



Is Intake of Added Sugars Associated with Diet Quality?

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Attention has been focused recently on the role of added sugars in the diet of Americans. The year 2000 *Dietary Guidelines* (1) state “Choose beverages and foods to moderate your intake of sugars.” The Guidelines further recommend choosing sensibly “to limit your intake of beverages and foods that are high in added sugars.” There is no quantified recommendation on what level of intake would constitute “moderating” or “limiting,” and the Food Guide Pyramid does not recommend any specific level of total or added sugars consumption.

The *Dietary Guidelines* (1) also note that consuming excess calories from foods high in added sugars “may contribute to weight gain or lower consumption of more nutritious foods.” It is possible that consuming a high amount of added sugars may displace the consumption of other foods such as milk products and fruits. This could result in lower intake of some nutrients. Alternatively, individuals who consume a high amount of added sugars may consume more calories than are needed for energy balance.

To explore these possible relationships, we looked at the association between added sugars consumption and diet quality at various levels of energy intake. Stratifying by energy intake allowed us to see if the relationship between added sugars intake and diet quality differed at lower vs. higher energy intakes.

We used USDA’s 1994-96 Continuing Survey of Food Intakes by Individuals. This data set contains food intake data for a nationally representative sample of Americans. All individuals 2 years and older ($N=15,011$) were separated into quartiles—four groups of equal number—according to their intake of added sugars in teaspoons. The ranges and median intakes of added sugars for each quartile are shown in Table 1. For this analysis, individuals in the top quartile were considered to be “high consumers” of added sugars. The 1-day food intake reported by these individuals contained more than 26 teaspoons of added sugars. The “high consumers” group was younger and more likely to be male than the overall sample (Table 2).

Because caloric needs vary by age and gender, energy intake was expressed as a percentage of the recommended energy intake (RDA) for an individual’s age-sex group (2). For example, the energy RDA for adult women (19 to 50 years old) is 2200 calories, so a woman who consumed 1800 calories would have an energy intake of 82% RDA, while a woman who consumed 2600 calories would have an energy intake of 118% RDA.

Table 1. Added sugars intake of Americans in teaspoons, by quartile

Quartile	Median	Range
	teaspoons	teaspoons
Lowest	3.6	0 to 7.4
Second	11.1	7.4 to 15
Third	19.6	15 to 26
Highest	36.7	26 to 191

Table 2. Characteristics of “high consumers” of added sugars in comparison to overall sample

Group	Mean age	Gender	
	years	male	female
High consumers	29.7	61.1%	38.9%
Overall sample	35.7	48.8%	51.2%

Added sugars and energy consumption

About 59% of the “high consumers” of added sugars also overconsumed total calories. These individuals had an energy intake greater than 100% of the RDA for their age-sex group. In contrast, only about 22% of all other individuals over-consumed total calories (had intake greater than 100% of their energy RDA).

Measuring diet quality—The Healthy Eating Index

To compare the diet quality of “high consumers” to others, Healthy Eating Index (HEI) scores were used (3). The HEI is a summary measure of people’s overall diet quality on a scale from 0 to 100, based on 10 components. Five components measure the degree to which a person’s diet conforms to USDA’s Food Guide Pyramid recommendations for the major food groups: grains, vegetables, fruits, milk, and meat and beans. Four components measure compliance with recommendations for total fat, saturated fat, cholesterol, and sodium consumption. The final component measures the extent of variety in the diet, measured by number of different foods eaten.

Added sugars and diet quality

The relationship between added sugars and diet quality varied depending on a person’s energy intake (Figure 1). For those whose energy intake was relatively low (from 60% to 90% of energy RDA), overall HEI scores of “high consumers” were

significantly poorer, in comparison to those with lower added sugars intakes. For individuals with higher levels of energy intake (from about 90% to over 140% of energy RDA), the relationship between added sugars and HEI scores was inconsistent.

We also looked at the relationship between HEI component scores and added sugars intake across energy intakes (Figure 2). At all levels of caloric intake, the HEI fruit score was significantly lower for “high consumers” than for those in other quartiles of added sugars consumption. Milk, vegetable, and grains HEI scores for “high consumers” were also significantly lower than the average scores of others, except for those with caloric intake above 120% of their RDA.

