The Serious Games Applied for Health

M

Grassyara Tolentino
Universidade de Brasília, Brazil

Alam Ventura
Universidade de Brasília, Brazil

Lorena Cruz
Universidade de Brasília, Brazil

Samuel Vidal
Universidade de Brasília, Brazil

Ritielli Valeriano
Universidade de Brasília, Brazil

Claudio Battaglini
University of North Carolina at Chapel Hill, USA

Ricardo Jacó de Oliveira
Universidade de Brasília, Brazil

INTRODUCTION

The process of urbanization and technological development has significantly altered the lifestyle of the twentieth century, including health-disease related processes. If at the beginning of industrialization countries suffered with infectious diseases, currently the chronic degenerative conditions are the major cause of morbidity and mortality worldwide (Harper & Armelagos, 2010).

Since the 70's decade, the high incidence of non-comunicable diseases (NCDs) and its association with elevated costs beyond the impossibility for cure, has led health care administrators to re-think policies and strategies (World health Organization [WHO], 2013).

The WHO has proposed strategies to promote health by emphasizing personal and social development, creating supportive healthy environments, updating health care services, and promoting health education (HE) by delivering information on how to live a healthy life (WHO, 1998). The goal of this perspective is to promote health as an important component of everyday life and instruct individuals to take spontaneous and organized actions toward healthier lifestyles (WHO, 2011).

DOI: 10.4018/978-1-4666-5888-2.ch557

In this context, access to information is an essential component for the promotion of healthy lifestyles and digital games have emerged as an innovative educational paradigm. Therefore, the purpose of this article is to present current information on the usability of serious games (SG) as a tool for promoting health. Following the WHO's health promotion (HP) model/strategy, this article is organized into three major sections: 1) The use of SG for prevention of diseases; 2) The use of SG for treatment and rehabilitation; and 3) The use of SG applied to health education. It is important to keep in mind that this article is not intended to prove the effectiveness of the games presented in this article, but, rather, to propose the use of SG as tools for the HP and to, perhaps, stimulate the reader to think about potential studies that would provide information for the development of future games aimed to promote better health.

BACKGROUND

Digital games have become present artifacts in the life of most people with access to various forms of information and communication technologies (ICT's), such

as video game (VG) consoles, cell phones, computers, paid TV and tablets. In the ITCs world, the combination of acquiring knowledge while entertaining with fun activities has come to be known as digital game-based learning. The objective of digital game-based learning is to promote active learning to students using digital gaming. According to Abt (1970), digital game-based learning allows for life experiences to interact with knowledge facilitating even more the learning process instead of only convey knowledge in a abstract way as is now in formal education.

The oxymoron "serious games" is used to designate digital games in which goals go beyond playfulness. These games seek assimilation of concepts and attitudes based on experiments and simulations in the virtual world (Charsky, 2010). The ability of SG to reproduce life situations can be used as a tool in prevention, diagnosis and, as an aid for treatment of diseases. SG can also be used for the training of health care professionals through different venues including, but not limited to game simulations at home or in clinics, TeleHealth systems, game sensors, and others.

The focus of this article was to review and to discuss the applicability of SG on health promotion. The US National Library of Medicine National Institutes of Health, Association for Computing Machinery and IEEE Xplore Digital Library, Google were searched using the key words health games, serious games applied to health, digital games, VG, health, treatment and rehabilitation. The websites specialized in serious games applied to health http://www.healthgamesresearch.org and http://www.seriousgamesinstitute.co.uk were also used in this review of literature. Only games classified as serious and published studies that used DG applied to HP were included in this review. Games developed with the goal of promoting training for health care professionals, simulators of physiological systems, or software used in telemedicine for patients' data evaluations were excluded from this review.

SERIOUS GAMES FOR PREVENTION OF DISEASE

Noncomunicable Diseases are characterized by long duration with slow progression that can only be managed but not cured (WHO, 2011). A high percentage of NCDs can be avoided by reducing 4 risk factors: tobacco use, alcohol abuse, unhealthy diet, insufficient physical activity. The control of these factors has been shown to reduce the manifestation of many morbidities such as obesity, hypertension, high cholesterol, hyperglycemia (Prochaska & Prochaska, 2011); all risk factors associated with the development of many different NCDs.

Alcohol Abuse Games

Alcohol consumption has been associated with health problems such as liver cirrhosis, cancer, mental problems, and social problems such as traffic and violent behavior, child abuse, and absences at work (WHO, 2011a). Despite being restricted to minors, the access to alcoholic beverages is facilitated by friends and relatives, and yet, familiar examples generally reinforce this habit (Higgins, McCann, McLaughlin, McCartan, & Perran, 2013).

Unfortunately, there are not a large number of research in the use of VG aimed to fight alcoholism, however, some evidence current available support the use of VG as an educational tool regarding the use of alcohol and drugs (Rodriguez, Teesson, & Newton, 2014). Games such as Divo's Buzz™, Dr. Nida's Challenge™, Pick a Card™, Saras Quest™ Look Out!!! Alcohol™, *On: Know Alcohol*™ are usually associated not only with the prevention of alcohol abuse but also the use of illicit drugs and follows traditional ideas of health campaigns, through negative reinforcement on consumption.

There are, also, games that discuss social consequences of alcohol use. The Booze Cruise Game™ is a racing simulation game in which the player faces the consequences of driving drunk. The Guardian Angel game is designed to assist individuals to recognize and to cope with relapse risk factors by emphasizing prevention techniques including identification of high-risk situations, drink-refusal skills, lapse management training, cognitive restructuring, stimulus-control and craving-management techniques (Verduin, LaRowe, Myrick, Cannon-Bowers, & Bowers, 2013). Therefore, the use of SG could be used as a new way of learning combinations of action and emotion that could assist with prevention and treatment of alcoholism. Despite the innovative use of social media tools, the association between advertising and harmful lifestyle habits is nothing new. The attractiveness of video games is