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AI IN MEDICATION ADHERENCE AND MONITORING ABSTRACT

Praveen kumar .D[1], S.Jeganath*

Department Of Pharmaceutics

School Of Pharmaceutical Sciences

Vels Institute of science, technology and advanced studies, Pallavaram , Chennai

Email:praveenkumard1431@gmail.com

Abstract

Artificial intelligence (AI) is transforming medication adherence and monitoring by leveraging advanced technologies to address the global challenge of medication non-adherence, which affects approximately 50% of patients with chronic conditions. AI-powered systems utilize machine learning algorithms, computer vision, and natural language processing to provide real-time monitoring through smartphone applications, smart pill bottles, wearable sensors, and video-based verification platforms. These technologies achieve remarkable improvements in adherence rates, with studies demonstrating 6.7% to 32.7% increases compared to standard care approaches. AI systems can predict future non-adherence patterns, identify high-risk patients, and deliver personalized interventions through conversational interfaces and automated reminders. Digital platforms using facial recognition and computer vision algorithms achieve up to 100% adherence rates in monitored groups versus 50% in control groups. While challenges include data privacy, implementation costs, and the need for larger long-term studies, AI represents a promising solution for enhancing medication adherence through precision-targeted interventions and continuous patient monitoring.

Keywords: artificial intelligence, medication adherence, patient monitoring, machine learning, digital health, smart devices, personalized interventions, healthcare technology