

Food Safety Education Using an Interactive Multimedia Kiosk in a WIC Setting: Correlates of Client Satisfaction and Practical Issues

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ABSTRACT

Objective: To assess acceptability of food safety education delivered by interactive multimedia (IMM) in a Supplemental Nutrition Program for Women, Infants and Children Program (WIC) clinic.

Methods: Female clients or caregivers (n=176) completed the food-handling survey; then an IMM food safety education program on a computer kiosk. Satisfaction with program, participant demographics, and change in food-handling behavior were assessed by univariate analyses.

Results: Over 90% of the participants enjoyed the kiosk, and most (87.5%) reported using computers a lot. Compared with participants with education beyond high school, participants with less education were more likely to report enjoying the kiosk (98.2% vs 88.1%, $P = .007$), preferred learning with the kiosk (91.7% vs 79.1%, $P = .02$), and would like to learn about other topics using IMM (95.4% vs 86.6%, $P = .04$).

Conclusions and Implications: Food safety education delivered by IMM was well accepted by inner-city WIC clinic clients, including those with less education.

Key Words: food safety education, foodborne illness prevention, maternal child health, computer-assisted instruction, health education (*J Nutr Educ Behav.* 2010;42:202-207.)

INTRODUCTION

Consumer food-handling practices are thought to account for most sporadic cases of foodborne illness and a significant percentage of foodborne illness outbreaks.¹ In the United States it is estimated that there are annually 9.3 million cases of foodborne illnesses resulting from poor personal hygiene, 3.5 million from inadequate cooking or cross-contamination, 0.5 million from not keeping food at safe temperatures, and 10,000 from consuming food from unsafe sources.² Young children are particularly susceptible to foodborne illnesses. Active surveillance data from 2007 indicated the highest incidence rates for salmonellosis, shigellosis, and campylobacteriosis, the most common nationally reportable foodborne diseases, were among children under

5 years old.³ Furthermore, pregnant women and infants are among the groups at highest risk of complications from foodborne illnesses.^{4,5} Therefore, food safety education should be a component of nutrition education for these groups.

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) serves 8 million low-income pregnant and postpartum women, infants, and children up to age 5 years. Because almost half of all infants in the United States are served by WIC,⁶ the program is in a good position to reach a large number of women and young children at risk of foodborne illnesses and in need of food safety education. However, WIC has been faced with a shortage of professionals and increased programmatic demands that limit the amount of time staff can spend pro-

viding nutrition education.⁷ Given these constraints, interactive multimedia (IMM) may be an attractive option to provide food safety education in WIC clinics.

Interactive multimedia is a method of delivering educational content with computers using audio, text, video, animation, and graphics. It can also include interactive tools such as quizzes, case scenarios, and games to enhance learning. For WIC clinics, there are numerous potential advantages of IMM relative to traditional methods such as print literature, classes, and in-person counseling. Narration, video, and graphics can be used to minimize reading text.⁸⁻¹⁰ Clients can move at their own pace,^{11,12} and the content can be modified based on a client's specific informational needs.¹² Interactive multimedia can also be used to ensure that consistent, correct information is presented in all clinics and at all times.^{13,14} Finally, once the program is developed and the equipment purchased, there are minimal costs¹³ and very limited additional staff burden.^{8,10}

An IMM program to improve food safety behaviors among WIC clients

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was developed and tested using a randomized controlled trial. Slightly greater improvements in food safety behaviors were found among participants who used the IMM compared with participants receiving traditional pamphlets.¹⁵ As part of the trial, participants who used the IMM completed a satisfaction survey. To better understand the acceptability of IMM in a WIC clinic setting, the authors analyzed demographic correlates of client satisfaction with the IMM program. In this article, the authors report the clients' experience, satisfaction, and correlates of satisfaction with the IMM program to aid those who are considering the use of IMM in a WIC clinic or similar setting.

