

Nutrition Self-Efficacy and Dietary Patterns among Older African American Women in Kansas

Grace Nassim, M.D., MPH¹, Michelle L. Redmond, Ph.D., M.S.²,

Samuel Ofei-Dodoo, Ph.D., MPA, M.A.³,

Mary Benton, Ph.D., M.A.⁴, Kelsey Lu, M.S.²

University of Kansas School of Medicine–Wichita, Wichita, KS

¹Department of Internal Medicine

²Department of Population Health

³Department of Family and Community Medicine

⁴University of Kansas School of Medicine, Kansas City, KS

Department of Population Health

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ABSTRACT

Introduction. Nutrition is the key contributor to disparities in many chronic diseases. However, little is known about the dietary habits and nutrition self-efficacy beliefs of older African American women with chronic diseases. This study looked at the relationship between nutrition self-efficacy and dietary patterns among older African American women.

Methods. A total of 115 African American women 55 years and older, with one or more chronic diseases such as hypertension, diabetes, and hyperlipidemia, were recruited from a midwestern city in Kansas. Participants completed a survey comprised of dietary intake items and the Physical Activity and Nutrition Self-Efficacy (PANSE) scale. Data were analyzed with descriptive statistics, Spearman correlation, and Wilcoxon rank sum test (Mann-Whitney U Test).

Results. There was a 79% (91/115) participation rate. Participants were confident in their ability to maintain healthy behaviors (57.67/72; SD = 11.22). The mean dietary score for fats and carbohydrate consumption was 32.67 ± 2.48 compared to 5.89 ± 3.52 for fruit and vegetable intake. A significant positive correlation was observed between fruit and vegetable intake and nutrition self-efficacy. A higher fruit and vegetable intake were observed among married women (mean = 7.35; SD = 4.45).

Conclusion. Our findings shed new light on older African American women's perceptions of healthy eating and the confidence to eat healthy. Based on these results, older African American women met the daily fruit and vegetable recommendations; however, more work is needed to understand how to intervene to improve dietary behaviors regarding fat and carbohydrate consumption in this population. While more research is needed, the findings indicated behavioral theories such as nutrition self-efficacy may have utility in tailoring nutrition interventions in an older African American population.

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INTRODUCTION

Health disparities, meaning a higher burden of illness, mortality or disease, exist for African American women with chronic disease

compared to other racial and ethnic female populations.¹ African American women tend to have a higher prevalence of certain chronic diseases, such as diabetes, heart disease, dyslipidemia, arthritis, cancer, and high blood pressure.² These chronic conditions are sometimes diet-related and need intervention to reduce incidence of complication and further poor health outcomes.³⁻⁵

National dietary guidelines recommend women 51 and older maintain a daily consumption of 1 - 1½ cups of fruits and 2 - 3 cups of vegetables.⁶ The recommended consumption of fats for women over 51 years of age is 25 - 35 grams. The recommended consumption of carbohydrates for women over 51 is 130 grams per day. Prior national studies have shown African American women generally do not meet these dietary guidelines.⁷⁻⁹ African American women in Kansas have a significantly higher age-adjusted mortality rate from chronic diseases as compared to other minority groups.¹⁰ Since little is known about the dietary patterns among older African American women,¹¹ it is fundamental to have a better understanding of the dietary behaviors among this particular population. Using a behavioral change approach to address issues of poor diet quality has utility. One approach is to use nutrition self-efficacy to improve behavior outcomes associated with better nutrition intake.¹²

Nutrition Self-Efficacy. Researchers have used perceived self-efficacy to modify behavior or intervene on certain behaviors.¹³⁻¹⁵ Perceived self-efficacy is defined as the confidence in one's ability to complete a task.¹⁶ Despite nutrition self-efficacy being a reliable predictor of health behavior,¹⁷ there is a dearth of research on nutrition self-efficacy and older African American women. There is even less published research on older African American women and nutrition self-efficacy in Kansas.

Understanding nutrition self-efficacy in this population is important because, poor nutrition increases the risk of obesity, hypertension, cardiovascular disease, and some types of cancer.^{18,19} An unbalanced diet with higher intake of fats and carbohydrates and low intakes of fruits and vegetables increases the risks of chronic diseases.^{20,21} Poor nutritional behaviors are modifiable which is why intervention and more knowledge is needed.

