

Chapter 13

Mobile Virtual Communities in Healthcare

The Chronic Disease Management Case

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ABSTRACT

The number of citizens with chronic diseases is increasing and is expected to grow more in the next few decades; consequently, the cost of healthcare delivery will increase, and it becomes vital for societies to investigate ways to decrease healthcare cost. On the other hand, mobile technologies are becoming widespread; besides, virtual communities (VCs) are evolving and are taking advantage of users' mobility. This chapter explores the ways in which mobility within virtual communities can play an important role in facing the current and future healthcare challenges, suggests that mobile VCs (MVCs) can help patients with chronic disease to self-manage their health, shows the many advantages of this approach, particularly in terms of enhanced healthcare delivery and reduced healthcare cost, and discusses the challenges that this approach faces.

INTRODUCTION

Chronic Diseases

Worldwide, chronic diseases (e.g. cardiovascular diseases, cancer, chronic respiratory diseases, diabetes) are on the rise. Global chronic disease related deaths were estimated to be 35 million out of 58 million annual deaths in 2005; besides, the number of people that die annually from cardiovascular

diseases is almost twice the number of people who die from all infectious diseases combined (i.e. AIDS, tuberculosis, malaria) (World Health Organization, 2005). By 2015, and for the first time in its history, Canada will have more people having an age of 65 and above, than people having an age under 15 (Institute of Aging-University of British Columbia, 2007) which will eventually cause the number of patients with chronic diseases to rise. Nevertheless, chronic diseases are not the monopoly of elderly nor of developed countries; indeed, they strike a high percentage of adults, adolescents and children.

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For example, 46 million U.S.A. adults (about 1 in 5) were reported with doctor-diagnosed arthritis, and 1 in 250 children has some form of arthritis or related condition (Marks, 2008); besides, diabetes and asthma are dominant chronic diseases; to be sure, 32.8% of males and 38.5% of females in U.S.A. born in 2000 will develop *diabetes* in their lifetime (Narayan, Boyle, Thompson, Sorensen, & Williamson, 2003); and the prevalence of *over-weight* has increased from 15% in 1981 to 35.4% in 1996 among boys, and from 15% to 29.2% among girls; while the prevalence of obesity in children went from 5% to 16.6% for boys and from 5% to 14.6% for girls (Public Health Agency of Canada, 2002). Furthermore, up to 17 percent of the population in the United States and Canada suffers from Asthma (International Study of Asthma and Allergies in Children (ISAAC) Steering Committee, 1998; Public Health Agency of Canada, 1999), the number of Asthma patients is approximately 5 million in the US alone (Mannino, et al., 2002). In Canada, about 20% of boys and 15% of girls aged 8 to 11 have been diagnosed with asthma (Secretariat of the Commission for Environmental Cooperation (CEC), 2006). Comparable data can be found in developing countries (Yach, Hawkes, Gould, & Hofman, 2004; Yusuf, Reddy, Ounpuu, & Anand, 2001), for instance the populations in developing countries suffer from chronic diseases (World Health Organization, 2003); in fact, the number of deaths from cardiovascular diseases (CVD) in developing countries is twice the same number in developed countries, and more than three-quarters of deaths related to diabetes occur in developing countries (World Health Organization, 2005). Similar observations can be found in Latin America regarding chronic obstructive pulmonary disease (Menezes, et al., 2005) and obesity (Uauy, Albala, & Kain, 2001). In India research findings point to the fact that chronic diseases, such as cardiovascular diseases, cancer, hypertension, contribute to an estimated 53% of deaths and 44% of disability-adjusted life-years (Reddy, Shah, Varghese, & Ramadoss, 2005).

Self Managed Care

In 2006, Canada spent \$148 billion on health services, which is more than three times the expenditure on health services in 1975 after taking inflation into account (Canadian Institute for Health Information, 2007). Worldwide, the rising cost of healthcare is pushing governments to find more efficient and less costly ways to deliver care.

In this context, self-managed care appears to be one aspect of the solution. Self management of one's health condition, increases autonomy and improves care quality as part of a managed care policy (Meuser, Bean, Goldman, & Reeves, 2006). While homecare is an important part of healthcare strategies, millions of people in the developed countries will be sick while they are studying or working outside their homes; therefore, finding ways to help people manage their health while they are on the move and away from a point of care, becomes an important part of the solution.

Supplied by telemonitoring functionalities, self management of chronic disease permits patient autonomy and allows daily activities to continue with minimal intervention of healthcare professionals at a point of care (hospitalization, emergency department, nurse visits, etc.) allowing intervention to take place only when needed.

While telemedicine applications exist and are diverse in application (patient care and monitoring, tele-cardiology), few telemedicine applications are mobile and targeting chronic diseases (Xiao & Chen, 2008). From a telemedicine perspective self managed care through mobile technology constitute a kind of an extension of telemedicine services.

Nowadays, youth use the internet and mobile phone on a daily basis; besides, youth are the "social network" generation, a fact confirmed by the massive adoption of social networking services (e.g. Facebook®, MySpace®, etc.) and the different applications and research directions evolving in the social networking field (Brendel & Krawczyk,

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