


# Chapter 3

## SmartMeds Hub: Bridging Generations in Healthcare

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### **ABSTRACT**

*In an aging global population, the management of medication regimens for elderly individuals presents an increasingly critical healthcare challenge. The aim of this chapter is to design and develop an automated pill dispenser system that ensures precise medication administration for elderly individuals at home, fostering medication adherence and improving health outcomes. This system is versatile and can be effectively employed in old-age homes as well as nuclear elderly households, addressing the diverse healthcare needs of this demographic. This system leverages*

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*face detection to identify patients, ensuring the right pills are dispensed to the correct individual. The audio interaction system enhances the user experience by providing audible medication reminders. The system introduces a feature that allows doctors to remotely edit medication prescriptions. These innovative features collectively establish a comprehensive and patient-centric approach to medication management for elderly individuals, significantly improving their well-being.*

## **I. INTRODUCTION**

In the face of a rapidly aging global population, the management of medication regimens for elderly individuals has emerged as a critical challenge in contemporary healthcare. The complexities associated with memory lapses, confusion, and the management of multiple medications contribute to non-adherence, hospitalizations, and adverse health events among the elderly. The situation is further compounded by the frequent adjustments required in medication doses due to evolving health conditions, posing potential risks if adaptations are not promptly made. Real-time monitoring and ensuring medication compliance present ongoing challenges for both family members and healthcare providers, often resulting in adverse health outcomes and increased hospitalizations.

In light of these urgent healthcare demands, this system aims to design and develop an automated pill dispensing system tailored to the special needs of the older population as a resident in domestic environments. The key objective is to design a holistic adaptable solution that ensures accurate medication delivery but at the same time improves the adherence to medication and enhances better health outcomes. This diversity tends to make the system more applicable to assisted living facilities and isolated elderly households, targeting different health care needs. The initiative is also aimed at ensuring immediate access to information regarding medication by healthcare practitioners and family caregivers to provide remote oversight and individual modifications to ensure optimal patient care.

The traditional elderly medication management methods lack personal pill dispensing and audio reminders. Thus, they can lead to medication errors and poor adherence. Therefore, the proposed system has included the following innovative features: FaceNet-based facial recognition system ensures safe and accurate patient identification and avoids any kind of incorrect dispensing, audio system for audio reminders for medications, and remote prescription editing for the healthcare professional. The removal of manually adjusted dosages of medicine with the implementation of double checks improves both accuracy and security in the medication administration process. Together, these breakthroughs promote a patient-centric approach to medication management in aging well.

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