What’s a ‘Seesaw’ Effect?

There is an inverse relationship between the percentage of calories people consume from fat and those consumed from added sugars. In other words, people with diets that are low in fat tend to consume more sugar. The reverse is also true – those with diets high in fat are likely to have low sugar intakes.

Known as a seesaw effect, this phenomenon is confirmed by historical consumption data and observed by researchers. Ultimately, it gets to the heart of most science-based dietary guidance: achieving a balanced diet.

Keeping calorie intake in mind, this seesaw effect highlights the importance of focusing nutrition messaging on a healthful, varied diet. Taking a whole diet approach – versus targeting a specific macronutrient such as fat, protein or carbohydrate – is one way to help reduce obesity in the United States and worldwide. As the data tells us, undue focus on single dietary components is ineffective, and also misses the larger picture of how people actually eat.

The current focus on reducing added sugars exacerbates the increase in fat consumption. Despite lessening health concerns about fat, it remains a major and increasing source of calories, while in parallel, calories from added sugars continue to decline.

THE NEED FOR A BROADER VIEW

Over the past 50 years, efforts (whether government-led or passing fads) that have targeted individual nutrients – whether sugars or fat or something else – have simply not reduced caloric intake. In fact, they’ve led to just the opposite – caloric intake has increased dramatically and people are more confused than ever.

The trend data from the United States Department of Agriculture (USDA) indicates there has been a steady decline in per capita consumption of sugars over the past two decades, while both fat and total calories have continued to increase (see chart to the left). To quantify, Americans are consuming more than 450 additional calories each day than they were 40 years ago, with these calories coming mostly from refined grains, added fats and oils. That’s equivalent to adding a double cheeseburger on to your total calories every day! Comparatively, added sugars contribute only 8 percent (40 calories) to the daily increase in consumption.
The Sugar-Fat Seesaw: Achieving a Balanced Diet

STABILIZING THE SEESAW

Nutrient Intake
Focusing public health messages too strongly on reducing sugar consumption may mislead the public on the need to also reduce intake of fat and calories overall.

A 2015 systematic review of the evidence suggested the inverse relationship explored here is partially explained by food compositional effects (high-fat foods tend to be low in sugar, and vice versa). With this in mind, meeting dietary recommendations for the percentage of energy intake that should come from both fat and sugars can prove challenging. In fact, most popular diet strategies are prone to seesawing as they typically focus on either a reduction of fat or reduction of carbohydrates (sugars).

Body Mass Index (BMI)
Research observing how this seesaw impacts BMI has found those with higher BMIs tend to be on the high-fat, low-sugar end of the seesaw.

A study published in 2016 examined the diets of more than 100,000 people in the United Kingdom who are part of an ongoing health study. They found that obesity was more strongly associated with total energy intake than any individual macronutrient (fat, carbohydrate or protein), with fat being the biggest contributor to calorie intake and having the strongest association with obesity. There was a positive, but weak, correlation between obesity and absolute energy derived from sugar. However, after controlling for calories, fat remained positively associated with obesity while sugar was negatively associated.

An analysis of data from USDA’s What We Eat in America found those who consumed less than 10 percent of energy from added sugars had higher BMIs than those whose energy intake from added sugars fell between 10 and 35 percent (see chart to the right). Those who consumed the lowest percentage of calories from added sugars (0-5 percent of calories) actually had the highest BMIs.

“Rather than trying to isolate a single dietary culprit, we should focus on the whole picture.”

— Alice H. Lichtenstein, DSc
Tufts University Health & Nutrition Letter

Association Between Added Sugars Intake and BMI

<table>
<thead>
<tr>
<th>Mean Energy from Added Sugars</th>
<th>Mean BMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5%</td>
<td>24</td>
</tr>
<tr>
<td>5-10%</td>
<td>25</td>
</tr>
<tr>
<td>10-15%</td>
<td>26</td>
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</tr>
<tr>
<td>30-35%</td>
<td>30</td>
</tr>
<tr>
<td>&gt;35%</td>
<td>31</td>
</tr>
</tbody>
</table>

(includes percent of population consuming each range)

A U-shaped relationship exists between added sugars intake and BMI. BMIs are highest when added sugars intake is less than 10% and greater than 35%.

The Bottom Line?
All macronutrients fit within a healthy lifestyle recognizing both sugars and fats are essential components of food. Data has shown the seesaw effect of restricting individual nutrients only leads to caloric overcompensation with another, whether sugar for fat, or vice-versa. When striving for weight control, concentrating on a balanced approach is key to eliminating the sugar-fat seesaw’s dizzying ups and downs.

References: