



Chapter 1

A Digital Health Perspective on Medication Use and Polypharmacy Management for Improving Healthcare Outcomes in Geriatric Patients

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DOI: 10.4018/979-8-3693-0260-6.ch001

ABSTRACT

The high prevalence of multiple comorbidities poses unique medication-related challenges for geriatric patients. Polypharmacy is a particular concern since taking several medications simultaneously increases the likelihood of adverse drug events and the risk of drug interactions while decreasing patient adherence. These factors are associated with suboptimal health outcomes and a heightened burden on the healthcare system (insurance claims) and the patient (out-of-pocket expenses). These challenges can significantly affect the quality of life of geriatric patients. This chapter critically examines the impact of medication use and polypharmacy on the quality of life of older patients. In addition, the authors discuss how artificial intelligence-based digital tools and precision medicine can address these issues by streamlining medical decision-making, improving the patient experience, and allowing remote monitoring. Finally, they interpret the findings from the lens of ethical considerations associated with the adoption and implementation of digital applications and gadgets.

INTRODUCTION

The geriatric population experiences several medication-related concerns due to the higher prevalence of chronic diseases in this group, particularly in the context of polypharmacy, which is defined by Borodo et al (2022) and Nobili et al (2011) as the simultaneous use of more than five different types of drugs. According to Aiezza et al (2021) and Dagli & Sharma (2014), taking several medications raised the risk of adverse drug reactions (ADRs), drug-drug interactions, prescription errors, lowers medication adherence, while increasing healthcare expenses. Fauziyah et al (2017) found that these difficulties can strongly influence patients' physical, mental, and social well-being, thereby, lowering the overall quality of life.

According to Frishammar et al (2023), the advent of digital technology has resulted in innovative techniques to improve medication management in geriatric patient. Electronic medication dispensers, for example, help to coordinate medication schedules, distribute the correct dosage at the scheduled time, and provide medication reminders, according to Shahani et al (2022). Dayer et al (2013) stated that patients and caregivers can benefit from mobile applications and gadgets that track medication compliance, send notifications, and provide medication-related content, and Marien et al (2017) stated that the deployment of medication reconciliation procedures and decision support tools has also been aided by digital transformation.

As per Wheatley (2013), medication reconciliation includes a review of patient's drug regimen to confirm that it is correct and acceptable. Healthcare practitioners can use digital tools to collect comprehensive treatment histories, detect potential

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