Center for Food and Nutrition Policy
Virginia Tech - Alexandria

Comments to the Dietary Guidelines for Americans Advisory Committee

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The Center for Food and Nutrition Policy (CFNP) is an independent, non-profit, center chartered at Virginia Polytechnic Institute and State University. The CFNP mission is to advance rational, science-based food and nutrition policy, and it is recognized as a Center of Excellence on such matters by the Food and Agriculture Organization of the United Nations (FAO).

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RE: Comments to the Dietary Guidelines for Americans Advisory Committee

The Center for Food and Nutrition Policy ("Center" or CFNP) at Virginia Tech in Alexandria is an independent, non-profit research and education organization that is dedicated to advancing rational, science-based food and nutrition policy. It is recognized as a Center of Excellence on such matters by the Food and Agriculture Organization of the United Nations (FAO). The Center uniquely operates like an independent "think-tank" while maintaining its academic affiliation with Virginia Tech, a major land-grant university.[1] The research, education, outreach, and communications activities of the faculty are conducted in a relevant, time-sensitive manner that helps inform the public policy process on food and nutrition issues.

Encompassed in the Center's activities on nutrition policy are its interests in policy and regulatory issues involving dietary guidance.

The Center respectfully submits the following comments in response to the solicitation of written comments to be sent to the Dietary Guidelines for Americans Advisory Committee (DGAC) as published in the *Federal Register*.[2]

Among the most contentious nutrition research questions and policy considerations are the links between consumption of *added* sugars and obesity and *added* sugars and micronutrients. This was reflected in the deliberations by the 2000 Dietary Guidelines for Americans Advisory Committee (DGAC 2000) regarding the language that would frame the sugars guideline.

Sedentary Behavior Is a Better Predictor of Children's Body Mass Index
On March 8, 1999, Dr. Maureen Storey provided oral testimony to the DGAC 2000 (Appendix 1).[3] In her testimony, she briefly described a research study being conducted

[1] The center is supported by gifts, grants, and contracts from the federal and state government, private industry, foundations, conference registration fees, and other organizations.
[2] Federal Register: Notice. December 29, 2003, Volume 68, Number 248, pages 74941-74942.
[3] Dietary Guidelines 2000 Advisory Committee Meetings Agendas and Transcripts. http://www.usda.gov/cnpp/DG2000/March8.pdf

by her and her colleagues at the Center for Food and Nutrition Policy that examined the effects of several dietary, lifestyle, and demographic components on the body mass index of children 6-11 years of age. That study is now published in the *International Journal of Food Sciences and Nutrition* and 13 reprints are provided—one for each committee member of the 2005 Dietary Guidelines for Americans Advisory Committee (DGAC 2005).[4,5]

The authors analyzed two nationally representative surveys conducted by the federal government—the Continuing Survey of Food Intake by Individuals (CSFII 1994-96, 1998) and the National Health and Nutrition Examination Survey III (NHANES III). Multivariate regression models were developed to examine the relative importance of demographic and lifestyle variables on the body mass index of children ages 6-11 years (CFSII) and adolescents ages 12-19 years (CSFII) and 12-16 years (NHANES).

Key findings in this study are:

- Only a small portion of the variation in children's and adolescents' BMIs is explained by the four multivariate regression models. The CSFII models explained 8.5 percent of the variance for children and 11.4 percent of the variance for adolescents. The NHANES models explained 8.8 percent of the variance for children and 12.5 percent of the variance for adolescents.

- Of the variance that was explained, about one-half was attributable to factors that cannot be changed, such as gender, age, and race/ethnicity. Income explained two percent or less of the variation in BMI for children and adolescents.

- Among children, sedentary behavior—as measured by hours of television or videos watched—was more predictive of BMI than diet as a whole. TV viewing was positively associated with BMI. Specific dietary components, including added sugars, were not predictive of children's BMI using either CSFII or NHANES data.

- The findings for adolescents were similar, but there were a few differences. For example, TV viewing was positively associated with BMI, but participation in team sports was negatively associated with BMI. Consumption of carbohydrates less *added* sugars was negatively associated with BMI, but there was no link between *added* sugars and BMI.

<u>*Added* Sugars Consumption Has Little to No Effect on Diet Quality</u>

The effect of *added* sugars on diet quality was also questioned during the DGAC 2000. The analysis conducted by Bowman on behalf of the committee (and later

[4] Storey ML, Forshee RA, Weaver AR, Sansalone WR. Demographic and lifestyle factors associated with body mass index among children and adolescents. Intl J Food Sci Nutr 2003; 54: 491-503.

