# Medi-Cliq (Automatic Drug Dispenser)

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**Abstract**: Access to essential medicines during emergencies remains a significant challenge due to limited pharmacy availability and accessibility constraints. Our project introduces an Automatic Drug Dispenser, a smart, self-service system designed to provide quick, secure, and 24/7 access to both prescribed and over-the-counter medicines. The dispenser integrates QR-based prescription verification, digital payment options, and real-time inventory tracking to ensure seamless medication dispensing. to enhance accessibility further, our system features online telemedicine services, allowing users to request medicines remotely, consult with licensed doctors via video calls, and receive digitally verified prescriptions. This hybrid model ensures that even patients without prior prescriptions can access the right medication through on-the-spot online consultation. targeted for deployment in hospitals, highways, universities, and remote areas, our solution minimizes dependency on traditional pharmacies, enhances emergency healthcare response, and bridges the gap between patients and healthcare providers. By integrating automated dispensing with telemedicine, our project aims to revolutionize medication access, prescription management, and remote healthcare support.

**Keywords:** Automatic Drug Dispenser, QR-Based Prescription Verification, Digital Payments, Real-Time Inventory Management, Telemedicine, Online Medicine Request, Smart Vending Machine, Pharmacy Automation, Prescription Management.

## I. INTRODUCTION

Access to essential medicines is a critical aspect of healthcare, yet many individuals face challenges in obtaining medications due to limited pharmacy hours, geographical constraints, and emergency situations. Traditional pharmacies may not always be available, especially in remote areas, university campuses, highways, and emergency zones, leading to delays in medical treatment. To address this issue, we propose an Automatic Drug Dispenser, a smart and self-service medical vending system that ensures 24/7 availability of prescribed and over-the-counter medicines. The system integrates QR-based prescription verification, secure digital payments, and real-time inventory tracking to facilitate seamless dispensing. Additionally, our solution extends beyond automated dispensing by incorporating online telemedicine services, allowing users to request medicines remotely, consult with doctors via video calls, and obtain digital prescriptions in real-time. By bridging the gap between patients, pharmacies, and healthcare providers, our project aims to enhance medication accessibility, reduce dependency on traditional pharmacy infrastructure, and improve emergency response efficiency. The system is designed for deployment in high-traffic areas such as hospitals, highways, and educational institutions, ensuring that essential medications are always within reach when needed the most.

## II. LITERATURE SURVEY

III.I ZhardEM Medicine Vending Machine – Limited Availability & Manual Dependency. It was developed to address the lack of 24/7 pharmacy services in university dormitories. It offers over-the-counter (OTC) medicines, ensuring basic medical needs are met without requiring a pharmacist. However, the system has several limitations:
It is coin-operated, restricting users who may not have the correct change. the machine only dispenses a limited selection of medicines, making it inadequate for diverse medical needs manual interaction is required to insert coins and select products, making it less efficient than fully automated systems. the machine does not have remote monitoring, leading to potential downtime when medicines run out.

III.II  MeddyCall: A Smart Household-Drug Vending Machine – Prescription Barriers & Accessibility Issues. it was designed for residential buildings, allowing users to purchase non prescription medicines through a vending machine that integrates with a mobile application and OTP-based pickup system. While it improves convenience, It excludes prescription-based medicines, creating a prescription barrier for users who require doctor-approved drugs. the symptom-based selection system can lead to incorrect self-medication, as users might choose the wrong medicine without professional guidance. The system relies on users actively placing online orders, which may not be feasible during urgent medical situations. While it helps reduce long pharmacy queues, it does not completely eliminate the need for human intervention, especially for prescription verification.

