

# Healthy Choices for Every Body Adult Curriculum Improves Participants' Food Resource Management Skills and Food Safety Practices

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## ABSTRACT

**Objective:** To evaluate the impact of the University of Kentucky's *Healthy Choices for Every Body* (HCEB) adult nutrition education curriculum on participants' food resource management (FRM) skills and food safety practices.

**Methods:** A quasi-experimental design was employed using propensity score matching to pair 8 intervention counties with 8 comparison counties. Independent-samples *t* tests and ANCOVA models compared gains in FRM skills and food safety practices between the intervention and comparison groups (*n* = 413 and 113, respectively).

**Results:** Propensity score matching analysis showed a statistical balance and similarities between the comparison and intervention groups. Food resource management and food safety gain scores were statistically significantly higher for the intervention group (*P* < .001), with large effect sizes (*d* = 0.9) for both variables. The group differences persisted even after controlling for race and age in the ANCOVA models.

**Conclusions and Implications:** The HCEB curriculum was effective in improving the FRM skills and food safety practices of participants.

**Key Words:** food resource management, food safety practices, program evaluation, *Supplemental Nutrition Assistance Program-Education* (SNAP-Ed) (*J Nutr Educ Behav.* 2018;■■:■■-■■.)

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## INTRODUCTION

The *Supplemental Nutrition Assistance Program-Education* (SNAP-Ed) and *Expanded Food and Nutrition Education Program* (EFNEP) aim to promote nutrition behavior change in limited-resource audiences. Implementing agencies for SNAP-Ed and EFNEP develop or adopt evidence or practice-based curricula (eg, *Cooking Matters for Adults*<sup>1</sup> and *Eating Smart Being Active*<sup>2</sup> [ESBA]) to teach nutrition education to participants. A common goal of

these curricula is to enhance participants' food resource management skills (FRM) and food safety practices.

Food resource management refers to the abilities of participants to stretch their food dollars and make healthy choices despite limited budgets.<sup>3,4</sup> It encompasses food budgeting, "menu planning, thrifty shopping, and awareness of supermarket persuasion techniques,"<sup>5</sup> which are skills that are vital for the food security of low-income individuals, especially those eligible for and/or receiving supple-

mental nutrition assistance. Recent studies reported statistically significant links between high levels of FRM skills and improved food security and the likelihood of purchasing healthy foods among low-income populations.<sup>6</sup> Research also documented the positive immediate and long-term impacts of nutrition education on the FRM skills of limited-resource audiences.<sup>1,4,5,7,8</sup> For example, a quasi-experimental intervention-comparison group study (*n* = 668) of *Cooking Matters for Adults* reported statistically significant improvements in FRM skills and self-efficacy among participants.<sup>1</sup> Similarly, an outcome effectiveness study of the ESBA curriculum showed statistically significant pre-post improvements in FRM.<sup>2</sup>

Nutrition education curricula also aim to enhance food safety practices among low-income audiences,<sup>5</sup> a group at higher risk for foodborne illnesses, especially illnesses (eg, *salmonella*) that result from poor food-handling practices.<sup>9</sup> Many nutritious, healthy foods being promoted in obesity

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prevention programs are perishable products; hence, there is a need for education to promote safe food-handling and storage practices.<sup>9</sup> However, findings of evaluations of the impact of nutrition education on food safety are mixed. Whereas some studies reported statistically significant immediate and long-term improvements in measures of food safety and food-handling practices (eg, not thawing foods at room temperature),<sup>2,5</sup> other studies did not report statistically significant improvements.<sup>8</sup>

The purpose of this study was to evaluate the impact of the University of Kentucky's *Healthy Choices for Every Body* (HCEB) adult nutrition education curriculum on participants' FRM skills and food safety practices. The hypothesis was that compared with nonparticipants, HCEB curriculum participants would report statistically significant higher pre-post gains in FRM and food safety practices. Although many existing nutrition education curricula (eg, ESBA) were previously evaluated for their impact on participant FRM skills, food safety, and other outcomes,<sup>4,5,8,10,11</sup> the current study is the first empirical evaluation of Kentucky's HCEB adult nutrition education curriculum. This study presents an evaluation of the extent to which the curriculum achieved its expected outcomes: specifically, its impact on participants' FRM skills and food safety practices.