Therefore, the main goal of this study was to examine nutrition self-efficacy among older African American women and how nutrition self-efficacy is related to their dietary intake. The study sought to fill a gap in the literature on the perceptions older African American women hold about nutrition self-efficacy. This perspective is important for researchers, clinicians, and public health professionals to understand when designing and implementing programs and interventions that use nutrition self-efficacy to improve health outcomes in this population.

METHODS

Study Design and Participants. This prospective study focused on diet and exercise behaviors of older African American women with chronic disease. Study volunteers participated in a 12-month study on their nutrition and physical activity behaviors and perceptions. This paper focused on preliminary data collected on nutrition self-efficacy perceptions at the initial baseline study appointment. To be eligible for this study, participants had to be an African American female, at

least 55 years of age, and diagnosed with at least diabetes mellitus, hyperlipidemia, and/or hypertension. Chronic disease eligibility was collected by self-report during the initial telephone screen. Participants were recruited through community recruitment in Wichita and the Kansas City Metropolitan area using flyers, word of mouth, and local community centers. Participants also were recruited by using a list of women participating in other community research studies who met eligibility qualifications.²² As an incentive, participants received an insulated bag and a cup. Ninety-one participants of 115 completed a demographic survey, a fat and carbohydrate intake questionnaire, a fruit and vegetable intake questionnaire, and the Physical Activity and Nutrition Survey (PANSE), which is the nutrition self-efficacy questionnaire. This study was approved by the University of Kansas Medical Center Human Subjects Review Committee.

Study Instruments

Demographic Survey. A demographic survey was administered to collect information on participants marital status, current employment, household income, education level, and insurance status.

Fat and Carbohydrate Intake Questionnaire. The fat and carbohydrate intake questionnaire measured the frequency of fat (i.e., hot dogs, mayonnaise, eggs, butter, beef) and carbohydrate (i.e., French fries, cereal, hash browns, grits) intake over the past 30 days. Participants were asked to rate how often they consumed a particular fat or carbohydrate based on the following scale frequency: 1 = never, 2 = less than once per month, 3 = 1 - 3 times per month, 4 = 1 - 2 times per week, and 5 = 3 - 4 times per week. The frequency of consumption was calculated into a diet quality score ranging from 0 - 100, with higher scores indicating better diet quality.

Fruit and Vegetable Intake Questionnaire. The fruit and vegetable intake questionnaire asked participants about their consumption of fruit and vegetables. They were asked to recall the number of servings of fruits and vegetables consumed in the past week. A few example items were how many times did you consume one whole apple, ½ cup of grapes, ½ cup of orange juice, and/or ½ cup of green beans. The serving frequency was calculated by dividing by 7 to achieve a daily consumption score.²³

Physical Activity and Nutrition Self-Efficacy Scale. Participants' nutrition self-efficacy was measured using the Physical Activity and Nutrition Self-Efficacy (PANSE) scale, a validated 11-item questionnaire that measures confidence in enacting behavior change.²⁴ For the purpose of this study, the physical activity items were excluded and an 8-item scale was used. The scale is brief and has a good test-retest reliability score of $r = 0.55$ and a Cronbach alpha of 0.89.²⁴ Example items included: "How confident are you that you can reduce your portion sizes at meals and snacks each day?", "How confident are you that you can substitute lower calorie food?", and "How confident are you that you can eat only a very small amount of fried food like fried chicken, French fries, potato chips, or other fried food each week?" Respondents rated how confident they felt about changing the identified behavior on a 9-point Likert scale (1 = not at all confident, 9 = highly confident). The higher the score on the PANSE, the greater confidence a person has for the specific behavior.²⁴ A possible total score on the PANSE is 72.

Statistical Analyses. Standard descriptive statistics were used to create a demographic profile and measure nutrition self-efficacy, fruit, and vegetable intake, as well as fat and carbohydrate intake. A sample size of 91 was calculated as necessary for adequate power (> 0.80) to detect significant correlations of 0.5 with $p < 0.05$ between variables.²⁵ Marital status was evaluated by asking participants to choose one of five options: married, single, divorced, widowed, or separated. This was an outcome variable of the study. This variable was dichotomized later into unmarried (single, divorced, widowed, or separated) and married. Spearman's correlation was performed to examine the relationship between nutrition variables. The relationship of marital status and nutrition self-efficacy was assessed with the Wilcoxon rank sum test (Mann-Whitney U Test), comparing the average PANSE score with marital status. SAS 9.4 (SAS Institute®, Cary, NC) was used for the analyses. A statistical critical value of 0.05 was specified for all tests.

