Reaching New Audiences Using Electronic Magazines for Microwave Food Safety Education

Julie A. Albrecht, PhD, RD[1]; Julie Garden-Robinson, PhD, RD[2]; Carol Schwarz, MS, RD[3]; Kayla Colgrove, MS, RDN, ACSM-CPT[4]

INTRODUCTION

Microwave ovens, which are found in more than 90% of US homes,[1] can be a meal preparation time saver; however, foodborne illness outbreaks have been traced to commercial foods cooked improperly in microwave ovens. The Centers for Disease Control and Prevention reported a multistate outbreak of salmonellosis associated with undercooked frozen meals containing raw chicken (44 people were sickened in 18 states).[2,3] The investigators reported that undercooking foods in microwave ovens had a role in many of the cases. They noted that consumers should know the wattage of their microwave ovens and follow instructions printed on packaging about how to heat the foods properly and to use a food thermometer to measure the final temperature.[3] Foods involved in microwave oven–related outbreaks are popular with young children, who have a higher risk for foodborne illness compared with adults. Food preparers in families with young children are responsible for food preparation that directly affects the food safety of their children.[4]

This program, *Save Time MICROWAVE IT*, was adapted from a traditional train-the-trainer lesson for family, community, and education clubs,[5,6] which typically reaches an audience aged ≥ 70 years, to a zmag format for use with a younger audience (aged ≤ 50 years). Electronic publishing has increased dramatically with the advent of mobile devices such as tablets and smartphones. A recent Pew Research Center[7] report indicated that more than half of American adults have used an e-reader or tablet and 1 in 3 have read a book on their electronic device in the past year. Electronic publishing and open access have allowed information to be available in a variety of formats (including video), which is expected to increase.[8]

Using research-based content and innovative approaches, the goal of the project was to educate younger technology-savvy food preparers about the importance of following microwave instructions correctly. According to the program objectives, as the result of using the zmag information, food preparers would be able to:

- Determine the wattage of their microwave oven
- Determine hot spots in their microwave oven
- Follow package instructions to cook food safely in their microwave oven
- Select containers safe to use in their microwave oven
- Properly clean their microwave oven

PROGRAM DESCRIPTION

The *Save Time MICROWAVE IT* zmag was a collaborative effort involving Extension educators, specialists, and dietetic interns to reach new and younger adult audiences with microwave food safety information through interactive technology available 24 hours/day, 7 days/week. The digital magazine was based on the US Department of Agriculture microwave cooking guidelines,[9] which were informed by research findings. The zmag includes the following topics: know the wattage, uneven heating, following microwave instructions, safe containers, and cleaning your microwave oven, with accompanying activities and recipes.[10]

The zmag format helps the learner access key food safety concepts through interactive pop-up screens, graphics, charts or tables, pictures, videos, and links to URLs and pdfs (Figure 1). For example, a video icon can be clicked to see a video showing a marshmallow test being conducted. The know the wattage activity helps the learner determine the wattage of his or her microwave oven. A recipe section contains tips to make microwave foods look like traditionally cooked foods, and pictures of recipes can be clicked for the actual recipe and nutritional information.

Survey data were collected with a link at the end of the zmag to the SurveyMonkey data collection system (SurveyMonkey Inc., Palo Alto, CA). To increase participation, the incentive for survey completion was entry into a random drawing for a $50 gift card.

Marketing strategies included promotion on Extension electronic mailing lists targeting food preparers to connect them directly to the zmag; a link on Nebraska Extension's Web site, a link on the North Dakota State University

[1]Department of Nutrition and Health Sciences, University of Nebraska–Lincoln, Lincoln, NE
[2]Department of Health, Nutrition and Exercise Sciences, North Dakota State University, Fargo, ND
[3]Nebraska Extension in Buffalo County, Kearney, NE
[4]Nebraska Extension in Gage County, Beatrice, NE

Conflict of Interest Disclosure: The authors' conflict of interest disclosures can be found online with this article on www.jneb.org.

