Better methods are needed to understand the effects of dietary sugar

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Less than 10 percent of energy intake from food should come from added sugar, according to the current Nordic Nutrition Recommendations. For adults, this corresponds to approximately 50–75

grams of added sugar per day and one can of soft drink contains approximately 30 grams of sugar.

"Drinking soft drinks is not necessarily dangerous for a particular individual, however, at the group level, across a whole population, we can observe the effects," says Stina Ramne, certified dietician and nutrition researcher.

In her research on sugar consumption and risks for diabetes and cardiovascular disease, Stina Ramne has studied the association between added sugar intake and mortality. Part of the data comes from two cohort studies, where the cohorts consisted of a large group of people with the same characteristics or experiences studied over a long period of time. In both studies, she found a positive association between the intake of sugar-sweetened beverages and premature death. However, the association with the total intake of added sugar was inconclusive.

Conflicting results

Stina Ramne found the same inconsistency when she studied blood proteins and intestinal bacteria to compare the total intake of added sugar and the intake of sugar-sweetened beverages in particular. In both cases, the results showed associations between intake of sugar-sweetened beverages and blood proteins related to type 2 diabetes and intestinal bacteria related to obesity. However, the results were inconclusive for the total intake of added sugar.

"However, in studies on animals, researchers have observed that a higher sugar intake increases the risk of disease and similar results have been observed in human experimental studies where, for example, one group is encouraged to consume more sugar than another for comparison. However, when we carry out longitudinal observational studies, we do not usually see clear associations between higher total intake of added

sugar and an increased risk of disease, except for the intake of sugar-sweetened beverages." "This is probably in part due to the fact that we do not have methods to optimally measure sugar intake yet," says Stina Ramne.

More reliable methods are being developed

Many studies are based on participants assessing and self-reporting their food and drink habits, however, these can be misleading. Most of us are not willing to admit, consciously or subconsciously, to our actual intake of snacks and other foods with high levels of added sugar.

Along with many other researchers, Stina Ramne is interested in producing better methods using different biomarkers; molecules that are measured via blood or urine tests to reflect intake objectively.

"Part of my thesis focused on the evaluation of measurements of sucrose and fructose in urine to be able to use this as an objective measurement, a biomarker, that reflects the sugar intake. This nutritional biomarker has great potential for providing a more accurate picture of sugar intake and to improve further research, however, more controlled studies are needed to fully understand which mechanisms and limitations affect the accuracy of the biomarker."

Scientific data showing the way

The fact that several independent studies demonstrate the same causation between food and health is important for nutritional recommendations, public health strategies and food policies. They are the foundation for the planning of food in schools, for the elderly and for food labeling.

The Nordic Nutrition Recommendations, NNR, have been published

since the 1980s and are updated approximately every eight years. In 2022, it is time for a new edition.

Stina Ramne's results are in line with a report published in 2021 by the European Food Safety Authority, EFSA, on request from the Nordic countries. A revised version will be released in February 2022 providing an overview of current knowledge about sugar and health outcomes. The NNR provide a recommended upper threshold of added sugar consumption for obtaining healthy dietary habits, while EFSA did not find sufficient evidence to set a maximum level for long-term daily sugar intake that can be assessed as having no risk of negative health effects. The NNR will also update their dietary guidelines during 2022.

More research needed

Humans do not need sugar; there are no known positive health effects. However, an increasing number of food items contain more added sugar and, at the same time, lower nutritional value. If more than 10 percent of your daily intake of calories is added sugar, it is difficult to consume enough nutritious food that provides you with vitamins and minerals. It then becomes easier to consume more energy than you need.

Sugar tastes great and since food with a l,ot of sugar is often energy-dense there is a risk that you will eat too much, leading to weight gain. This is combined with the fact that sugar leads to high insulin secretion. In the long term, weight gain and increased blood lipids contribute to a lowering of insulin sensitivity, which increases the risk of type 2 diabetes and cardiovascular disease.

To ensure that the scientific evidence is strong, further research is needed on how sugar affects our health. There is sufficient evidence to understand the effects of increased consumption of sugar-sweetened beverages and that there is an association with a risk of serious disease

and premature death.

"When it comes to total intake of added sugars, the state of knowledge is yet to be conclusive. More research is needed," says Stina Ramne.

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