[5] This study was supported in part by The Sugar Association as a student fellowship grant to Alexis R. Weaver.

published)[6] suggested that high consumption of *added* sugars decreased micronutrient intake. In a study conducted by Forshee and Storey, the role of *added* sugars on the diet quality of children (6-11 years) and adolescents (12-19 years) was examined. Thirteen reprints of that study, which is published in the *Journal of the American College of Nutrition*, are provided to the DGAC 2005.[7,8]

The authors analyzed data from the U.S. Department of Agriculture's CSFII to develop multivariate regression models that assessed the statistical and practical significance of the intake of *added* sugars on nutrient adequacy. The data show that the association between intake of *added* sugars and servings of a food group (based on the Food Guide Pyramid) or selected micronutrients was inconsistent and always very small.

In a follow-up analysis to this study, we conducted an *effects* analysis of how moving from a higher to a lower percentile of intake from *added* sugars would affect the consumption of servings of the food groups described in the paper (Figures 1 and 2).

These charts show the predicted differences in consumption of servings of the Food Guide Pyramid food groups. These data show consumption of *added* sugars from the 10th through 90th percentiles compared with non-consumers. A line above the zero axis means that consumers at that percentile consume *more* servings of the selected food group than would a non-consumer. A line below the zero axis means that consumers at that percentile consume *fewer* servings of the selected food group than would a non-consumer. These are based on the results from our paper on diet quality published in JACN in 2001.

For both children and adolescents, the strongest positive association is between *added* sugars and grains consumption. For children ages 6-11, the strongest negative association is between *added* sugars and dairy foods, although the magnitude of the relationship is very small. The lines show that moving across percentiles of *added* sugars consumption has very little effect on consumption of servings from the Food Guide Pyramid food groups. For example, moving from the median or 50th percentile (79 g) to the 10th percentile (36 g) of *added* sugars consumption, dairy foods consumption will increase by 0.07 servings. In like fashion, moving from the median consumption of *added* sugars to the 10th percentile will decrease grains consumption by nearly 0.2 servings. Alternatively, if we look at the impact of moving from the 90th percentile to the median (50th percentile), dairy foods consumption would increase by 0.05 servings and would decrease grains consumption by 0.38 servings.

For adolescents ages 12-19, the strongest negative association is between *added* sugars and fruits consumption. If adolescents at the 50th percentile (100 g) moved to the 10th percentile (38 g) of *added* sugars consumption, fruits consumption would increase by 0.08 servings. Moving from the 90th percentile to the 50th percentile of

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[6] Bowman SA. Diets of individuals based on energy intakes from added sugars. Fam Econ and Nutr Rev 1999; 12: 31-38.

[7] Forshee RA, Storey ML. The role of added sugars in the diet quality of children and adolescents. J Am Coll Nutr 2001; 20: 32-43.

[8] This study was supported in part by The Sugar Association.

added sugars consumption would decrease grains consumption by 0.09 servings and would increase fruits intake by 0.13 servings.

These data in the effects graphs illustrate that *added* sugars consumption has very small or no effect on diet quality as measured by consumption of foods from the Food Guide Pyramid.

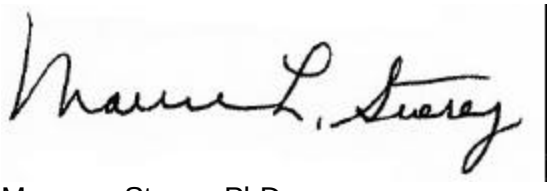
Summary of Comments

In summary, the Center for Food and Nutrition Policy reiterates its views presented previously to the DGAC 2000. Rather than focus on specific dietary components, such as *added* sugars, that make little or no difference in health or body weight, the Center urges DGAC 2005 to:

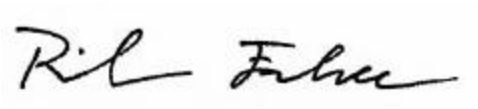
1) emphasize the importance of physical activity in maintaining healthy body weight and;
2) promote moderation in portion sizes.

This may be the single most important diet, physical activity, and health message for Americans.