Address for correspondence: Julie A. Albrecht, PhD, RD, Department of Nutrition and Health Sciences, University of Nebraska–Lincoln, 119 LEV, Lincoln, NE 68583-0806; Phone: (402) 472-8884; Fax: (402) 472-1587; E-mail: jalbrecht1@unl.edu

J Nutr Educ Behav. 2016;48:590-592

http://dx.doi.org/10.1016/j.jneb.2016.06.012

Figure 1. Sample page illustrating interactive graphic designs, such as pop-up buttons that take the viewer to additional information and a television screen that takes the viewer to a video.

Extension Service Web site; links on local Extension office Web sites; Facebook; Twitter; news releases; and postcards with a QR code on the reverse side (Figure 2). Family and consumer science teachers and Extension educators were provided information about accessing the zmag for use in their classrooms. The zmag was marketed via television coverage from an interview. In addition, the guide was featured in a weekly column, "Prairie Fare," that originates in North Dakota and is used in the Midwestern states and Canada.[11]

PROGRAM IMPACT

During National Food Safety Month in September, 2015, a major marketing effort to collect evaluation data was conducted through national and state listservs and Web sites. The marketing and evaluation process resulted in 277 participants from across the US completing the survey at the end of the zmag. Nearly all owned a microwave oven (99.5%). About 70% knew the wattage of their microwave oven. Forty percent of those accessing the zmag were aged $<$ 50 years (93.6% female), whereas the majority of participants using the traditional lesson were aged $\geq$ 70 years. Approximately 73% of participants aged $<$ 50 years planned to try one of the recipes, compared with 66% of those aged $>$ 50 years (not significant). About one third of participants tested the wattage, conducted the marshmallow test, and viewed the videos. More participants aged $>$ 50 years were likely to share the information, although results were not significant ($P = .11$).

Foodborne illness outbreaks from commercially produced microwaved food resulted in changes in cooking instructions.[12] A total of 93% of participants stated that they would follow

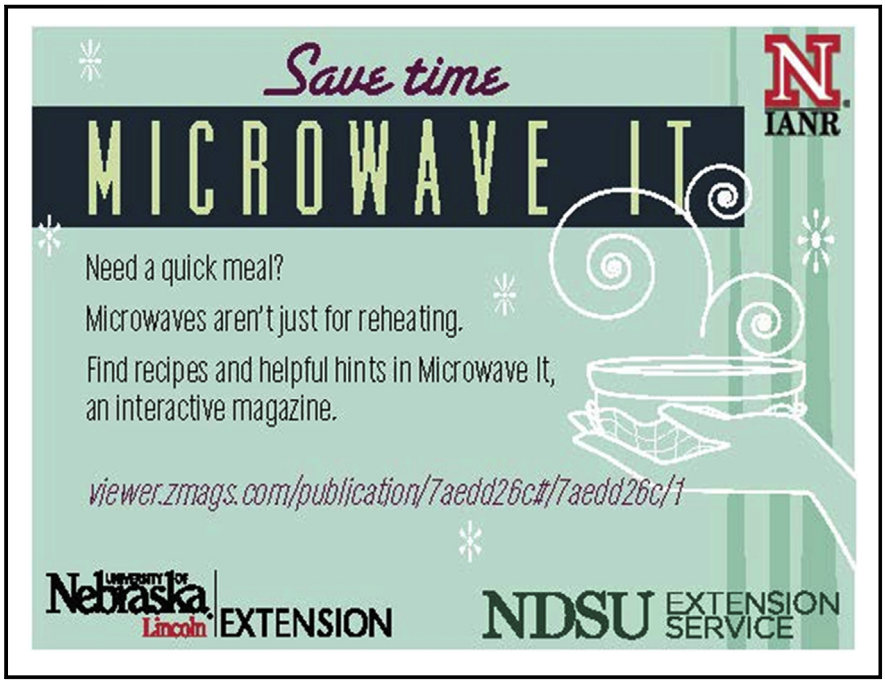

Figure 2. Recruitment postcard for the *Save Time MICROWAVE IT* zmag program.