RESULTS

A total of 91 participants of 115 completed the baseline PANSE scale fruit and vegetable intake questionnaire and fat and carbohydrate intake questionnaire. The mean age of participants was 69 ± 7.5 years. As shown in Table 1, 61 (69.3%) participants were retired/not employed; 24 (27.6%) were single; 41 (47.1%) had some college degree; and 47 (57.4%) had a yearly household income of less than \$40,000. In terms of participants perceptions of nutrition self-efficacy, significant associations were found between marital status and nutrition self-efficacy and employment and nutrition self-efficacy.

Nutrition Self-Efficacy, Fat and Carbohydrate Intake, and Fruit and Vegetable Intake Mean Scores. Participants had an average mean total score of 57.67 of 72 (SD = 11.22) on the PANSE scale, indicating they were confident in their ability to maintain healthy eating behaviors. The mean for daily fat and carbohydrate consumption was 32.67 (SD = 2.48) and the mean for daily fruit and vegetable intake was 5.89 (SD = 3.52).

Correlational Relationship between Dietary Intake and Nutrition Self-Efficacy (PANSE). A positive relationship was found between fruit and vegetable intake score and nutrition self-efficacy score ($r_s (91) = 0.28, p = 0.007$). An inverse relationship was found between the composite score of fat and carbohydrates intake and nutrition self-efficacy score ($r_s (85) = -0.35, p = 0.001$).

Mean Differences Between Marital Status, Employment, and Nutrition Self-Efficacy. Mean differences between scores on the nutrition self-efficacy scale and participant demographics were assessed. Unmarried status included older African American women who were single, divorced, widowed, and separated. Higher nutrition self-efficacy among married women ($M = 62.95, SD = 6.92$) was observed, compared with unmarried women ($M = 55.99, SD = 11.83$), $z = 2.32, p = 0.023$. Significant differences were found in PANSE scores for participants who were employed ($M = 61.54, SD = 9.97$) compared to those not currently working ($M = 56.41, SD = 11.4$), $z = 2.02, p = 0.047$.

Table I. Demographic characteristics of participants and Physical Activity and Nutrition Self-Efficacy Scale results (n = 91).

Characteristics	Frequency n	Percentage %	PANSE
Marital status (n = 87)			0.022**
Single	24	26.4	
Married	23	25.2	
Divorced	22	24.1	
Widowed	17	18.7	
Separated	1	1.1	
Missing	4	4.4	
Employment (n = 88)			0.047**
Employed	27	29.7	
Retired/not employed	61	67.0	
Missing	3	3.3	
Household income (n = 70)			0.533
Under \$25,000	27	29.7	
\$25,000 to \$39,000	20	22.0	
\$40,000 to \$49,000	7	7.7	
\$50,000 to \$74,000	10	11.0	
\$100,000 and over	6	6.6	
Missing	21	23.1	
Education (n = 87)			0.817
Less than high school	1	1.1	
High school or GED	15	16.5	
Some college	41	45.1	
College graduate	15	16.5	
Post-graduate	15	16.5	
Missing	4	4.4	
Health insurance (n = 86)			0.102
Yes	83	91.2	
No	3	3.3	
Missing	5	5.5	

**Significant at $p < 0.05$.

Note: Missing = missing data; PANSE = Physical Activity and Nutrition Self-efficacy Scale.

DISCUSSION

Older African American women with chronic disease were confident in their ability to maintain healthy behaviors. At the same time, the rate of fat and carbohydrate consumption was high in this population with adequate daily intake of fruit and vegetable consumption. These findings increased our knowledge about dietary patterns and nutrition self-efficacy among older African American women diagnosed with chronic disease conditions. These findings were important because they add to a growing body of work that is needed to understand nutrition self-efficacy better and other dietary habits in this population.

