Identifying Underlying Beliefs About Fruit and Vegetable Consumption Among Low-Income Older Adults: An Elicitation Study Based on the Theory of Planned Behavior

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ABSTRACT

Objective: Identify underlying salient behavioral, normative, and control beliefs about fruit and vegetable (F&V) consumption among limited-income older adults.
Design: The Theory of Planned Behavior (TPB) was used as the framework for conducting semistructured individual interviews in 2016.
Setting: Two congregate meal sites in the city of Tuscaloosa, AL.
Participants: A total of 25 low-income older adults aged ≥60 years.
Main Outcome Measures: Behavioral, normative, and control beliefs about F&V intake.
Analysis: All interviews were audiotaped and transcribed verbatim. Data were analyzed using a hybrid inductive and deductive content analysis approach.
Results: The elicitation interviews identified salient behavioral, normative, and control beliefs about F&V intake among low-income older adults.
Conclusions: These results can be used to develop nutrition education programs aimed at improving economically vulnerable older adults' F&V intake.
Key Words: fruit and vegetable intake, Theory of Planned Behavior, elicitation study, low-income older adults (*J Nutr Educ Behav*. 2017;■:1-7.)
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INTRODUCTION

Healthful eating is vital for promoting overall health and reducing the risk of chronic disease.[1] Specifically, adequate fruit and vegetable (F&V) consumption has been associated with a reduced risk of heart disease, diabetes, and certain types of cancer.[2,3] A diet rich in F&V has also been associated with delaying age-related declines in physiological function.[4,5] Because of the many benefits of F&V in maintaining optimal health, the 2015–2020 Dietary Guidelines for Americans[6] highlights the importance of F&V consumption by recommending that adults aged ≥51 years consume 1.5–2.0 cups of fruit and 2.5–3.0 cups of vegetables each day. Despite numerous health benefits of F&V in reducing the risk of many chronic conditions, F&V consumption among older adults remains below recommended levels.[7] Consumption of F&V is particularly low among limited-income older adults compared with those with higher incomes.[1,8,9]

Given the relationship between adequate F&V consumption and reduced risk of heart disease, diabetes, and certain types of cancer, a health promotion program aimed at increasing F&V could be enormously positive.[10] Improved understanding of determinants about F&V consumption can provide the basis for developing more effective nutrition education to promote F&V consumption among low-income older adults.[11]

Use of an appropriate theoretical framework was recommended to understand target audiences' underlying beliefs better regarding health-related behaviors.[12] One of the most widely applied theoretical frameworks for identifying underlying beliefs about dietary behaviors is the Theory of Planned Behavior (TPB). The TPB, which was developed by Ajzen,[13] suggests that intentions are determined by attitudes, subjective norm, and perceived

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behavioral control. Attitude refers to the expectations and evaluation of given health-related behaviors. Subjective norm is the perceived pressure from significant others to perform the behavior. Perceived behavioral control refers to a person's belief in his or her ability to perform the recommended actions.[13] Behavioral, normative, and control beliefs are the determinants of attitude, subjective norm, and perceived behavioral control, respectively.[13] The TPB has been used successfully as a framework to predict and explain food choices and health-related behaviors, including F&V consumption among adolescent, adults, and older adults.[14-18]

Although the TPB has been useful in a number of quantitative studies for predicting F&V consumption, conducting an elicitation study within the TPB was recommended to assess salient beliefs associated with dietary behaviors among the target populations.[19] This would provide a greater understanding of specific beliefs about a behavior. However, no elicitation studies using the TPB have been published that explore underlying salient beliefs associated with F&V consumption among low-income older adults.

Given the lack of understanding about eating behaviors among low-income older adults despite the known health benefits of F&V in lowering chronic disease risk, the purpose of this qualitative study was to identify underlying beliefs related to F&V consumption among low-income older adults. Findings from this study are needed to inform guidelines for developing tailored health education messages aimed at increasing F&V consumption among low-income older adults.

METHODS
Recruitments and Study Participants

The researchers used a convenience sampling method to recruit 25 low-income older adults aged ≥60 years who were living in Alabama.[20] The number of study participants was determined based on the manual for TPB elicitation studies.[19] The number of participants in the elicitation study was appropriate for identifying salient beliefs about F&V consumption among low-income older adults. To target low-income older adults, the researchers contacted 2 local congregate meal sites with increased socioeconomic needs in the city of Tuscaloosa. One facility was a local senior center; the other was a low-income living complex where older adults lived and interacted within the same building. To obtain permission to conduct individual interviews with potential participants, information about the purpose of the study and the procedure of individual interviews was shared with the facility directors. After receiving permission, a research team visited both sites to recruit potential participants while providing information regarding the purpose of the study, the procedure of individual interviews, and the incentive for the participation in April, 2016. Selection criteria for participants included being aged >60 years with a limited-income status, which was defined based on *Supplemental Nutrition Assistance Program* (SNAP) income eligibility criteria. A repeat back method was used to examine participants' capability of making their own decision to participate in a study.[21] If interested older adults were not able to explain what had they had been told previously, they were excluded from the study. Of 28 interested older adults, 3 were excluded because 1 was aged <60 years, 1 had difficulty speaking, and 1 was not able to understand what was expected for participation in the study. Interested older adults who met selection criteria scheduled their individual interview with the research team. The University of Alabama Human Research Ethics Committee approved the study.

Data Collection

Before each interview began, a written consent form was obtained from each participant. The consent form was read aloud by the researcher to participants who were unable to read. Semi-structured individual interviews were conducted with study participants in a private room at the senior center and at the low-income living complex's meeting room from May, 2016 through June, 2016. A graduate research assistant took field notes during the interviews. Interviews ranged from 20 to 40 minutes. Individual interviews were audiotaped with participants' permission. Participants were also asked to complete a demographic questionnaire assessing gender, racial/ethnic groups, age, marital status, number of adults living in their household, number of children living in their household, education, annual household income level, and whether they received SNAP benefits at the time of the interview. Each participant was compensated for time with $10 in cash.

Interview Protocol

Seven open-ended elicitation questions were developed in accordance with the TPB manual to identify salient beliefs regarding F&V consumption among low-income older adults (Table 1).[19] The framework of questions was originally developed by Ajzen,[22] the developer of the TPB, and was applied successfully in a number of human behavior studies,[23-25] which supported its reliability and validity. Expert validity of the question lines was also conducted with a panel of 3 experts in the area of qualitative study.

Data Analysis

The graduate research assistant transcribed the audio-recorded interviews verbatim; participants were assigned with unidentifiable indicator (eg, P1, P2). The first author compared transcribed verbatim interviews with audio-recorded ones to ensure accuracy. After each interview, the transcription was entered into the qualitative analysis software (version 11, Nvivo 11, QRS International Pty Ltd, Melbourne, Australia, 2015) so that data collection, storing, management, and analysis occurred consistently and simultaneously.

Data were analyzed using a hybrid inductive and deductive content analysis approach.[26] Deductive analysis is initiated by adopting a provisional start list of analytic codes and ideas before data collection.[27] Inductive analysis allows researchers to catch uncovered but important codes and themes that emerge during data collection and analysis to be uncoverd.[27] Whereas the TPB guided framework, research questions and interview protocol guided deductive data analysis. Unrevealed and newly emerging themes and concepts were identified and coded through the open coding