III.III  Automatic Health Machine (AHM) – Rural Accessibility & Emergency Response Delays. The Automatic Health Machine (AHM) integrates IoT and AI to provide healthcare services such as telemedicine consultations, COVID-19 screenings, and emergency medicine dispensing. While designed to enhance healthcare accessibility in rural areas, the system has several drawbacks , Internet dependency: The machine requires stable internet connectivity, which can be unreliable in remote locations.AI reliance for prescriptions: While the system uses AI for symptom analysis, it may not always provide accurate medication recommendations compared to human doctors. Emergency support delays: Although AHM can book ambulance services, it does not physically provide life-saving medicines immediately in critical emergency cases.
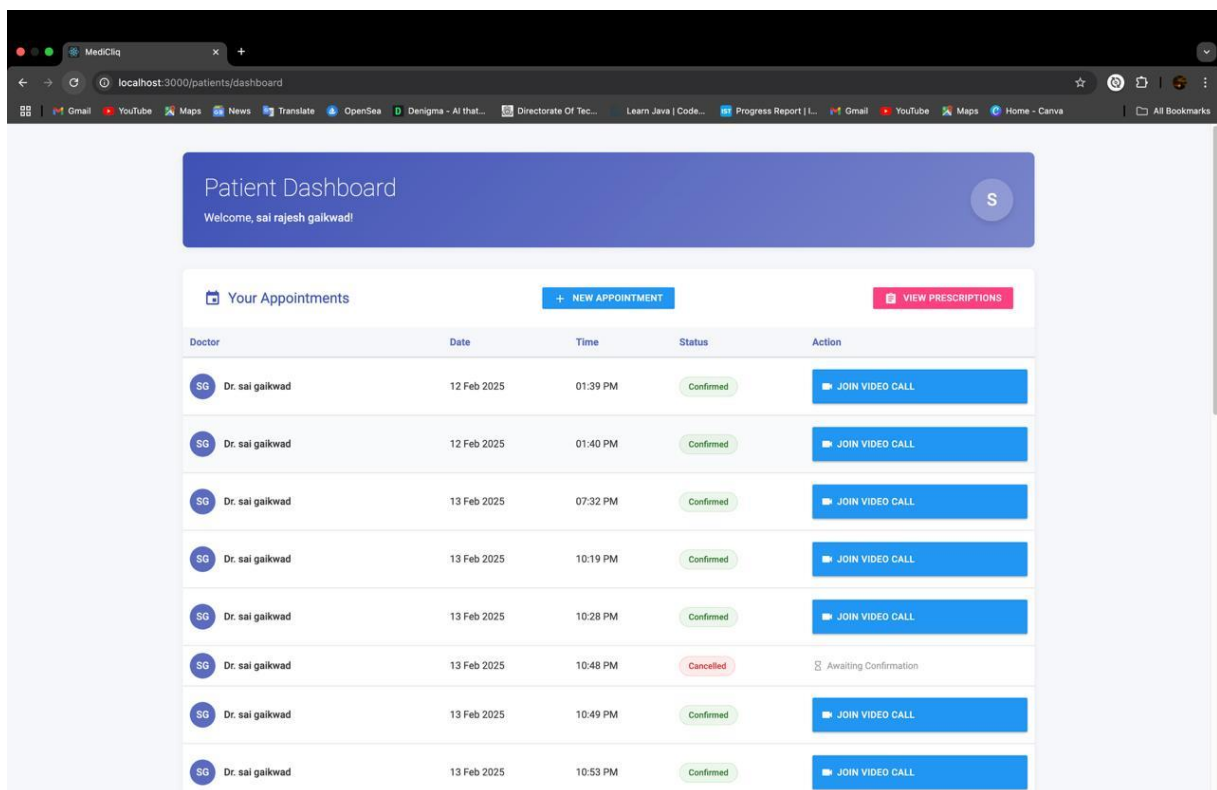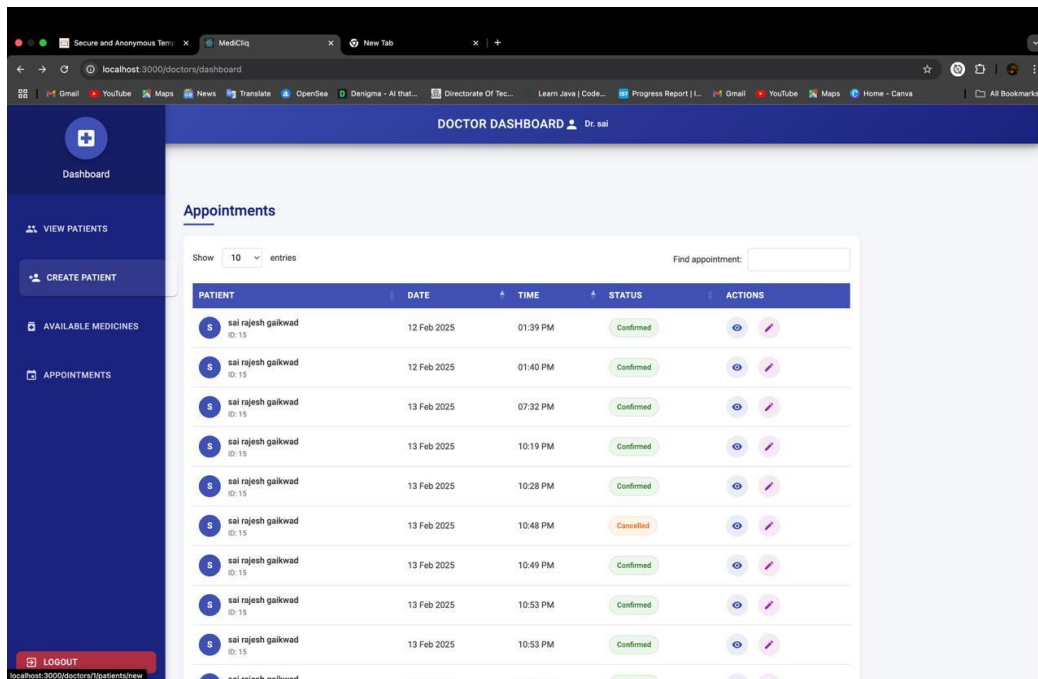
## III.    ARCHITECTURE AND METHODOLOGY