Respectfully submitted,



Maureen Storey, PhD
Director, CFNP



Richard Forshee, PhD
Associate Director, CFNP
Director, Research

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1. 13 reprints—Journal of the American College of Nutrition article
2. 13 reprints—International Journal of Food Sciences & Nutrition article

Figure 1
Predicted Difference in FGP Servings Compared to Non-consumers of Added Sugars for Children 6-11y

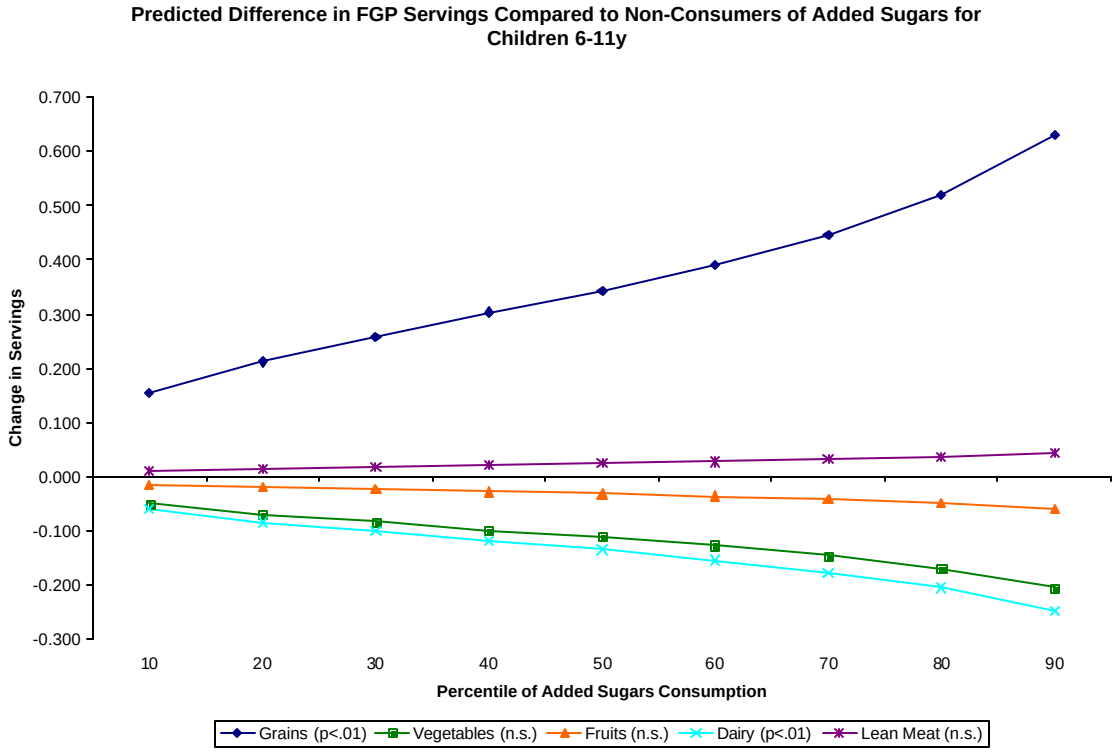
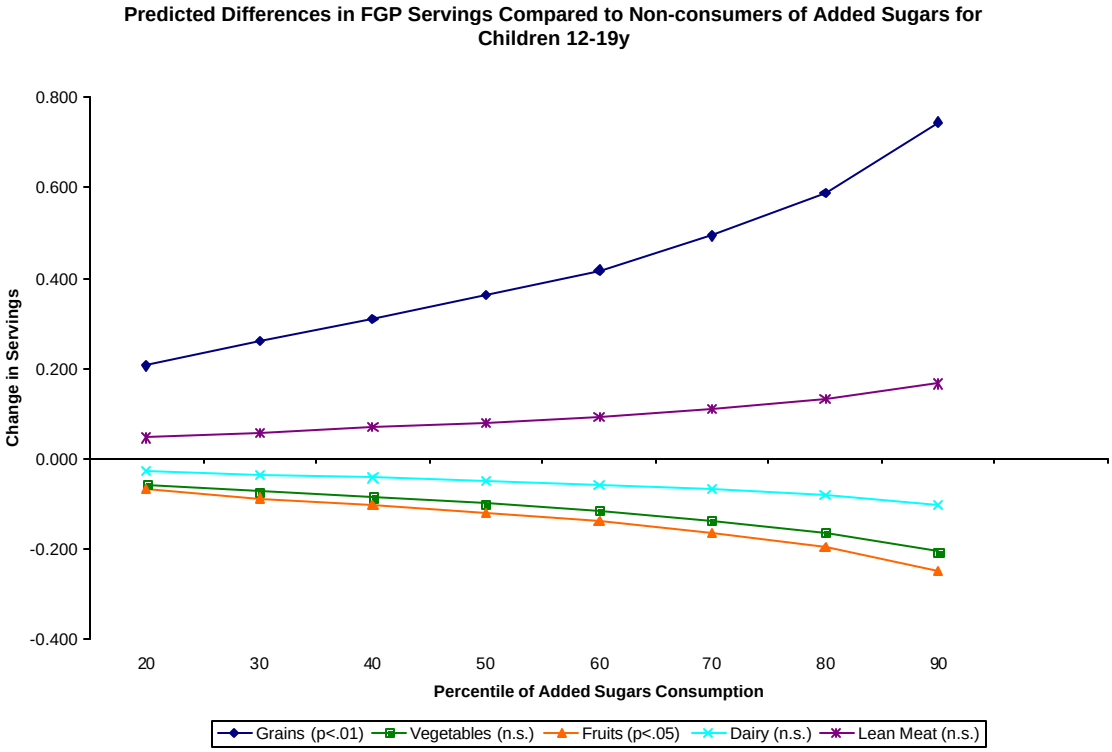


