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Featured Article

Gaming Simulation as Health and Safety Training for Home Health Care Workers

Amy R. Darragh, PhD, OTR/L^{a,*}, Steve Lavender, PhD^{b,c}, Barbara Polivka, PhD, RN^d, Carolyn M. Sommerich, PhD^b, Celia E. Wills, PhD, RN^e, Bradley A. Hittle, BA^f, Renee Chen, MFA^f, Donald L. Stredney, MA^f

^aSchool of Health and Rehabilitation Sciences, The Ohio State University, Columbus, OH 43210, USA

^bDepartment of Integrated Systems Engineering, The Ohio State University, Columbus, OH 43210, USA

^cDepartment of Orthopedics, The Ohio State University, Columbus, OH 43210, USA

^dUniversity of Louisville School of Nursing, Louisville, KY 40292, USA

^eCollege of Nursing, The Ohio State University, Columbus, OH 43210, USA

^fOhio Supercomputer Center, Columbus, OH 43212, USA

KEYWORDS

clinical simulation;
virtual simulation;
occupational health;
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training

Abstract

Background: The demand for home health care services is rapidly increasing and is driving a need for additional trained home health care professionals (HHPs). HHPs need effective training for managing personal health and safety hazards encountered when providing health care services in the home environment. The purpose of this article was to describe the process used for developing and evaluating an interactive virtual simulation training system (VSTS) to educate HHP.

Sample: Sixty-eight HHPs, including nurses, home health aides, occupational and physical therapists, administrators, and health and safety educators, participated in the study.

Methods: A mixed methods design that included an interdisciplinary, participatory design methodology was used to develop a VSTS to train HHP to identify and manage health and safety hazards in the home using a gaming simulation learning approach.

Results: This approach has yielded a training package that includes modules addressing electrical and fire hazards; environmental hazards; and lift, slip, and trip hazards routinely encountered by HHP.

Conclusions: Participatory methods are a useful and effective way to design a VSTS that is interactive, engaging, and informative.

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* Corresponding author: darragh.6@osu.edu (A. R. Darragh).

Background

There is increasing demand for home health care services and for home health care professionals (HHP) to provide needed services. As a workplace, the home environment

can be more challenging and variable than other environments, including HHP exposure to varying types of personal health and safety hazards. Although HHPs are at high risk of injury and illness, health and safety training is limited, inconsistent, and often incomplete (Centers for Disease Control and Prevention, 2010; Gershon et al., 2012). Existing training approaches are often constrained to written or video-based information, or one-time-only passive lectures in classroom settings. There is a need for more active learning methods that can overcome the limitations of these existing approaches.

Zyda (2005) defines Serious Games as “... a mental contest, played with a computer in accordance with specific rules that uses entertainment to further government or corporate training, education, health, public policy, and strategic communication objectives”

(p. 25). As an example, Thompson (2007) noted, “Video games, enhanced by behavior-change technology and motivating story lines, offer promise for promoting diet and physical activity change for diabetes and obesity prevention in youth” (p. 916). In contrast, interactive training and assessment methods currently used for training HHP do not engage learners in immersive, interactive training experiences. Clinical simulations offer an alternative to more passive methods of instruction such as classroom lecture, reading, and video viewing. Simulations, which often include physical mock-ups, manikins, theater props, and/or actors, are more interactive and can incorporate the more typical complexities of a home health care environment (Figure 1; Polivka, Chaudry, & Crawford, 2012; Unsworth, Tuffnell, & Platt, 2011). When providing education on home safety issues, in-person, on-site clinical

simulations provide naturalistic ways to expose trainees to hazards in the environment as they navigate through the space. However, on-site simulations often provide limited variability in training experiences, can be costly to construct, maintain, and upgrade, and require the use of physical space, which is often hard to come by, to support often sporadic usage. In addition, trainees must be at a specific location at a specific time, which may not be convenient or feasible for HHP who often commute between their home and their client’s home and who may rarely visit their agency’s office.

The use of virtual environments (VEs) can successfully overcome these barriers and may have equivalent or superior learning outcomes relative to traditional training approaches. VEs have successfully been used for training and education in a variety of health care situations (Feng et al., 2013; Ferrer-García & Gutiérrez-Maldonado, 2012; Foran, 2011; Stredney, Carlson, Swan, & Blostein, 1995). Currently, the Department of Labor’s Occupational Safety and Health Administration is using the Unity™ game engine to provide an interactive, game-based tool to introduce small business owners to work site hazards (OSHA, 2015). Advantages of VE include (a) the ability to precisely track each participant’s activity (e.g., location, direction of gaze, selection, and time on task) during simulated learning events, (b) the ability to quantify and classify risk perception and decision-making, and (c) the ability to tailor the training to the specific needs of the trainee group of interest by engaging them in targeted activities.

A virtual, game-based environment, crafted to represent a realistic and accurate home health care environment and containing hazards relevant to the multiple professional disciplines working in home health care, has the potential to provide accessible, effective, and engaging training that is both appropriate and relevant to multiple types of HHPs. The purpose of this article was to describe the process used for developing and evaluating an interactive virtual simulation training system (VSTS) to educate HHP. The content emphasizes key details of the participatory process used for creating the initial version of the VSTS that could be used and/or adapted for multiple types of virtual training simulations targeted to training of diverse groups of health care professionals.

Sample

Occupational therapists, physical therapists, nurses, administrators/educators, and home health aides were eligible to participate in the study if they (a) identified home health care as their primary work setting, and (b) were able to converse, read, and write in English. Participants were recruited using informational flyers and e-mails distributed to home health care agencies. The study protocols and consent procedures were approved by The Ohio State

Key Points

- Home health care professionals (HHP) often are faced with limited opportunities for health and safety training to address the hazards they encounter in client homes.
- The virtual simulation training system provides an engaging environment for training HHP in the recognition, identification, and response to health and safety hazards in client homes.
- The virtual simulation training system stimulates critical thinking and decision-making regarding the risk assessments HHP must make when facing often unpredictable and varied health and safety hazards in client homes.

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