Redesigning the Healthcare Model to Address Obesity Problem Using Incentives Delivered through a Combination of Processes and Mobile Technologies

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ABSTRACT

Obesity and other lifestyle-related illnesses are among the top global healthcare challenges today. Obesity in young population is an alarming predictor for obesity in adulthood, but also entails different short term health complications. Knowing how to stay healthy is not enough to motivate young individuals to adopt healthy lifestyles. However, relevant progress can be achieved with use of incentives delivered through combination of processes and mobile technologies. Recognizing effectiveness of new healthcare model to prevent obesity in young population, an innovative multi-dimensional cross-disciplinary ICT framework should be developed, which uses sophisticated game mechanics to motivate behavior changes towards healthier lifestyles and supports three main functions: individual & environmental monitoring, including wearable sensors, mobile phones and multimedia diaries; feedback to users, presenting personalized healthy options for alternative lifestyles; and social connectivity, encouraging involvement in sharing experiences through social networks and social engagement. System development should be based on user-centered design, social and networking games and online education and supported by a wide stakeholder’s ecosystem, including health authorities and research institutions, industries and academia from the ICT and healthcare sectors, as well as food companies and SMEs.

Keywords: Healthcare, Behavior Change, Behavior Model, Gaming, Health Status, Innovation, Mobile Technologies, Monitoring, Motivation, Obesity, Social Networks

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INTRODUCTION

The rapidly increasing prevalence of overweight and obesity among young population reflects a global ‘epidemic’ worldwide. Due to the associated serious medical conditions, it is estimated that obesity accounts for up to 7% of entire healthcare costs, as well as costs to the wider economy associated with lower productivity, lost output and premature death. Obesity in young age has been recognized as an alarming key predictor for obesity in adulthood, but also entails a number of short term health complications such as hypertension, type 2 diabetes, metabolic syndrome, fatty liver disease, sleep disturbances along with greater risk of social and psychological problems (Krebs et al., 2007; McGuire, 2012).

Obesity is a complex disorder with many interrelated factors relevant in the regulation of energy balance and body weight, massive environmental changes in the recent few decades being involved in the rise of sedentary pursuits, decrease in physical activity and increased energy intake. Therefore, addressing the obesity issues requires a comprehensive approach taking into account the individuals’ physical-physiological characteristics, personality as well as the social and psychological environments influencing decisions and habits in their everyday life (Kim & Lee, 2009; Mattila et al., 2010; Strasburger et al., 2010; Honka et al., 2011; Jonston, 2012; Jonston & Papaioannou, 2013).

Among the key strategies tackling the risk of obesity in young age, a great relevance should be given to actions developing awareness and enhancing motivation for changing behavior towards healthy diet (e.g., dietary) and physical activity (e.g., active lifestyle). Consequently, effective management of this epidemic should be directed to the environment where the young individuals live and should interact with family and peer group habits taking into account family income, ethical and cultural background, and lifestyle patterns.

Then, such a behavioral management should be also sensitive to social factors as relations with peers through social network media and personal opportunities focused on increasing awareness and personal involvement in the issues of healthy lifestyles to contrast body mass excess. This requires a lot of cross-disciplinary work among all involved health ecosystem stakeholders and enablers, including health authorities and research institutions, industries and academia from the ICT and healthcare sectors, as well as food companies and SMEs.

Finally, the rapid development of the ICT, and in particular mobile technologies, together with increasing diffusion among the young population worldwide, offers an important opportunity for facing these issues in an innovative manner and introducing the possibility of a new technological framework to redesign existing healthcare model.

This paper is comprised of five sections, and is organized as follows. A brief overview and analysis of existing experiences and health management strategies to address obesity problem in young population based on relevant literature are presented in the following section. The third section focuses on new healthcare model, and the fourth section propose fundamental multidimensional cross-disciplinary ICT framework to support new healthcare model. Summary and conclusions are contained in the final section.

ANALYSIS OF EXPERIENCES AND HEALTH MANAGEMENT STRATEGIES TO PREVENT OBESITY IN YOUNG POPULATION

Educational Experience: Review and Analysis

The main educational experiences are normally related to the programs that support children through their families and communities by integrating physical activities into people’s daily lives; making healthy food and beverage options available constantly and everywhere; promoting nutrition and activity; making schools a gateway to healthy weights; and obliging employers and health care professionals to support healthy lifestyles (DeMattia & Denney, 2008; Kim &