Chapter 36
A Taxonomy for mHealth

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ABSTRACT

Recently, we are witnessing an exponential growth in remote monitoring and mobile applications for healthcare. These solutions are all designed to ultimately enable the consumer to enjoy better healthcare delivery and /or wellness. In order to understand this growing area, we believe it is necessary to develop a framework to analyse and evaluate these solutions. The purpose of this chapter then is to offer a suitable taxonomy to systematically analyse and evaluate the existing solutions based on number of dimensions including technological, clinical, social, and economic.

INTRODUCTION

Within consumer health informatics, one of the key driving technology enablers has been mobile solutions. These mobile solutions, whether smartphones or other sensor devices, promised to empower consumers to be better able to monitor their own health and wellbeing and thereby be better placed to engage in more meaningful and in-depth discussions with their respective clinicians. It is clear that such mobile solutions are only in their infancy in health care, and the whole area of mobile health (mHealth) care is growing exponentially. Given this, it believes us to understand the whole domain of mobile health including remote monitoring and mobile apps, and thus, this chapter, offer an appropriate taxonomy to assist us in developing a better understanding

mHealth

The area of ubiquitous and pervasive computing as it relates to health monitoring underscores the need to be continuous and support anywhere-and-anytime monitoring, preferably in a seamless and unobtrusive fashion.

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As a result, with the prevalence of smartphones, mHealth emerged in the past decade. mHealth is viewed as driving force in transforming health-care delivery, making some elements of health care faster, better, more accessible, and cheaper (Levy 2012).

While a standard or a definition for mHealth is absent, the definition for "mHealth applications" provided in the American Health Information Management Association (AHIMA) guide was adopted and given below:

… the use of devices such as smartphones or tablets in the practice of medicine, and the downloading of health-related applications or 'apps'…[to] help with the flow of information over a mobile network and…improve communication, specifically between individuals and clinicians. (AHIMA Guide 2013, p. 1)

While the AHIMA guide offers a reasonable definition for mHealth applications, it is argued that the above definition lacks comprehension in the following two elements:

1. The definition does not include a holistic view on the communication technology aspects of the mHealth applications. This chapter argues that the mHealth information flow does not necessarily occur over a mobile network. Depending on the application and the adopted technology, a single mobile or networking communication technology (mobile/wireless) or hybrid communication method could be used for global connectivity in the system.
2. As Malvery and Slovensky (2014) argue, it does not include key elements of clinical purpose. The definition focuses on communication with a physician or other clinician and fails to acknowledge the important role mHealth applications play in self-care and self-management of health issues and the resulting information that is not intended to be reported to the individual's physician.

Istepanian et al. (2006) argue that mHealth redefines the original concept of tele-medicine as "medicine practiced at a distance" to include the new mobility and "invisible communication technologies" to reshape the future structure of global health-care systems. Further, the definition of mHealth by Istepanian et al. (2006) is "emerging mobile communicates and network technologies for healthcare," which gives a more holistic focus to the communication aspect. They further state that convergence of future wireless communication, wireless sensor networks, and ubiquitous computing technologies will enable the proliferation of such technologies around health-care services with cost-effective, flexible, and efficient ways. Supportively, Free et al. (2010) identify mHealth as "the use of mobile computing and communication technologies in health care and public health".

TAXONOMY

As the vision of pervasive computing, to be connected anywhere, anytime, on any device was accomplished, an exponential growth in mHealth systems and applications also appeared over the past decade. For example, in 2013, it was estimated that more than 40,000 mHealth apps were in use (Silow-Carroll and Smith 2013).

Similarly, an exponential growth of mHealth can be expected in the future. The market for mHealth app services is predicted to reach US$ 26 billion worldwide by 2017, according to a March 2013 report by research2guidance, a Berlin-based consulting company (in Malvery and Slovensky 2014, p. 65).