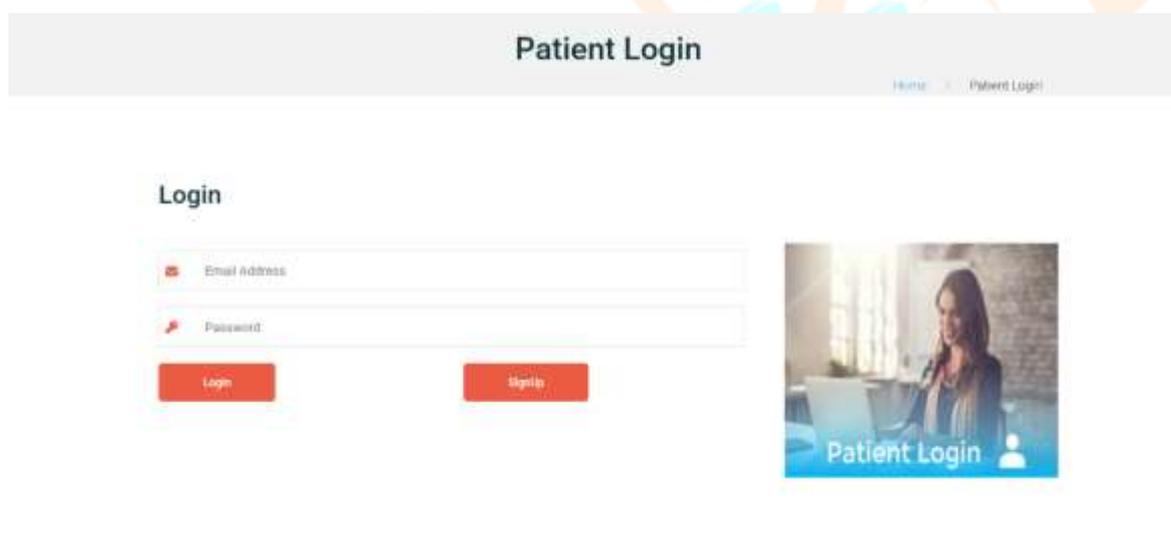
USER INTERFACE

The user interface (UI) of the Digital Patient Portal is designed to be clean, intuitive, and easy to navigate for all user roles—patients, doctors, and hospital staff. The frontend is developed using HTML, CSS, and JavaScript to ensure responsiveness across various screen sizes and devices.



PATIENT MODULE

The Patient module of the *Digital Patient Portal* is designed to provide users with a convenient and secure way to access hospital services remotely. Patients can manage appointments, communicate with doctors and administrators, and keep track of their health records using a simple web interface.



KEY FEATURE OF PATIENT MODULE

Appointment Booking:

Patients can view available slots for different doctors and easily book appointments. The portal provides confirmation and appointment details after booking.

View Appointment:

Patients can view all their upcoming and past appointments, along with date, time, doctor's name, and status.

Upload Medical Reports:

Users can upload lab test results, prescriptions, and scan reports in PDF or image formats. These are stored securely for doctors to review.

View Prescription:

After a consultation, patients can log in to view prescriptions issued by the doctor, including medicines, dosages, and usage instructions.

Send a Query to a Doctor:

Patients can raise medical-related questions directly to their respective doctors through a query form. Doctors can respond via the portal.

Send a Query to Admin:

For non-medical issues like appointment issues, login problems, or general help, patients can submit queries to the hospital administration team.

Secured Login and Logout:

Patients use secure login credentials to access the system. Sessions can be safely logged out to protect sensitive data.

DOCTOR MODULE

The Doctor Module in the *Digital Patient Portal* is designed to help medical professionals manage their schedules, communicate with patients, and provide online consultations efficiently. It offers a secure and organized interface where doctors can view appointments, review medical data, and perform essential tasks with ease.



KEY FEATURE OF PATIENT MODULE:

View Appointment:

Doctors can see a list of all their scheduled appointments, including patient names, time slots, and booking status. This helps them plan their day and avoid overlaps or delays.

See Patient Queries:

Patients can send questions or concerns to the doctor via the portal. The doctor can view these queries, reply through the system, and maintain a record of all communication for future reference.

Accessed uploaded Reports:

Doctors can view diagnostic reports, prescriptions, and other medical documents uploaded by patients. These reports are listed by patient and date, allowing quick access before or during consultations.

