

A Virtual Reality Training Tool to Improve Weight-Related Communication Across Healthcare Settings

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Introduction: Discussing overweight or obesity in healthcare settings is a sensitive topic but it presents a global health challenge. Healthcare professionals (HCP) cite a lack of training and there are few studies on the practice of sensitive communication skills needed to engage patients. Using Virtual Reality (VR) as a training tool is a safe and immersive way to acquire the skills needed. **Methods:** This research is a mixed method 5-phase study to design, develop and test the feasibility of a VR-based training approach to improve weight-related communication in healthcare settings. The training will use a novel wizard-of-oz (WOZ) experimentation technique. **Outcome:** The anticipated outcome of this PhD is the development and feasibility testing of a VR-based training tool to improve weight-related communication with patients who are overweight and obese in healthcare settings.

Virtual reality. Digital learning. eLearning. Wizard of Oz. Human computer interaction. Health communication. Healthcare professionals. Weight management. Obesity Management.

1. INTRODUCTION

Overweight and obesity are chronic disease risk factors, associated with reduced life expectancy (Abdelaal et al. 2017). The global 'obesity crisis' is well documented and few countries have reduced the trend (World Obesity Federation 2019). Maintaining a weight that supports health is challenging in the current obesogenic environment, but together with food and built environment changes, healthcare professionals (HCP) have a role to play in both the prevention and reducing the health impacts of overweight and obesity (Royal College of Physicians policy: public health 2015; BDA Obesity Specialist Group 2018).

Effective health communication positively impacts patient outcomes, if it is sensitive, accurate and honest (Moorhead et al. 2013). Talking to patients about weight loss is known to help to reduce BMI (Pool et al. 2014) and to raise awareness of the health consequences being overweight or obese (Post et al. 2011; Jackson et al. 2013). However, weight loss discussions in healthcare settings are often carried out in an adhoc and non-standardised manner (McHale et al. 2020; Dragomir et al. 2020). HCP report several reasons for not raising the topic

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of weight, including a lack of training in the sensitive communication skills needed, worries about damaging the patient relationship and a lack of patient motivation (Laidlaw et al. 2016; McPherson et al. 2018).

Current training methods rely on text-driven online learning tools and provide little opportunity for skills-based practice in the sensitive communication skills required. Virtual reality (VR) is an emerging tool for empathy-focussed skills-based learning. New training approaches for sensitive communication are available through VR (Pan et al. 2016; Real et al. 2017; Pan et al. 2018). There is a gap in the literature new technologies to improve the standard of training for HCP in weight-related communication.

As part of a PhD, a VR-based training tool to improve communication across healthcare settings was developed. Now usability and feasibility testing are required. This paper has been written with the help of PhD supervisors Dr Anne Moorhead, Dr Raymond Bond, Dr Toni McAloon and Prof Huiru Zheng, Ulster University.

2. RESEARCH QUESTION

How can a VR-based training tool improve weight-related communication in healthcare settings?

2.1 Aims

The aims of usability testing are to:

- Assess the usability of a VR-based training tool to improve how HCP communicate about weight in healthcare settings.
- Assess a wizard-of-oz technique for usability testing a VR-based training tool.

The aim of the feasibility study is to:

- Assess the potential feasibility of a VR-based training tool to improve how HCP communicate about weight in healthcare settings.

3. WIZARD-OF-OZ FOR DESIGNING AND TESTING NEW TECHNOLOGIES

Wizard-of-oz (Woz) is common research method in human computer interaction studies which has been used to prototype the designs of the future that do not currently exist in the real world. (Dahlbäck et al. 1993). Woz has been used to prototype applications of new technologies, such as VR apps and digital assistant apps (Jonell et al. 2017; Clark et al. 2019). These apps typically include other new technologies such as speech recognition, natural language processing, artificial intelligence and machine learning, which are time-consuming and complex to develop. Woz facilitates the usability and acceptance testing of intelligent agents without having to fully developed the intelligence. In healthcare settings, Woz has been used to facilitate the design of intelligent agents such as Sim-Sensi Kiosk (DeVault et al. 2014) - a virtual human interviewer for healthcare decision support and an early usability assessment for a conversational agent (Amith et al. 2019) for HPV vaccination.

4. METHODOLOGY - STUDY DESIGN

This research is part of a five-phase methodology, progressing in accordance with guidelines laid out in the Medical Research Council (MRC) Framework for Developing and Evaluating Complex Interventions, updated 2008. The MRC framework supports researchers to choose the best design methods for a complex intervention. The usability testing and feasibility study are the final phases of the study. This corresponds to the MRC Framework Feasibility/Piloting phase and Evaluation phase.

The research design of the usability testing and feasibility study uses a mixed method approach,

impropriating two validated usability questionnaires, two validated self-assessment communication skills questionnaires and a semi-structured reflective practice interviews with participants.

4.1 Usability testing

The purpose of the usability testing is to assess the usability of a VR-based training tool, *VITAL-COMS* (Figure 1), to improve how HCP communicate about weight in healthcare settings. This study will also include the assessment and analysis of a wizard of oz technique for usability testing.

4.2 Feasibility study

The purpose of the feasibility study is to assess the potential of a VR-based training tool, *VITAL-COMS*, to improve how HCP communicate about weight in healthcare settings.



Figure 1: VITAL-COMS Prototype

5. CONCLUSION

Studies about how to train HCP to sensitively engage patients in weight-related communication are scarce, despite the global challenge of increasing obesity levels. This study aims to guide HCP to improve their weight-related communication with patients by using a novel wizard-of-oz experimentation approach within an immersive VR setting.

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