Chapter 13
The Influence of Mobile Health Adoption on Medication Adherence on Population Health: Mobile Health Adoption on Medication Adherence

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ABSTRACT

The fields of population health include health outcomes, patterns of health determinants, and policies interventions. Health is a national and international priority and implementation of mHealth can add a new level of solution to current challenges facing healthcare. The goal of this study is to explore the influence of mobile health adoption on medication adherence. A two-month intervention to monitor patients with poorly controlled diabetes was developed by the researcher diabetic patients that attend two private hospitals in western part of Nigeria. The researcher invented a smart pill container that automatically uploaded its data to the cloud. The pillbox helped patients organize their medications while providing patient-facing reminders and provider-centered feedback on medication adherence patterns. Average medication adherence was consistently above 80%, and even briefly hit 90% during one week of the study. The intervention showed an improvement in the medication adherence among the participants.

DOI: 10.4018/978-1-5225-9746-9.ch013

BACKGROUND

Chronic diseases are major causes of disability and mortality globally (Bowry, Shrank, Lee, Stedman, & Choudhry, 2011). Premature fatal and non-fatal chronic diseases are considered to be largely preventable through the control of risk factors via lifestyle modifications and preventive medication. Chronic diseases morbidity and mortality among high-risk people and are recommended by international guidelines (Annisto, Koivunen, & Välimäk, 2014). However, adherence to medication prescribed for the prevention of chronic diseases can be poor. Low-cost, scalable interventions to improve adherence to medications for the primary prevention of chronic diseases have potential to reduce morbidity, mortality and healthcare costs associated with chronic diseases (Burnier, Wuerzner, Struijker-Boudier, & Urquhart, 2013).

Adherence is defined as the extent to which a patient correctly follows a prescribed therapy; it is the medically preferred term because it reflects active involvement of the patient and a therapeutic alliance between the patient and his or her physician (Annisto, Koivunen, & Välimäki, 2014). This term is in contrast to compliance, which reflects more unidirectional connotations. Adherence to long-term therapies in developed countries is typically reported to be approximately 50% at 1 year after initiation of therapy, with worse rates in lower socioeconomic groups and in developing countries (Habib, 2010). Poor adherence has been linked to successive hospitalizations, increased need for medical interventions, morbidity, and mortality (Cole-Lewis, & Kershaw, 2010).

Medication adherence also implies the notion of concordance, i.e. a process of shared decision-making between patients and healthcare professionals (Fallis, Dhalla, Klemensberg, & Bell, 2013). According to a WHO report, inadequate medication adherence averaged 50% among patients with a chronic disease and represented a significant problem that led to increased morbidity and mortality, as well as increased healthcare costs (Chow, Redfern, & Hillis, 2015). Many older adults suffer from multiple chronic diseases and are treated with numerous medications. They are, therefore, at a high risk of poor adherence, e.g. missing doses, discontinuation, alteration of schedules and doses or overuse. Non-adherence can result in worsening clinical outcomes, including re-hospitalisation, exacerbation of chronic medical conditions and greater healthcare costs (Coyle, 2012). Up to 10% of hospital readmissions have been attributed to non-adherence (Sergi, De Rui, Sarti & Manzato, 2011).

Population is defined as a group of people with similar characteristics/health needs that requires health care interventions (World Health Organization, 2011). In the same vein, population health is defined as the health outcomes of a group of individuals, including the distribution of such outcomes within the group (Folami, 2015). The fields of population health include health outcomes, patterns of health determinants, and policies and interventions that link these two (Habib, 2010). There are varieties of ways in which m-Health can potentially be used to improve population health (da Costa, Barbosa, & Gomese Costa, 2012). Health is a national and international priority and effective implementation of m-Health can strategically add a new level of solution to current challenges facing healthcare.

More than 100 million Nigerians are currently living with at least one chronic health condition and to improve chronic illness care, patients must be empowered and engaged in health self-management(Fox, 2012). However, only half of all patients with chronic illness comply with treatment regimen. The self-regulation model, while seemingly valuable, needs practical tools to help patients adopt this self-centered approach for long-term care (Higgins, & Green, 2011). Of two trials targeting medication adherence alongside other lifestyle modifications, one reported a small beneficial intervention effect in reducing low-density lipoprotein cholesterol (mean difference (MD) –9.2 mg/dL, 95% confidence interval (CI)