Figure 2
Predicted Difference in FGP Servings Compared to Non-consumers of Added Sugars for Children 12-19y



The descriptive statistics for added sugars (g) consumption for the two age groups are in the following table:

Table 1
Descriptive Statistics for Added Sugars (g) Consumption

		Added Sugars Consumption (g)	
		Children 6-11	Children 12-19
Mean		87.7	115.6
Median		79.4	100.3
Std. Deviation		48.0	75.2
Minimum		0.0	0.5
Maximum		412.0	664.6
Percentiles	10	35.8	37.6
	20	49.3	57.0
	30	59.8	72.6
	40	70.6	85.6
	50	79.4	100.3
	60	90.5	115.9
	70	103.9	137.0
	80	120.6	163.0
	90	146.5	207.0

Source: Analysis by authors using data from the Continuing Survey of Food Intake by Individuals, 1994-96, 1998.

Appendix 1. Oral Testimony by Maureen Storey, March 8, 1999.

Georgetown University Center for Food and Nutrition Policy

MS. STOREY: Good morning. My name is Maureen Storey. I am a faculty fellow with the Georgetown University Center for Food and Nutrition Policy.

The key point I would like to make before this committee is also provided in written testimony submitted to you by me and several of my colleagues, namely Drs. Robin Wu and Richard Forshee. I would also like to acknowledge my graduate student, Alexis Weaver, without whom we would not have these data.

Over the last several months, a great deal of media attention has been turned to the issues of obesity among children and carbohydrates as a chief villain in keeping our children and adults from having a healthier body weight. While this is a great media story, our data suggest that that is exactly what it is, a story, a fairy tale.

To get to the point, we recently examined the association between several dietary components and other variables on the body mass index of children ages six to 11 years. In our study, we used the Continuing Survey of Food Intakes by Individuals, CSFII, and performed bivariate and multivariate regression analyses to determine the association between children's BMI and these independent variables. There were 1,230 records from the children in the study.

These independent variables may also be categorized as those that are not modifiable and those that are modifiable. The nonmodifiable variables included gender, age and race. The modifiable independent variables included total energy intake, total fat, carbohydrate and protein intake, added sugars intake, servings of milk and television hours watched.

The bivariate regression analysis showed that children's BMI was not correlated with total energy intake, total carbohydrate intake or added sugars intake. We found a very small, but significant, correlation between children's BMI and total fat intake and hours of TV watched. However, only .4 percent of the variation in the children's BMI was predicted by total fat intake, and only 1.4 percent of the variation in BMI was attributable to TV hours watched.

The multivariate regression analysis showed that combining seven variables, including three dietary components, total energy, total fat and added sugars, with age, race, gender and TV hours explained only 6 percent of the variation in children's BMI.

In the multivariate model, BMI was positively correlated with age. This is no surprise. African American children had higher BMIs than other children. BMI increased by two-tenths of a BMI unit as TV hours watched increased.

To conclude, these data show that no single dietary component, including total energy, total carbohydrate and added sugars intake, contributes to increased BMI among children. Based on our study, the Georgetown University Center recommends that the language regarding the importance of physical activity be strengthened.