

# Methodology for Developing a New EFNEP Food and Physical Activity Behaviors Questionnaire

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## ABSTRACT

**Objective:** Research methods are described for developing a food and physical activity behaviors questionnaire for the *Expanded Food and Nutrition Education Program* (EFNEP), a US Department of Agriculture nutrition education program serving low-income families.

**Design:** Mixed-methods observational study. The questionnaire will include 5 domains: (1) diet quality, (2) physical activity, (3) food safety, (4) food security, and (5) food resource management. A 5-stage process will be used to assess the questionnaire's test-retest reliability and content, face, and construct validity.

**Setting:** Research teams across the US will coordinate questionnaire development and testing nationally.

**Participants:** Convenience samples of low-income EFNEP, or EFNEP-eligible, adult participants across the US.

**Interventions:** A 5-stage process: (1) prioritize domain concepts to evaluate (2) question generation and content analysis panel, (3) question pretesting using cognitive interviews, (4) test-retest reliability assessment, and (5) construct validity testing.

**Main Outcome Measure:** A nationally tested valid and reliable food and physical activity behaviors questionnaire for low-income adults to evaluate EFNEP's effectiveness.

**Analysis:** Cognitive interviews will be summarized to identify themes and dominant trends. Paired *t* tests ( $P \leq .05$ ) and Spearman and intra-class correlation coefficients ( $r > .5$ ) will be conducted to assess reliability. Construct validity will be assessed using Wilcoxon *t* test ( $P \leq .05$ ), Spearman correlations, and Bland-Altman plots.

**Key Words:** evaluation, food and physical activity questionnaire, validity, reliability, EFNEP protocol (*J Nutr Educ Behav.* 2017; ■:1-7.)

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## INTRODUCTION

Program evaluation is an essential component of nutrition education interventions,<sup>1</sup> assessing the extent to

which a program produces specific results and impacts.<sup>2</sup> Nutrition education evaluation tools should address program objectives and undergo testing to confirm appropriateness.<sup>1,3</sup>

Extensive work is required to develop and test the evaluation tool with the target population to have adequate psychometric properties, including reliability and validity.<sup>3</sup>

The *Expanded Food and Nutrition Education Program* (EFNEP) is a national nutrition education program that works with low-income families to improve their food-related behaviors.<sup>4</sup> Policy makers have directed federally funded nutrition education programs such as EFNEP to evaluate their impact on improving healthful eating behavior and preventing obesity.<sup>5</sup> However, the majority of nutrition education programs lack consistent evaluation tools that accurately measure program impacts on diet, food choice, and physical activity behaviors.<sup>5</sup> Thus, there is a need to develop evaluation tools to assess the impact of national nutrition interventions targeting low-income families.<sup>6</sup>

Developing evaluation tools for use with low-income adults requires

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sensitivity to the potential challenges of low-literacy skills and the multiple cognitive steps required to recall foods eaten or health behaviors with accuracy.<sup>7</sup> Because of their lower respondent burdens and administration costs compared with other methods, questionnaires can be appropriate evaluation tools.<sup>8</sup>

The goal of EFNEP is to help low-income families improve nutritional status to reduce health disparities associated with hunger, malnutrition, poverty, and obesity.<sup>9</sup> To fulfill this goal, EFNEP interventions are delivered as a series of classes to improve behaviors in the areas of nutrition/diet quality, physical activity, food safety, food resource management, and food security,<sup>9</sup> referred to here as content domains. A 10-item questionnaire that was developed in 1997 is used nationally by EFNEP but does not comply with current program requirements and existing nutrition and physical activity guidelines<sup>10,11</sup> As a consequence, there is a need to develop an updated EFNEP national evaluation tool.

The purpose of this article is to describe methods for the development of a valid multi-domain food and physical activity behaviors (FPAB) questionnaire for EFNEP. The EFNEP FPAB will be administered to all EFNEP adult participants, approximately 120,000 annually,<sup>12</sup> most of whom are female (86%), and Hispanic (41%), white non-Hispanic (27%), or black non-Hispanic (23%).<sup>13</sup>

The questionnaire will align with national EFNEP administration requirements, which include: (1) a paper questionnaire format administered before and after the intervention, (2) a limited number of questions to reduce participant and staff burdens, and (3) question wording that meets the needs of low-literacy adults. By limiting the number of questions per domain to accommodate EFNEP's desire to minimize participant burden, the ability to create scales with internal consistency within each domain is threatened.<sup>14</sup> This challenge is 1 example of the compromises necessary to achieve the national program's desire for an evaluation instrument that assesses specific behaviors while limiting participant burden.

Methods used to develop and test the FPAB questionnaire need to be do-

cumented for several reasons. Because EFNEP is mandated to evaluate and report program impact,<sup>15</sup> to have confidence in reported outcomes, the validation and appropriate application of evaluation instruments must be established. The FPAB questionnaire has implications that extend beyond EFNEP, because other nutrition education programs or interventions serving low-income adults may adopt this validated questionnaire.<sup>16</sup> The methods may also be used as a model for developing evaluation tools for other nutrition education programs.

## METHODS

Two national EFNEP evaluation committees will coordinate efforts to develop and test questions for each of the 5 required content domains: diet quality, physical activity, food safety, food security, and food resource management (Table 1).<sup>17</sup> The committees are the EFNEP National Behavior Checklist Workgroup and the US Department of Agriculture (USDA), Agriculture Experiment Station multistate research project (NC2169: EFNEP Related Research, Program Evaluation, and Outreach).

Domain leaders will be members of the EFNEP national evaluation committees and university faculty, many of whom direct their state's EFNEP. Institutional review board approval will be obtained by participating insti-

tutions in the following states: Colorado, Florida, Kansas, Kentucky, Maine, Nevada, New Jersey, Oklahoma, South Carolina, Pennsylvania, Tennessee, Virginia, and Washington. The developed questions will be tested using a convenience sample of English-speaking, EFNEP-eligible women from states in 4 regions in the US (west, north central, east, and south) and from the 3 primary racial/ethnic groups (Hispanic, black, and white) in EFNEP.

To address the challenges of coordinating the research and ensuring consistency using domain groups located in different universities and states, domain leaders will implement a 5-stage systematic process to develop the questions,<sup>18</sup> which uses established health assessment and survey design methodology.<sup>14,19,20</sup> Table 2 describes the process of developing questions and how each stage relates to establishing the reliability and validity of the FPAB questionnaire. Steps to ensure research process coordination will include: (1) annual face-to-face and virtual meetings, (2) monthly phone calls, and (3) written protocols with detailed descriptions of any variations.

### Stage 1: Prioritizing Domain Concepts to Evaluate

Content domains included in the questionnaire are based on EFNEP core

**Table 1.** Developing a National EFNEP Questionnaire: Food and Physical Activity Behavior Domains and Research Team Leadership

Domain	EFNEP Goals	Research Team Leadership
Diet quality	Improved diets and nutritional well-being through adoption of the US Dietary Guidelines for Americans	Colorado State University
Physical activity	Improved physical well-being through adoption of the Physical Activity Guidelines for Americans	Clemson University Rutgers University
Food safety	Improved household food safety and sanitation practices	University of Tennessee
Food security	Increased ability to obtain food directly (and from food assistance programs) to ensure having enough healthy food to eat	University of Florida University of Kentucky
Food resource management	Increased ability to buy, grow, or otherwise appropriately obtain, prepare, and store food that meets nutritional needs	Washington State University

EFNEP indicates *Expanded Food and Nutrition Education Program*.

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