Provide Prescription:

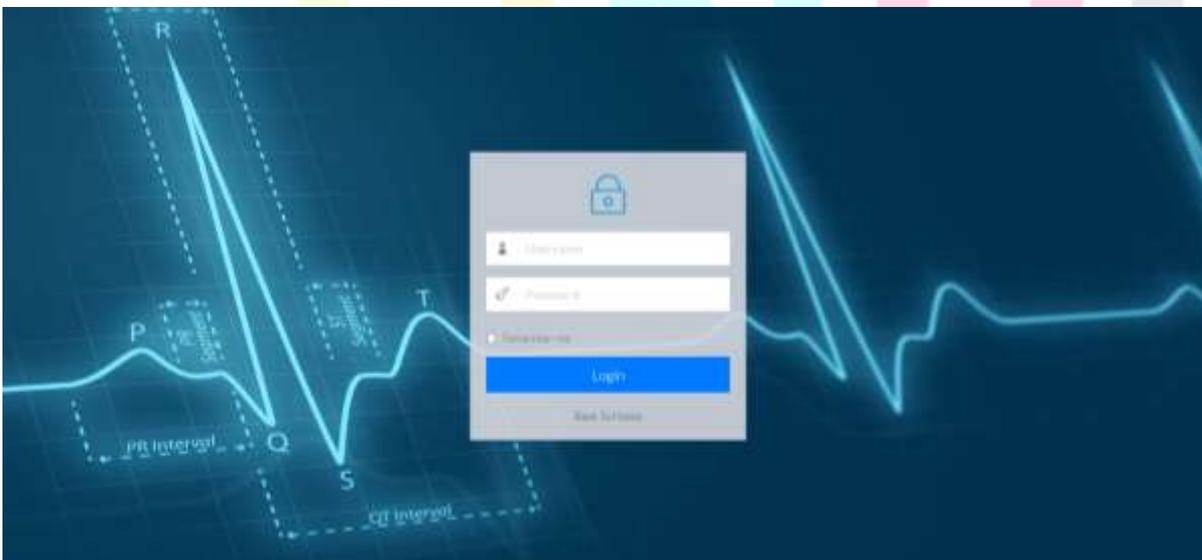
After reviewing a patient's case, the doctor can generate and upload a digital prescription. The prescription includes medicine names, dosages, usage instructions, and is saved in the patient's record for future use.

Send a Query to Admin:

Doctors can contact the hospital's administrative team through a query form. This is useful for reporting technical issues, requesting schedule changes, or asking for support.

ADMIN MODULE:

The Admin Module is the central control system of the *Digital Patient Portal*. It is designed to help hospital administrators manage the platform, users, and communication effectively. The admin has the authority to oversee patient and doctor activities, manage user records, and respond to system-level queries.



View Patient Module:

The admin can access and respond to queries sent by patients. These may include issues related to appointment booking, login problems, report uploads, or general help.

View Doctor Queries:

Admins can also view and reply to queries raised by doctors regarding schedule updates, technical issues, or platform-related support.

Add New Doctors:

The admin has the ability to register new doctors into the system. This includes entering personal details, specialization, and availability timings.

Add New Patients:

If required, the admin can manually add patient details into the system, especially useful in cases where patients are registered offline.

Remove Doctors:

The admin can remove a doctor from the system in case of resignation, transfer, or termination. All associated schedules are also cleared.

Remove Patients:

Admins can delete a patient's record, for example in case of duplicate entries or if the patient no longer wishes to use the portal.

FUTURE ENHANCEMENT:

Mobile Application Development: A separate mobile application can be developed so that it is accessible to patients readily for utilizing services anywhere, anytime.

Telemedicine Integration: Video consultation services can be incorporated so that doctors are consulted by patients directly through the portal without hospital visits

Security Features: Biometric login and two-factor authentication (2FA) features can be added to enable making the data security stronger.

Online Payment Gateway: Provisions for online payment for billing and purchase from pharmacy can be included to enable the system to be completely cashless and user-friendly.

Appointment Reminders: SMS and email reminders of upcoming appointments and availability of reports can be provided to enhance patient interaction.

CONCLUSION:

The Digital Patient Portal successfully streamlines hospital services by digitizing key functions like appointment booking, medical record management, and doctor-patient communication. It improves the accessibility of healthcare services, allowing patients to manage their health more independently and enabling doctors and administrators to work more efficiently. The portal reduces paperwork, minimizes waiting times, and offers a secure platform for data exchange. By integrating features for patients, doctors, and administrators, the system ensures better coordination, faster service delivery, and enhanced user satisfaction. Overall, the project contributes to modernizing healthcare services and paves the way for more technology-driven health solutions in the future.

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