

IoT-Based Pillbox with Caregiver Connectivity

Prof. Fatima Ansari¹, Chandni Qureshi², Falak Shaikh³, Firdos Shaikh⁴, Zikra Siddiqui⁵

Department of Computer Engineering,

M.H. Saboo Siddik College of Engineering, Mumbai, India

fatima.ansari@mhssce.ac.in¹, chandni.211239.co@mhssce.ac.in²,

falak.211249.co@mhssce.ac.in³, firdos.211250.co@mhssce.ac.in⁴, zikra.211257.co@mhssce.ac.in⁵

Abstract: Medication adherence remains a critical challenge in chronic disease management. In India, over half of patients (55.14%) with diabetes struggle to follow their antidiabetic therapy correctly, and nearly 60% admit to missing doses or taking them at incorrect times. These lapses not only undermine treatment efficacy but also increase the risk of complications, hospitalizations, and healthcare costs. To address this gap, this research paper incorporates an intelligent, automated medication dispenser designed to improve adherence through real-time reminders and remote monitoring. The system integrates a microcontroller-driven pill dispenser, onboard sensors to verify dose retrieval, a buzzer and LCD for local alerts, and a wireless module to relay adherence data to caregivers and healthcare providers via a mobile application. When it's time for medication, the pillbox issues an audible and visual alert and releases the correct dose. If the patient fails to retrieve the medication within a preset interval, the device records a "missed dose" event and sends an immediate notification to designated caregivers. This dual approach—local prompting and remote oversight—ensures that patients receive timely support, while caregivers gain peace of mind and actionable insights..

Keywords: Smart pillbox, Smart pill dispenser, Medication Adherence, IoT-Based Medication Reminder, Remote Caregiving.

