INTRODUCTION

Research has shown that web-based information delivery methods can be a low-cost and effective way to improve knowledge and encourage health behavior change among college students across health issues such as alcohol use, healthy eating, stress management, and physical activity (Bingham et al., 2010; LaChausse, 2012; McCalley et al., 2006; Portney, Scott-McLean, Johnson, & Carry, 2000; Wells, Joseph, Vander, & Mitchell, 2010). Additionally, research suggests that brief web-based interventions have the potential to yield positive results (Bingham et al., 2010; Chinman, Green, Lord, Then, & Goldstein, 2007; Twel, 2014). Further, technology-based, interactive health communication methods can result in improved knowledge, social norms, and health behaviors (Murray, Barnes, See Tai, & Nazareth, 2009).

In this pilot study, we assessed a web-based health promotion intervention designed to communicate health information about a variety of health topics relevant to the college student experience. The purpose of this study was to evaluate the efficacy, feasibility, and interface usability of a brief, self-directed, tablet-based health promotion intervention implemented on a college campus.

METHODS

The very-brief (5- to 10-minute) intervention was created using an online web editor and administered on iPad® tablets using the campus wireless network. The intervention, which consisted of five, multiple-choice quiz game items, was grounded in the Theory of Planned Behavior (TPB). Content was developed by college health promotion practitioners specializing in the individual health content areas (i.e., alcohol, stress management, nutrition, time management, sexual health, and HIV) utilizing TPB constructs of attitude, perceived behavioral control, and behavioral intent. After entering the response for each item, participants were provided the correct answer and cues regarding the behaviors presented. The intervention topic changed bi-weekly to coincide with the campus health communication topic being promoted.

Data Collection and Recruitment

Graduate students trained in intercept sampling methodology recruited participants at central, highly trafficked locations on campus. To reduce sampling bias, recruiters approached every n-th student who walked on/over a piece of clear tape in the sampled area. To assess feasibility and usability, we administered paper-and-pencil pre- and post-test surveys aimed at evaluating changes in the aforementioned health areas for each of the three cues to action presented in the intervention. Usability measures included technical issues and relevance of the health topic.

DATA ANALYSIS & RESULTS

Data were entered into SPSS and cleaned for analysis. A total of 437 students completed the intervention and survey across all topic areas. The sampling strategy yielded a diverse sample across gender (55.5% female), race (46.9% white), and years of study (87.1% undergraduate). Students found the content areas to be highly relevant (see Figure 1); and the intervention itself to be easy to navigate (98%) and easy to follow (97%). Only 8% reported technology problems; the most common of which was Wi-Fi disconnection (64%).

Independent evaluators assessed each intervention’s educational content and theoretical fidelity. The strongest fidelity was found in the content for HIV, nutrition, and stress management; thus, in an effort to reduce likelihood of Type III error, further analysis focused on these three areas. Composite scores were created for each cue to action by averaging associated items assessing behavioral control, attitude, and intent. Paired samples t-tests (with Bonferroni correction) and Cohen’s d effect sizes were computed for each of these topic areas (see Figure 2).

DISCUSSION

The present study examined the feasibility of a very-brief web-based tablet-administered health education quiz-game on a college campus. Our results indicate that this intervention was successful at improving overall attitude, perceived behavioral control, and intent related to behaviors for HIV testing and prevention, healthy eating, and stress management. Students also found the health content areas to be highly personally relevant. Given these results, along with the understanding that most pre-test scores were already high, this intervention strategy may be most efficient and cost-effective when used to reinforce already salient health cues. This strategy is easily used in a variety of settings, including health promotion/education offices and healthcare centers.

Limitations

We did not include the use of a comparison group; thus, we cannot determine if intervention effects are inflated due to content exposure and the short period of time between the pre-test and post-test. Additionally, the change from pre-test to post-test may not reveal long-term change or true behavioral change. However, according to TPB, changes in behavioral intention are likely to lead to behavior change.

The independent evaluators determined that the theoretical foundation was not strong for the cues associated with alcohol, time management and sexual health; however, students did indicate that these content areas were highly relevant to them personally. Previous studies suggest that very brief interventions, especially those targeting high-risk drinking (Leeman et al., 2015), can be effective. Thus, we plan to improve and re-pilot the intervention to address these health topic areas.