Conclusion

The relationship between added sugars intake and diet quality is complex. The impact on diet quality of consuming a high amount of added sugars depends on total caloric consumption.

Many “high consumers” (59%) also overconsumed total energy. Their intake from the fruit group is low in comparison to others with the same level of energy consumption, but their intake of other food groups was not consistently affected. However, some “high consumers” of added sugars (41%) do not overconsume energy. They apparently compensate for the additional calories from sugars by reducing intake of other foods. These individuals had lower intake from the fruit, vegetable, milk, and grains groups in comparison to others consuming the same relative amount of energy.

Figure 1. Average HEI scores by energy and added sugars intake

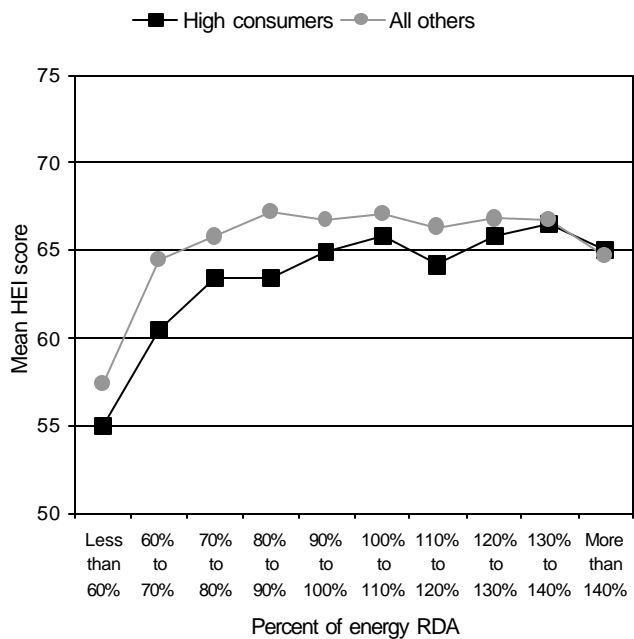
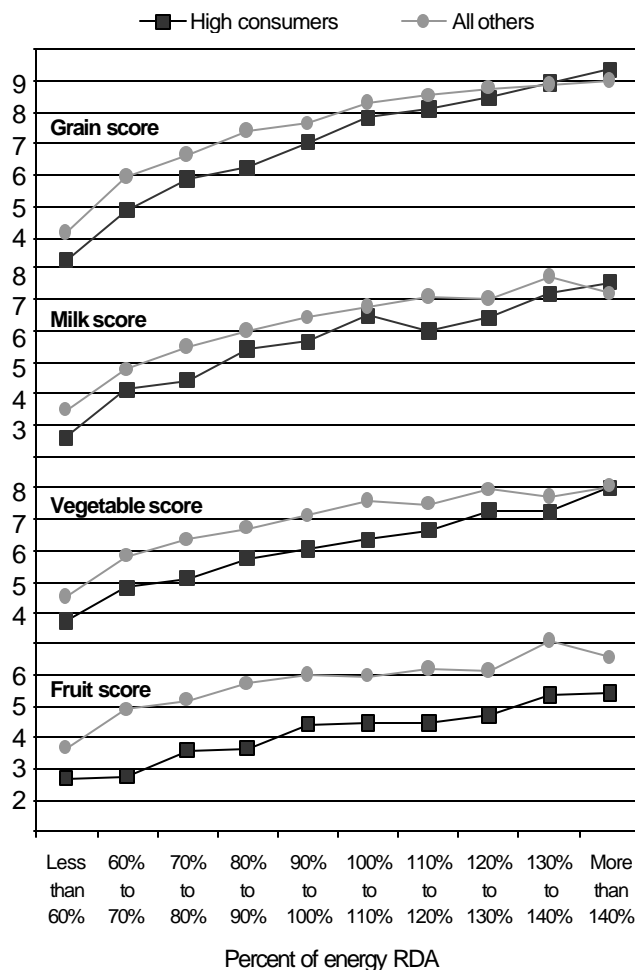


Figure 2. Average fruit, vegetable, milk, and grain HEI component scores by energy and added sugars intake



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