Response to Salt Intake Is Related to Soft Drink Consumption in Children and Adolescents: A Link to Obesity?

We are grateful to Gibson1 for her comments on our article. Unfortunately, Gibson1 does not consider the totality of evidence that relates salt intake to fluid consumption and merely restricts her comments to the National Diet and Nutrition Survey data set.

In a carefully controlled metabolic study in adult humans where salt intake was changed, we quantified the relationship between the change in salt intake and the subsequent change in fluid consumption.2 A study in 10,074 free-living individuals across the world showed an identical relationship between usual salt and fluid intake.2 Our analysis of the National Diet and Nutrition Survey data set showed that, in free-living children in Great Britain, the same relationship held true.3 There is, therefore, no doubt that, in humans, like other mammals, salt is a major drive to thirst, a reduction in salt intake will reduce the amount of fluid consumed, and, if part of this fluid is in the form of soft drinks, they will be reduced proportionately.

In relation to her other points, there is no evidence in the National Diet and Nutrition Survey publication that the volume of water used as a dilutant was double counted.4 The sugar content of soft drinks does vary greatly and, even in diluted soft drinks, the sugar content can be as high as 33.4 g per soft drink (250 mL). Our assumption that 1 sugar-sweetened soft drink contained 26.5 g of sugar was based on a soft drink that is commonly consumed by children. This may have introduced a bias in estimating the amount of calories that could be reduced with salt reduction, but this does not alter the quantitative relationship between salt intake and sugar-sweetened soft drink consumption. Randomized trials have shown that even a small reduction in soft drink consumption, eg, by 1.5 soft drinks per week for 1 year, which is less than what would occur with halving children’s salt intake, has a significant effect on childhood obesity.5

Many correlations may be found in dietary surveys; however, they need to be interpreted in the light of other evidence, a point that Gibson1 seems to have ignored. For instance, she claims that, in the National Diet and Nutrition Survey, salt reduction is associated with a decrease in fruit and vegetable consumption, but randomized trials have shown that salt reduction does not have such an effect.

Our results do have significant public health implications, because almost all children have salt intakes far in excess of their need, and in most developed countries childhood obesity has reached epidemic proportions. A reduction in population salt intake, which can easily be made by slowly reducing the amounts of salt added to food by the food industry, will cause a reduction in soft drink consumption and, thereby, a decrease in obesity. Additionally a reduction in salt intake lowers blood pressure in children, which is likely to prevent the development of high blood pressure in later life. Both high blood pressure and obesity are important independent risk factors for cardiovascular disease, the leading cause of death and disability worldwide. A lower salt intake starting in childhood would, therefore, have a significant impact on reducing the appalling burden of cardiovascular disease later in life.

Disclosures

None.

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