Chapter 16
E-Health: Current Status and Future Trends

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ABSTRACT

Due to higher life expectancy, the number of older people continues to increase, and with it the number of cases of chronic diseases. Estimates indicate that the percentage of people with at least one chronic disease living in modern societies can reach as much as 40%, making chronic diseases one of the major challenges for modern healthcare systems. In order to reduce healthcare costs, solutions based on information and communication technologies have emerged. The expansion of e-Health solutions is associated with the increased demand for flexible, comprehensive, and cost-effective chronic care models, and continues expanding, putting together a very comprehensive set of knowledge. This chapter presents an inclusive and widespread current state of the art of e-health solutions for chronic diseases, proposing a number of predictable future trends and scenarios.

1. INTRODUCTION

The growing cost of healthcare and the aging of population have created many challenges for governments, healthcare providers and healthcare industry that they try to overcome using E-Health technologies, being one emerging area that has potential to improve healthcare service delivery, diagnostic monitoring, disease-tracking and related medical procedures. The use of wireless technologies to remotely monitor patients in an unobtrusive manner attracts great interest since it
can be done in a reliable and cost effective manner, offering personalized sustainable services to patients (Ragesh & Baskaran, 2012).

Thus, eHealth solutions are particularly identified by several characteristics, such as context aware, personalized, anticipatory, adaptive, ubiquity, transparency, performance, security, privacy (Acampora et al., 2013).

From the point of view of functionality, these systems can be useful in different areas, including diagnosis, prognosis, screening, behavior discovery, therapy, decision support, hospital management, prediction of effectiveness of surgical procedures, continuous monitoring, medication, discovery of relationships among clinical and diagnosis data (Acampora et al., 2013; Abdel-Aal, 2004, 2005).

In addition to these characteristics and tasks, also low cost and user-friendly interface help to improve comfort and life quality to users.

The remainder of this chapter is as follows: section 2 addresses the relevance and challenges of the e-Health; section 3 covers some available technologies and solutions in e-Health divided in wearable multi-sensors platforms and support to care givers and care organizations; section 4 describes the issues of security and privacy of health data; and finishing, section 5 covers open research issues and future perspectives in e-Health.

2. RELEVANCE AND CHALLENGES

Health is something of common concern for everyone, as society live minded and wanting to live well as long as possible. With that in mind the delivery of high quality e-Health products is currently the main priority of each company that develops such products. Advances in e-Health solutions have shown that it is possible to get the most out of the existing technology by investing on it and creating newer and better technologies for this field. Newer and better technologies don’t just refer to new products that do things a little bit better, or redefined products, but in fact, solutions that may profoundly improve the quality of treatment and broaden access to medical care.

These technologies aim to increase efficiency in health care treatments, improve quality of life, increase commitment to evidence-based medicine, empowerment of patients and consumers, and the development of new and more intimate relationships between patients and health care professionals. From a more abstract point-of-view, e-Health can be used to spread, share and relate health information through both patients and health professionals.

Nowadays there is an increasing consciousness about the importance and challenges e-Health and e-Health systems represent, being these challenges are as distinct as:

- An aging population, which demands for a longer-term care, consecutively demanding more elaborated and more available health-care solutions, on which the Information Technologies (IT) may provide a solution like, for example, autonomous monitoring platforms that may synchronize patient vital data with a physician in real-time, and sound an alarm at the nearest healthcare facility if anything goes wrong with the patient;
- The rising expectations of patients from their healthcare professionals due to their access to the Internet that allows them to be better informed about their health issues by consulting and participating in health counselling forums;
- Pressure from the governments to reduce healthcare budgets by adopting IT solutions that automate manual procedures leading to cost reductions;
- A population that demands for better equipment conditions when hospitalized, like for example, newborn trackers, vital alarm systems, non-intrusive monitoring solutions, etc.