METHODS

IMM Food Safety Education Program Development

The development of the program has been reported in more detail elsewhere,¹⁵ and what follows is a brief description. Focus groups and surveys of WIC clinic clients were conducted to assess baseline food safety knowledge and to identify preferred food safety education delivery methods and barriers to safe food handling.^{16,17} The curriculum included the key messages of the Partnership for Food Safety Education's Fight BAC! campaign constructs of "clean," "separate" (not cross-contaminate), "cook," and "chill,"¹⁸ as well as messages about food items to avoid during pregnancy and safe handling of bottles and baby food. The video, audio, graphics, and software were developed by Web Courseworks (Madison, WI). The final program had 5 required modules: "Welcome" (instructions on using the program, duration 2 minutes); "What is foodborne illness and food poisoning" (explanation of how foodborne illnesses occur and their potential consequences, duration 3 minutes); "Food safety and your family" (covered constructs of clean, separate, cook, and chill, duration 13-15 minutes); "Food safety for infants and toddlers" (formula and breast milk safety, duration 5 minutes); and "Food safety during pregnancy" (food items to avoid during pregnancy, duration 5 minutes). Each module was followed by a short quiz,

and the participants were given immediate feedback after each answer. Because the largest racial/ethnic group served by the clinic is African American, the actresses and narrator who were chosen were African American. The software was installed on a free-standing computer kiosk at the clinic.

Study Setting and Participants

The trial was conducted in a WIC clinic in Miami-Dade County, Florida, that serves approximately 6,700 clients monthly. Of these, about 55% are non-Hispanic black; 43% are Hispanic; and 2% are non-Hispanic white/other races (according to clinic records). Eligible participants in the trial were pregnant WIC clients or female caregivers (usually mothers) of WIC clients, 18 years of age or older, who were able to speak and read English.

Enrollment and Intervention

Participants were recruited from clients picking up their WIC vouchers or coming for certification between May 15 and September 26, 2006. All female clients were approached and told about the study. They were asked if they were interested and if they met the eligibility criteria. After each of the 394 participants volunteered, provided informed consent, and completed the pre-intervention food-handling questionnaire, they were randomized to the IMM group ($n = 195$) or the pamphlet group ($n = 199$). Participants assigned to the IMM group completed the computer program and a satisfaction questionnaire about their experience with the IMM. The satisfaction questionnaire included 6 questions, which are listed in the Table, and a section for comments. Participants in both groups completed the post-intervention food-handling questionnaire at least 2 months after the intervention. The development and validation of the pre- and post-intervention questionnaires have been previously described¹⁵; briefly, the questionnaires contained 21 questions about food handling that were designed to capture the "clean," "separate," "cook," and "chill" constructs as well as avoiding unsafe food items during pregnancy.

Data Management and Analysis

The data were double-entered into 2 SPSS 15.0 datasets (SPSS Inc., Chicago, IL, 2006), and discrepancies between the 2 sets were resolved. One to 5 points were assigned for the response to each question (Table) on the satisfaction questionnaire, except the question about using computers a lot. The lowest number of points was assigned to the "strongly disagree" end of the Likert scale, and the highest number of points was assigned to the "strongly agree" end of the scale. These points were summed for each participant. The scores were then categorized by tertile because of their non-normal distribution. Univariate analyses using chi-square or Fisher's exact test were conducted as appropriate to evaluate demographic factors associated with client satisfaction. Race/ethnicity was included as a demographic factor because the program was in English and targeted to African American clients. To test the association between satisfaction and change in food handling, a pre- and post-intervention mean food safety score was determined for each participant. One to 5 points were assigned to each of the 21 question responses, with the highest number of points assigned to the safest behaviors. For each participant, these scores were summed and divided by the total number of questions answered so that each final mean score was between 1 and 5. The Kruskal-Wallis test was used to analyze the relationship between satisfaction score and change in food-handling behavior score. Three of the authors independently categorized the written comments of the participants as "positive," "neutral," and "negative." The analyses were conducted using SAS (version 9.1, SAS, Inc., Cary, NC, 2002). This study was approved by the Florida Department of Health and Florida International University Institutional Review Boards.

RESULTS

Participant Experience with IMM

Of the 195 participants randomized to the IMM group, 180 (92.3%) participants completed the IMM program.

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