## METHODS

### Curriculum Description

The HCEB curriculum was developed by the University of Kentucky's Nutrition Education Program to teach limited-resource adults about planning nutritious meals on limited budgets, safe food-handling practices, and appropriate food preparation skills needed for a healthy lifestyle. In line with Knowles'<sup>12</sup> adult learning theory, the curriculum incorporated lessons and activities that recognize participants' experiences, skills, and knowledge; explained why, what, and how the nutrition education concepts presented relate to real-life situations; and included active learning activities, hands-on practice, and demonstrations to help participants understand and apply content. Lesson

units were provided at a low literacy level to reach targeted populations and were available in both English and Spanish. Each unit was designed to be delivered as a single lesson using accompanying resources (eg, ice breakers and recipes) to reinforce learning, and required approximately 45 minutes to 1 hour to complete. The curriculum was delivered in small-group settings at various locations throughout the Commonwealth of Kentucky by paraprofessional nutrition education assistants. Ongoing education was provided to enhance the professional development of the paraprofessional assistants. Training focused on best practices for participant recruitment, curriculum delivery, nutrition concepts (eg, current dietary guidelines and physical activity recommendations), food safety protocol, FRM practices, and food preparation skills.

The HCEB curriculum consisted of 10 core units, 7 of which were required for graduation from the program. There were also 6 supplemental units for specific populations (eg, pregnant women, nursing women, and women with infants). Three of the 7 required units related to FRM, including lessons on the components of the Nutrition Facts Label and how to interpret information when making food choices; knowledge and skills to plan nutritious meals successfully; and money-saving strategies for planning and purchasing nutritious and appealing meals on a limited budget. One unit focused on food safety, with lessons emphasizing handwashing before, during, and after food preparation; use of meat thermometers; and the 4 principles of food safety: clean, separate, cook, and store food properly. The final 3 of the 7 required lesson units focused on nutrition concepts including lessons on MyPlate<sup>13</sup>; limiting fat, sugar, and sodium intake; and the importance of a healthy breakfast and ideas for breakfast meals. Topics on physical activity and practical ideas for adopting a physically active lifestyle were incorporated into each lesson. All program graduates received the same 7 core lessons, including 3 on FRM skills. The HCEB curriculum shared the same overarching goal as other statewide nutrition education curricula<sup>1,2</sup>: provide

nutrition education to enhance the likelihood that low-income families would make healthy food choices within a limited budget. However, HCEB seemed to have a stronger focus on FRM; 43% of its required lessons (3 of 7) focused exclusively on topics related to FRM, compared with 11% (1 of 9) for the ESBA curriculum.<sup>14</sup>

### Evaluation Design

The study protocol was approved by the Institutional Review Board of the University of Kentucky. A quasi-experimental design was used to compare outcome variables between HCEB curriculum participants in SNAP-Ed counties and a matched sample of non-curriculum participants. Participants in both groups were required to be aged  $\geq 18$  years and could be male or female and of any racial or ethnic background.

Sample selection occurred in fall, 2016. At that time, HCEB was being implemented in 90 of the 120 counties in the state of Kentucky, with 30 nonparticipating counties. A total of 72 of the implementing counties were supported by SNAP-Ed whereas the others were supported by EFNEP. Because this evaluation was funded by SNAP-Ed, the intervention group was drawn from counties that had services for SNAP-Ed. The comparison group was composed of 8 of the 30 nonparticipating counties; they were selected because of the willingness of family and consumer science county agents to recruit and collect data from SNAP-eligible adults who were not enrolled in a nutrition education program. Each county agent was asked to recruit 20 participants in the non-intervention counties; however, average recruitment per county was 14 participants.

The researchers used the method of propensity score matching (PSM)<sup>15-19</sup> to match the 8 comparison counties with 8 intervention counties. Propensity score matching is a quasi-experimental design method used to reduce imbalances between groups when randomization is not possible or practical. Matching was done at the county level because the implementation of HCEB is county-based. The county-level PSM analysis ensured that each selected intervention county was

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