

# Spice MyPlate

## A Pilot Nutrition Education Intervention Focusing on Spices and Herbs Improved Diet Quality and Attitudes Toward Healthier Eating Among Baltimore High School Students

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**S**pice MyPlate was a pilot nutrition education intervention that focused on using spices and herbs to improve diet quality among Baltimore high school students. Baltimore was chosen because it represents the “perfect storm” of risk factors for future health problems among high school students. The community faces environmental challenges such as “food deserts,” while schools struggle to provide effective nutrition and physical education to students. Furthermore, 40% of Baltimore high school students are more likely to be obese than high school students statewide.<sup>1</sup>

### SPICE MYPLATE STUDY DESCRIPTION

The pilot study was designed to determine whether a nutrition education program focusing on spices and herbs improved objective and subjective measures of diet quality to a greater extent than standard nutrition education alone. The intervention was meant to be exciting, engaging, and enjoyable for students. Two schools with student populations that were primarily African American agreed to participate. One school had 1637 students and was assigned to the intervention; the other school (564 students) was assigned to the control arm. In all, 108 students in grades 9 to 12 were enrolled in the study. Each participating student signed an assent form and submitted a consent form signed by a parent or guardian. The study was approved by the institutional review board of the University of Maryland School of Medicine.

### SPICE MYPLATE STUDY DESIGN

Both groups received 1 hour of standard nutrition education at the start of the study. The *Spice MyPlate* intervention group received an additional 9 hours of nutrition education that included 2 cooking sessions and a grocery store tour. The intervention focused on 12 core spices and herbs chosen for their palatability, affordability, accessibility, versatility, health benefits, and mix of familiarity and novelty: basil, black pepper, cinnamon, cumin, garlic, ginger, nut-

meg, oregano, red pepper, rosemary, thyme, and turmeric. The primary study outcome was objective changes in diet quality based on validated 3-day food logs,<sup>2</sup> which included a weekend day. Diet quality was calculated based on food record data and expressed by the number of weekly servings of vegetables, fruits, whole grains, and lean protein sources such as lean meats, poultry, eggs, beans and peas, seafood, as well as nuts and seeds. Secondary outcomes included subjective changes based on 8 questions that assessed attitudes toward healthy eating using a 3-point Likert scale. Assessments were made in both groups at the intervention midpoint (week 3), at the end of the intervention (week 6), and 4 weeks later (week 10). Differences between the *Spice MyPlate* and control groups in diet quality and healthy eating attitudes changes were estimated by *t* tests. In addition, multivariable regression modeling was also performed using generalized estimating equations to control for confounding introduced by potential differences in key covariates between the *Spice MyPlate* and control groups at baseline. Statistical significance was defined as 2-tailed  $P \leq .05$ .

### SPICE MYPLATE STUDY OUTCOMES

The food log data indicated that the groups did not differ in their intake of vegetables, fruits, and dairy products at the end of the study, but the *Spice MyPlate* group consumed more whole grains and lean protein foods. The students' attitudes toward healthy eating differed between the groups at the 10-week assessment, with the *Spice MyPlate* group reporting being more likely to consume vegetables, protein, and dairy foods compared with the control group ( $P \leq .05$ ).

Consumption of protein foods, for example, increased from about 32 oz to 40 oz daily or 7.7 oz/wk in the *Spice MyPlate* group ( $P < .05$ ) by the end of the 10-week period. The *Spice MyPlate* group also reported being more likely to eat vegetables and whole grains with added spices and herbs than did the control group ( $P \leq .05$ ).

### STUDY LIMITATIONS AND CONCLUSION

This pilot study had several limitations. First, students in the *Spice MyPlate* group received 9 hours of nutrition education compared with 1 hour for the control group (the current amount of nutrition education provided in

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Baltimore's public high school curriculum), which may account for part of their improvements in diet quality. Second, there may have been intervention "ceiling effects" due to the urban demographic characteristics of the students, many of whom had limited access to healthy food. Third, about 75% of students in both schools were participating in the School Breakfast Program and the National School Lunch Program. Because these programs offer standardized menus, it was difficult for students to improve their meals. Nonetheless, a future study might consider this pilot study strategy and use a larger, more generalizable sample from several high schools. The *Spice*

*MyPlate* nutrition education pilot study found that some measures of diet quality and attitudes toward healthy eating improved in the spice and herb intervention group compared with the control group.

## REFERENCES

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# The Importance of Flavor in Dietary Counseling

Keith T. Ayoob, EdD, RD, FAND

"If it doesn't taste good, people won't eat it."

—Jacques Pépin, French chef

**D**ietary counseling to improve health has traditionally included advice on adding fresh fruits and vegetables, high-fiber grains and cereals, and low- or reduced-fat dairy and meat products to the typical diet.<sup>1</sup> Consumers are usually and perhaps necessarily advised to "avoid," "limit," "reduce," or "control" the intake of certain foods and/or nutrients to achieve their dietary goals. Despite several decades of public nutrition education and individual dietary counseling, it seems many consumers cannot or will not convert dietary instruction into practice, and nutrition education alone does not always produce the desired dietary changes. Consumers are interested in foods that provide function *and* better health, but recent research has indicated that they fear such foods will not taste as good.<sup>2</sup> For consumers, the word "food" means flavor, fun, enjoyment, taste, and motivation; the word "nutrition" speaks of rules, boring and not-so-tasty foods, less freedom, more work, and deprivation. It is no wonder the traditional approach to dietary change is not working as well as we would like.

## WHAT CONSUMERS SAY ABOUT HEALTHY FOOD

Consumers perceive barriers to eating functional foods and adopting healthy eating patterns. In a recent survey

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of 1005 Americans aged 18 to 80 years of age, 55% said health-promoting foods and food components were too costly, whereas 31% said they sometimes do not taste as good. These barriers were considered major reasons for not eating healthy foods more frequently.<sup>2</sup>

## ADDING SPICES AND HERBS HELPS CONSUMERS OVERCOME BARRIERS TO HEALTHY EATING

Adding spices and herbs to the diet boosts flavor and variety; may contribute antioxidants, anti-inflammatory compounds, and other bioactive components; and can help consumers overcome some barriers to meeting their dietary goals. For example, adding a variety of spices and herbs to carrots, potatoes, and leafy greens will give budget-conscious consumers a different taste nearly every day. Cooking classes can convince consumers that adding spices and herbs enhances natural flavors without calories. Low- or reduced-fat fruit and vegetable dishes and dairy foods prepared with added spices and herbs can readily be incorporated into weight control diets. It has been shown that even preschool children will eat more celery and squash when the vegetables are paired with a low-fat, herb-flavored dip.<sup>3</sup>

## CHANGING CONSUMER ATTITUDES

Consumers are already receptive to experiencing a broader range of flavors. Witness the explosion of ethnic restaurants. Even school lunch menus now feature foods such as hummus—not only because it is a healthful food, but because it tastes good. Indeed, flavoring foods with spices and herbs may be 1 of the best ways to help improve the dietary patterns of Americans. Although convenience rules consumers' food choices, food producers and manufacturers can add spices and herbs to packaged foods to produce a flavorful product that both pleases the consumer palate