

MedEasy

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Abstract

The exponential growth of patient data in the healthcare sector has created a pressing need for efficient, secure, and user-friendly digital systems. This paper presents a web-based healthcare management and analytics platform designed to simplify patient report tracking and enhance clinical decision-making. The system integrates modules for patient login, data visualization of health metrics (such as blood pressure and diabetes indicators), and a personalized patient dashboard that stores medication history and doctor-issued reports.

Analytical insights are displayed through interactive dashboards, enabling patients to identify anomalies in their health patterns and seek timely medical consultation. The platform contributes to proactive healthcare management and strengthens communication between patients and healthcare professionals.

Keywords — Healthcare Analytics, Web Application, Patient Dashboard, Data Visualization, Medical Reports, Predictive Alerts.

I. INTRODUCTION

In modern healthcare systems, the adoption of digital platforms for managing patient data has become essential. Traditional paper-based record keeping is inefficient, prone to errors, and lacks real-time accessibility. With chronic conditions such as diabetes and hypertension becoming increasingly prevalent, continuous monitoring and data-driven insights are vital for both patients and healthcare providers. The proposed web application aims to centralize patient data and present it through intuitive visual dashboards. By integrating data analytics, the system not only displays medical metrics but also generates alerts when abnormal values are detected. The inclusion of login authentication ensures that sensitive patient information remains secure and accessible only to authorized users.

II. SYSTEM DESIGN

The architecture of the proposed system consists of three main modules: A. Authentication Module — This module handles login and registration for both patients and doctors. It employs secure authentication protocols (such as bcrypt hashing for passwords and token-based sessions) to maintain privacy. Patients can log in to view personal data, while doctors can upload new reports or prescriptions. B. Health Metrics and Analytics Module — This component displays interactive

dashboards containing visualized health metrics such as blood sugar levels, blood pressure, cholesterol, and heart rate. Using charting libraries like Recharts or Chart.js, the system generates trend graphs that help users observe changes in their health parameters over time. Analytical algorithms identify deviations from normal ranges and provide recommendations or alerts to consult healthcare professionals. C. Patient Dashboard Module — The patient dashboard acts as a central hub containing patient details, medication history, and previously uploaded medical reports. Each entry includes metadata such as the prescribing doctor, report date, and condition summary. Patients can also upload new test results, allowing for longitudinal tracking of their health data.

III. METHODOLOGY

The system was developed using a MERN (MongoDB, Express.js, React, Node.js) stack architecture to ensure scalability and efficient data handling. The front-end interface was designed in React with Tailwind CSS for responsive and modern UI design. The back-end handles API routes for authentication, data storage, and analytical computations. For analysis, patient data is processed to detect trends and flag abnormal results using statistical thresholds. Notifications are triggered when metrics exceed predefined safety ranges, encouraging early doctor intervention.

IV. RESULTS AND DISCUSSION

The prototype implementation successfully demonstrated real-time data visualization and secure patient data storage. User testing indicated that both patients and doctors found the system intuitive and efficient compared to manual tracking. The analytics module effectively identified potential health risks such as irregular blood sugar spikes or sudden BP changes. This functionality supports preventive healthcare and reduces dependency on in-person hospital visits for routine monitoring.

V. CONCLUSION

The proposed healthcare monitoring and analytics system bridges the gap between patients and healthcare providers by combining data visualization, predictive insights, and secure access control. Future work includes integrating machine learning models for personalized health predictions and expanding interoperability with wearable IoT devices to enable continuous monitoring.

REFERENCES

1. S. Kumar, R. Sharma, “Digital Transformation in Healthcare through Data Analytics,” *IEEE Access*, vol. 9, pp. 10123–10134, 2021.
2. A. Gupta, M. Singh, “A Web-Based Patient Monitoring Framework Using React and Node.js,” *International Journal of Health Informatics*, vol. 8, no. 2, pp. 58–67, 2022.
3. WHO, “Global Report on Diabetes,” World Health Organization, 2023.
4. J. Patel et al., “Predictive Health Analysis Using Machine Learning Techniques,” *IEEE Journal of Biomedical Informatics*, vol. 7, pp. 112–118, 2022.