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INNOVATION

Shopping for Health: An Interactive Health Professions Educational Intervention

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Abstract

Health professionals lack nutrition training. Food insecurity among trainees reduces performance. We aimed to support trainees in eating well on a budget and prepare them for patient encounters through "Shopping for Health," gamified grocery shopping, via Virtual Reality or website. Future work could integrate gamified nutrition education into existing training.

Keywords Nutrition · Gamification · Healthcare professionals · Trainees · Virtual reality · Food security

Nutritionis a modifiable risk factor for chronic disease and integral in the management of chronic conditions [1]. Health professionals are asked nutrition-related questions; however, few health professions training programs include formal nutrition education [2]. The prevalence of food insecurity among health professions trainees is estimated at 29% and can lead to missed classes and study sessions, and lower performance [3]. We created a nutrition intervention and gamified grocery shopping via "Shopping for Health" (SFH). Students accessed the game via the Meta Quest 2 Virtual Reality (VR) headset or online via a website (WebGL). Our goal was to educate participants on healthy eating on a budget to support eating well in their own lives at a time when budgets are often stretched [3], and to prepare them for future patient encounters.

Two faculty members in biomedical sciences, a pharmacologist and a nutrition researcher, developed the idea to gamify nutrition education and test the feasibility of using VR and/or web-based games for immersive nutrition education. The educational component included a brief (10 min) video on healthy eating on a budget, created by a Registered Dietitian (RD), "Tips for Healthy Eating on a Budget," that participants accessed via YouTube (https://www.youtube.com/watch?v=-3UF3fvP6Y8). The video includes resources for accessing food on a budget, budget-friendly recipes, and a food security screening tool. The RD worked with a dietetic intern to create a food database with nutrition facts, food allergens, and cost, that was used to develop SFH. The pharmacologist created and tested the game and developed a video tutorial for participants to understand how to use the SFH game (https://www.youtube.com/watch?v=jh2TPu6wjQE). The RD created a patient case, and participants shopped for a young adult female with food allergies to encourage careful reading of nutrition facts and ingredients labels. The case informed the criteria for the SFH game and scoring.

We recruited trainees via email to medicine and pharmacy students, and through professional connections at other institutions. The study included a pre- and post-test, brief video, and SFH game. When participants completed the pre-test, they were assigned a return code for the post-test. We performed *t*-tests in Excel to determine if there was any statistical difference between the pre- and post-tests. Gift cards were provided to those who completed the study. This study was approved by the West Coast University IRB, and all participants completed informed e-consent.

Twenty-two volunteers participated: 10 played the game (four via VR, six via WebGL). 11 participants completed the pre-test, six completed the post-test. All questions were optional; n varies by question. A majority (79%, $n = 11$) agreed or strongly agreed with the statement, "I feel confident that I can afford to buy healthy foods at the grocery store" and 69% ($n = 11$) agreed or strongly agreed with the statement, "I feel confident in my ability to cook and eat healthy foods". When asked, "How comfortable are you

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Table 1 Pre- and post-test results[a] among participants when asked "What are the main factors that influence the food you eat on a regular basis?" Please answer the following questions on a scale from 1 (not important) to 5 (extremely important)[b]. $n=6$

	Price	Health	Taste	Conven-ience	Stress	Family	Physical appear-ance	Social media	Routine	Ability to feel full	Peer/ social situations	Sig-nificant other	Freshness/ quality/sea-sonal
Pre	3.7	3.8	3.8	3.3	3	3.5	3.8	1.2	2.8	3.2	2.7	3	3.2
Post	3.8	4	4.5	3.2	3.5	3.5	3.3	1.5	3.8	3.7	2.3	3	3.3

[a] *t*-tests performed in Excel; [b] Survey questions adapted from: Vilaro MJ, et al. Development and Preliminary Testing of the Food Choice Priorities Survey (FCPS): Assessing the Importance of Multiple Factors on College Students' Food Choices. Evaluation & the Health Professions. 2017;40(4):425–449

with grocery shopping for healthy meals on a budget?", 33% ($n=6$) said they were familiar, 44% ($n=8$) responded they could do this, and 22% ($n=4$) said they could teach this. When asked, "How comfortable are you with grocery shopping for healthy meals for someone with one or more food allergies?", 50% ($n=9$) said they were familiar with this, 44% ($n=8$) said they could do this, and 6% ($n=1$) said they could teach this.

Among participants who completed SFH ($n=10$), 50% ($n=5$) met all nutrient needs, 20% ($n=2$) left one unmet, and three ($n=30\%$) left > 1 nutrient unmet and/or had > 1 nutrient need in gross excess; 90% met all allergens or preferences, and 10% ($n=1$) left at least 1 unmet. Seventy percent ($n=7$) were at or under the budget, while 30% ($n=3$) were over the budget. Table 1 displays the ranking of factors that influenced participant food decisions before and after SFH. Taste was more influential than price or health. There were no statistically significant differences (all p-values > 0.5).

Healthcare providers should be conversant in basic nutrition and able to refer to registered dietitians for in-depth nutrition counseling. This work began during the COVID-19 pandemic, and both PIs relocated to new institutions, which negatively impacted recruitment. Few participants matched their pre- and post-tests, resulting in only six matches for comparison. Future studies will integrate nutrition education and SFH into interventions, not as a standalone activity. We may test SFH in patient education to support meal planning and grocery shopping for healthy foods.

Data Availability Data will be made available upon reasonable request to the corresponding author.

Declarations

The authors have no relevant conflicts of interest to disclose.
This study was approved by the West Coast University IRB, and all participants completed informed e-consent.
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