- Automated Medicine Dispensing: A smart vending system provides instant access to medicines, reducing wait times.
- QR-Based Prescription Authentication: Ensures secure and authorized medicine retrieval.
- Online Medicine Requests: Patients can request prescriptions from doctors remotely, eliminating the need to visit a pharmacy.
- Telemedicine Integration: Video consultations allow users to connect with doctors and receive digital prescriptions.
- Digital Payment & Real-Time Inventory Tracking: Enables cashless transactions and ensures efficient stock management.
- Strategic Deployment: Installed in high-traffic locations to maximize accessibility, especially in emergencies.
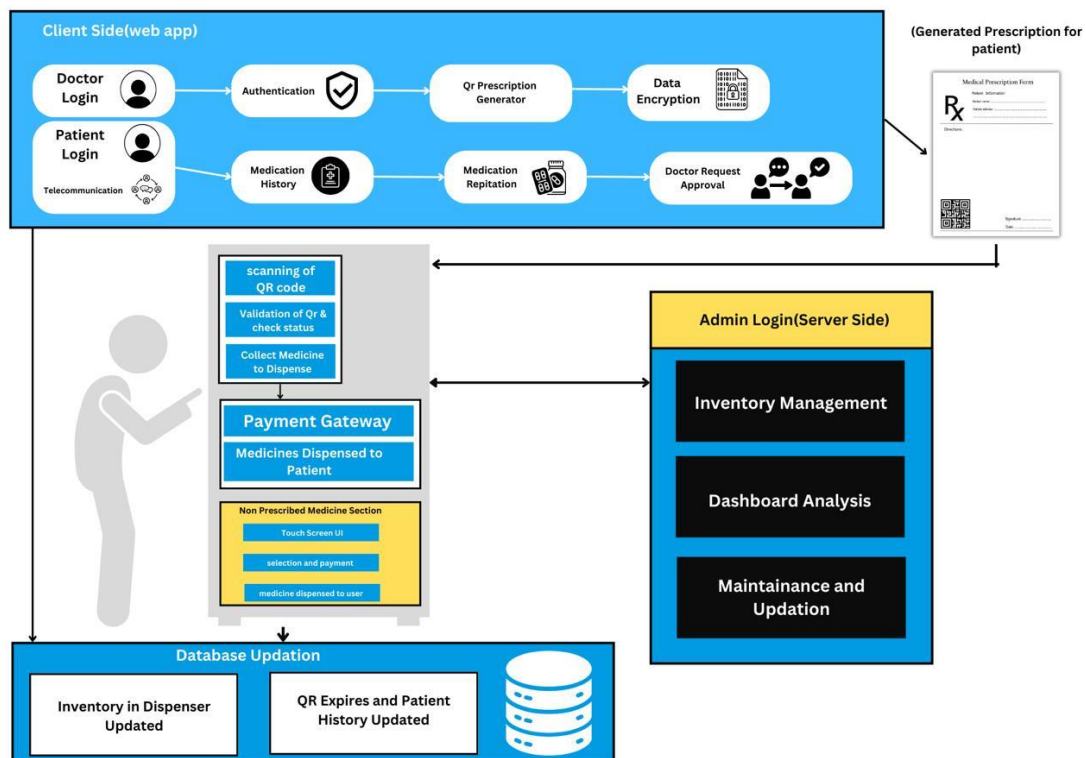
## IV. RESULTS

- Secure Prescription-Based Dispensing: QR validation ensured authorized medicine access.
- Reduced Wait Times: Instant medicine retrieval eliminated long pharmacy queues.
- Seamless Telemedicine Integration: Users could request medicines online and consult doctors.
- Efficient Payment & Inventory: Digital payments and real-time stock tracking prevented shortages.

## V. CONCLUSION

The Automatic Drug Dispenser enhances healthcare accessibility by reducing pharmacy congestion, ensuring quick medicine retrieval, and enabling remote consultations. It provides an innovative and scalable solution to modern healthcare challenges. Future advancements will focus on expanding medicine categories, including prescription-based medicines with secure verification. Enhancing user experience through multi-language support, voice assistance, and intuitive interfaces will improve accessibility. AI-driven predictive stock management will ensure optimal inventory control, preventing shortages.

Integration with telemedicine platforms will enable real-time doctor consultations and automated prescription approvals, reducing self-medication risks. Mobile pre-ordering systems will streamline medicine collection, while biometric authentication will enhance security. IoT-based monitoring will track stock levels and system performance for seamless operation. With these improvements, the Automatic Drug Dispenser can become a comprehensive, intelligent healthcare solution, revolutionizing medicine accessibility, efficiency, and emergency responsiveness in both urban and rural settings.

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