

Caries Res 2014;48:96–97  
DOI: [10.1159/000351676](https://doi.org/10.1159/000351676)**Per Capita Sugar Consumption in Switzerland Is Not Extreme**K.W. Neuhaus<sup>a</sup>, D. Erdin<sup>b</sup>, A. Lussi<sup>a</sup><sup>a</sup>Department of Preventive, Restorative and Pediatric Dentistry, University of Bern, Bern, and <sup>b</sup>Swiss Farmers' Union, SFU Statistics, Brugg, Switzerland

Dear Editor,

The study by Masood et al. [2012] compared national income, caries prevalence and per capita sugar consumption of numerous countries. The data presented by the authors are supposed to show that the relationship between sugar consumption and caries levels is dependent on the absolute level of income of the respective country. Switzerland, next to Singapore, has been identified as the country with 'the highest per capita sugar consumption (about 70 kg) but has a relatively low level of caries'. The authors suggest that the caries level in Switzerland might be due to the high level of salt fluoridation.

The data for the per capita sugar consumption were obtained from the United Nations Food and Agricultural Organization (UNFAO). The per capita added sugar consumption was calculated by subtracting the sum of added sugar imported and produced from the total added sugar exported or used for industry. The quantity that remained had therefore 'disappeared' and was assumed to have been consumed. However, supply balance sheets are at risk of bias. For Switzerland, considerable export data (e.g. sweet soft drinks) are underestimated or not considered at all by the statistics as published by *réserveuisse* and Swiss sugar producers [Sugar companies of Aarberg and Frauenfeld, 2012], which was most likely used by the UNFAO. From a methodological point of view, it is indispensable to use reliable, available published data. It is difficult to exactly assess the per capita consumption of sugar for each nation, and the authors admit a certain lack of clear definition. We have substantiated concerns about the validity of data regarding Switzerland used in the

study by Masood et al. [2012]. Taking into account the collective flow of sugared goods (sugar, syrup, honey), in fact the per capita sugar consumption in Switzerland was 42.3 kg in 2004 and has not changed significantly since [Swiss Farmers' Union, 2010]. The World Health Organization [2011] also reported a sugar consumption of about 40 kg per capita per year in Switzerland.

Thus, sugar consumption in Switzerland is comparable to that in other European countries like Sweden or Denmark. Comparing the DMFT levels of Denmark and Switzerland (canton of Zurich) (0.7 and 0.82, respectively), the suggestion that salt fluoridation is responsible for the low caries level in Switzerland appears to be unsubstantiated, considering there is no salt fluoridation in Denmark. Rather, we would like to stress that, besides availability of fluoride dentifrices, school and preschool educational dental public health measures as practiced in these two countries lead to low levels of caries experience. However, it should be kept in mind that caries counts may be dependent more on dentists' treatment decisions than on preventive approaches.

Hence, the regression analysis in the study by Masood et al. [2012] should be recalculated, and the respective scatterplots should also be adjusted, using the more realistic sugar consumption data of Switzerland at least.

**References**

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**Reply****Per Capita Sugar Consumption in Switzerland Is Not Extreme**M. Masood<sup>a</sup>, Y. Masood<sup>b</sup>, T. Newton<sup>c</sup><sup>a</sup>Center of Studies for Community Dentistry and <sup>b</sup>Center of Studies for Oral and Maxillofacial Surgery, Faculty of Dentistry, Universiti Teknologi MARA, Shah Alam, Malaysia; <sup>c</sup>Unit of Dental Public Health and Oral Health Services Research, King's College Dental Institute, King's College London, London, UK

We thank Neuhaus and colleagues for their comments on our paper [Masood et al., 2012] and gratefully acknowledge their suggestions. The data for the per capita sugar consumption were ob-

tained from the United Nations Food and Agricultural Organization (UNFAO), which provides reliable and comparable data on food balance sheets for more than 100 countries. We accept that it

is difficult to obtain accurate consumption data and further that there is no consensus on the most valid methods of measuring dietary intake of sugar [Burt and Pai, 2001]. Data are available from the Swiss Farmers' Union [2010], providing greater detail on sugar consumption for Switzerland, but this does not provide comparable data for other countries. We have previously recognized in our paper the limitation of considering disappearance as consumed sugar, an issue that highlights the complexity of sugar usage across countries and cultures.

We suggested salt fluoridation might be one of the possible reasons for this high tolerance to sugar in Switzerland. However, this does not exclude the importance of fluoride dentifrices, school and preschool educational dental public health measures or indeed the possibility that actual sugar consumption is not reflected in the UNFAO data. We recognized in our discussion the importance of access to fluoride and established preventive oral health schemes addressing lifestyle and environmental factors in dental caries prevention in developed countries [Edelstein, 2006].

We are grateful to Neuhaus and colleagues for raising this important topic for debate and look forward to future researchers addressing these methodological challenges.

#### *References*

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