Use of a Simulator to Develop Clinical Skills for Pharmacists

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INTRODUCTION

Pharmaceutical education is a field in constant development, and thus, it is demanding innovative learning techniques to enhance students' pharmacotherapy knowledge and clinical skills (Seybert, 2011).

Dynamics and concept changes in student environments are increasingly evident. New methods of assessment have been created ever more quickly and along with them, new educational technologies. More than just an option, they are indeed necessary (Botezatu, Hult, Tessma, & Fors, 2010).

The Brazilian reality is still an education with a focus on practice and technique and with little appreciation and expression in health care itself. True integration between our health services and educational institutions is lacking. Today's health services employ professionals who have acquired health care knowledge which does not always serve the needs of the target community (Maftum & Campos, 2008).

Health education which is based on multimedia, including the use of virtual patients, is considered educationally effective and has been regarded favorably when compared to traditional education (Cavaco & Madeira, 2012). Virtual patient technology encompasses a significant field of research and the application of this software is considered to be mainstream in medical education (Botezatu et al., 2010). In the United States and Canada 57% of medical schools include activities using mock patients, especially virtual patients (Kirch, 2007), in their curricula.

After an analysis of published studies regarding the use of simulators in current health care practice there is a noted increase in the use of simulation in health care education. This is commonly found in the curricula of medical, nursing and dental schools. Nevertheless, the use of simulation in pharmaceutical education has not advanced at the same rate (Lin, Travlos, Wadelin, & Vlasses, 2011). There is a definite lack of published studies in the pharmaceutical field (Jabbur-Lopes, Mesquita, Silva, De Almeida Neto, & Lyra, 2012).

The use of simulation in the education of health care professionals allows the students to practice the needed skills in an environment where errors can be committed and there is professional growth

without risking the safety of patients (Issenberg, McGaghie, Petrusa, Lee Gordon, & Scalese, 2005; Ziv, Ben-David, & Ziv, 2005).

In this context, there is a need to create authoring software which aims to facilitate a model for clinical cases, such as the Virtual Patient. The result is the Interdisciplinary Analysis System for Clinical Cases (Sistema Interdisciplinar de Análise de Casos Clínicos; SIACC), which is a system that can be used for educational purposes.

Therefore, the authors plan to present the SIACC as a tool for the development of a pharmaceutical practice simulator involving various curriculum subjects and allowing the integration of content which had been previously disconnected.

BACKGROUND

A review of published studies by (Jabbur-Lopes et al., 2012), regarding virtual patients in teaching pharmaceutical services, revealed seven articles that met the following criteria: original articles and specialist opinions, published between January 1960 and December 2009, in English, where virtual patients were used in competence teaching (skills, knowledge and attitudes) and were related to pharmacist/patient interaction. Four of the studies were carried out in North America.

In a project that brought together pharmacy students from different European countries, (Cavaco & Madeira, 2012), describe how virtual patient technology is being used to simulate real life clinical settings in undergraduate pharmacy courses in Europe. There were 194 participants in the Association of European Pharmacy Students Congress (2011). Of the 46 universities and 23 countries represented at the Congress, only 12 students from 6 universities in 6 different countries told of their experiences with virtual patient technology. These students were satisfied with the use of virtual patient technology and they considered this teaching tool to be very useful. Those interviewed who had not used the technology expressed their support for the potential benefits in pharmaceutical education. Finally, the authors talk about the limited use of virtual patients in European pharmaceutical education and they propose initiatives to boost the use of virtual patient technology and praise the benefits of computer assisted learning in pharmacy studies.

(Zary, Johnson, Boberg, & Fors, 2006) evaluated the possibility for the development of an environment with virtual patient simulations where all the authoring process can be handled by the professors and the environment is flexible enough to be used in different health care courses. A variety of students from health care courses, such as medicine, dentistry and pharmacy, participated in the study. The Web-SP (virtual environment) was successfully implemented at various universities taking into account key factors such as cost, access, security, scalability and flexibility. Evaluation/pilot courses in medicine, dentistry and pharmacy have also been carried out. They show that students thought the Web-SP was easy to use and presented significant educational value. The conclusion was that the Web-SP system had reached the goal of providing a common platform for the creation and evaluation of virtual patient clinical cases. The system is currently in use or in the implementation phase in different health courses at more than 10 universities worldwide.

In 2006 a study was conducted that aimed to document the successful resolution of clinical cases using virtual patients in comparison to real patients. The objective was to improve knowledge and enhance clinical skills (Triola et al., 2006). This study involved the participation of 55 health care professionals. At the end of the research, there was no significant difference in the subjective evaluation of effectiveness. There was an improvement in equivalent diagnostic capability and improvement in the performance

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