The findings on nutrition self-efficacy were in line with two other studies which found African American women had high self-efficacy for healthy eating.^{14,26} Our study, however, was the first to look at an older population of African American women. The findings on fats and carbohydrates left room for future interventions, but were similar to other studies.^{10,27-31} Previous research focusing on dietary components showed African Americans consumed fewer dietary fiber, vegetables, whole grains, and dairy, and had higher intakes of fat, sodium, and sugar-sweetened beverages,^{18,27-31} and energy from salty snacks, dessert, and sweets.³²⁻³⁴ Those observations could be explained by multiple influencing factors, such as preparation techniques for healthy fruits and vegetables,¹³ culture,³⁵ lack of time to prepare healthy food, and possibly cost.³⁶

The correlation was examined between nutrition self-efficacy (PANSE) and dietary behaviors. Self-efficacy increased when associated with fruit and vegetable intake and decreased when associated with fat and carbohydrate intake. The PANSE measures participants confidence to reduce fried foods and sugary drinks.²⁴ The PANSE also measures participants' ability to select lower-calorie foods and omit fats. The relationships found between the PANSE and fruit and vegetable intake suggested high nutrition self-efficacy was related to greater fruit and vegetable intake, while lower nutrition self-efficacy was related to greater fat and carbohydrate intake for this population.

This area will require more examination to understand the causal relationship between nutrition self-efficacy, fruit and vegetable intake, and fat and carbohydrate intake. The positive correlation found between PANSE and fruit/vegetable intake score suggested women in this study were confident in maintaining self-efficacious behaviors for nutrition and fruit/vegetable intake. Unfortunately, they were less self-efficacious when it came to fat and carbohydrate intake. Similar relationships between perceived self-efficacy and dietary intake have been noted in previous studies.³⁷⁻⁴⁰ According to our results, there was a relationship between nutrition self-efficacy and dietary patterns, which must be explored further to clarify how self-efficacy impacts dietary habits among older African American women. Nevertheless, there are places to intervene to improve nutrition behavior in this population.

A significant difference was observed between married and unmarried older African American women with respect to nutrition self-efficacy. Married women were more self-efficacious regarding healthier nutrition choices on the PANSE scale. Self-efficacy can mediate the interaction between social support and good diet quality as shown in previous studies.³⁹⁻⁴¹ The association of social relationships with diet quality is considered in the literature.^{7,41-44} Further exploring the impact of social support and marital status on nutrition and dietary habits for this population is important. Clarifying the role of social support among older African American women as it relates to nutrition self-efficacy will help to understand this interaction better and build upon more targeted interventions.

There were limitations to this study. Generalizing our results to all older African American women is difficult, although it provided some context for future studies, particularly with a Midwest population. Moreover, the information collected on nutrition self-efficacy and dietary intake was self-reported. Additionally, it was challenging

to account for all potential influences on dietary intake profile, such as food addiction behaviors,⁴⁵ stress,⁴⁶ and social interactions.⁴⁷ As this study focused on a midwestern population, it is recommended additional research be replicated in different geographic areas for public health professionals to think more carefully about the issues of health disparities in chronic disease prevalence among older African American populations and apply appropriate strategies. Nevertheless, this study contributed to the understanding of the relationship between nutrition self-efficacy and dietary patterns among older African American women. Further evaluation in a large cohort is required to determine the accurate impact of nutrition self-efficacy on diet related chronic diseases and health disparities among older African American women.

CONCLUSION

Behavior theorists know self-efficacy is a powerful behavior change tool for health interventions. Our study added to this knowledge by informing the role nutrition self-efficacy can have with older African American women. Hence, strategies to address healthy eating behaviors have the potential to be more effective when tailored to specific domains, such as nutrition self-efficacy.

While the population in this study maintained a higher fat/carbohydrate intake than recommended,⁶ the findings on nutrition self-efficacy and fruit/vegetable intake were promising. Because we know older African American women believe they have the confidence to maintain a healthy diet, this knowledge should be used in future interventions as a tool to reduce fat and carbohydrate intake. Recommendations would be to use self-efficacy to reduce saturated fats in diets, shop for more nutrient-rich options when meal planning, increase nutritional food label reading for better adherence,⁴⁸ and build intervention programming and curriculum in a way that enhances participants' ability to enhance their self-efficacy skills such as problem-solving, goal-setting, and motivational interviewing.

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