Chapter 14
Digital Technology Supporting Medication Adherence:
The Mobili® Automatic Dose Dispenser in Portugal

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ABSTRACT

This chapter explores the complex relationship between medication adherence, digital health, and patient-centred care (PCC), with a focus on chronic multimorbidity and polypharmacy. It begins by addressing the conceptual evolution of adherence and its determinants, followed by a discussion of how digital technologies can support person-centred approaches to improve therapeutic outcomes. The chapter presents Mobili®, an innovative portable automated dispenser, and outlines the design and implementation of the MobiMAd@PT project in Portugal. Drawing on international evidence and implementation science

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frameworks, it analyses the usability, effectiveness, and scalability of such interventions. Emphasis is placed on co-design, contextual adaptation, and integrated care models involving community pharmacies. The chapter concludes by outlining best practices for future digital adherence strategies, highlighting the importance of collaborative, user-driven approaches to enhance healthcare quality and sustainability.

INTRODUCTION

The global demographic transition has significantly reshaped public health priorities, with population aging emerging as a defining challenge of the 21st century. As life expectancy increases, healthcare systems face a sharp rise in the prevalence of chronic conditions and multimorbidity—the co-occurrence of two or more chronic illnesses in the same individual (Navickas et al., 2016). This epidemiological shift has profound implications for clinical management and health service delivery, particularly in terms of medication use. In older adults, multimorbidity often leads to complex therapeutic regimens and, consequently, to polypharmacy, typically defined as the concurrent use of five or more medications (Bricca et al., 2023; Masnoon et al., 2017). While clinically justified in many cases, polypharmacy presents significant risks, including drug-drug interactions, adverse events, and, most importantly, poor therapeutic adherence.

Medication adherence—broadly understood as the extent to which patients take medications as prescribed—is a cornerstone of chronic disease management and a key determinant of health outcomes. However, non-adherence remains alarmingly prevalent, especially among individuals managing complex regimens (Foley et al., 2021). In the context of polypharmacy, the barriers to adherence multiply: from forgetfulness and adverse events to low health literacy, demotivation, and inadequate follow-up (Pantuzza et al., 2017; Religioni et al., 2025). As a result, improving medication adherence has become a major public health goal, demanding both multifaceted, multidisciplinary approaches and person-centered strategies.

In recent years, digital health has emerged as a promising frontier to address these challenges. Technologies such as mobile health (mHealth) applications, telemedicine platforms, and smart medication dispensers offer new ways to support patients in managing their treatments, monitor therapeutic behaviors in real-time, and facilitate communication with healthcare providers. These tools align with the broader shift toward patient-centered care (PCC), which emphasizes individual needs, preferences, and active involvement in health decisions. Digital solutions—when well-designed and integrated—can enhance PCC by increasing access to services, personalizing interventions, and enabling continuous support beyond traditional clinical encounters.

This book chapter explores the intersection of polypharmacy, medication adherence, and digital health through a patient-centered lens. It begins by examining the conceptual foundations of therapeutic adherence and the multifactorial determinants that influence it. Building on this, the chapter discusses digital health as a facilitator of adherence, highlighting the technological, behavioural, and organizational aspects of its implementation. Special attention is given to automated dose dispensing technologies, such as Mobili®, and their role in community-based interventions to support medication adherence for older adults with multimorbidity.

Drawing on international evidence and implementation science frameworks, the chapter also presents the case of the MobiMAd@PT project—an initiative which is piloting digital adherence support systems in Portuguese community pharmacies. By situating this intervention within the broader landscape of healthcare innovation, this chapter offers insights into best practices, potential pitfalls, and pathways