Reviewer’s report

Title: A longitudinal study of fruit juice consumption during preschool years and subsequent diet quality and BMI

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Reviewer: France Bellisle

Reviewer's report:

The article presents a cross-sectional analysis of a dietary survey of Spanish preschool children, investigating the potential association of intake of sugar-containing beverages (SCB) with obesity. The data were obtained from the Spanish INMA cohort from which data from 1823 4-5 year-olds were extracted. The paper analyses the association of obesity with total intake of SCB, and then with subsets of total intake: intake of "packages juices", and intake of sugar-sweetened soft drinks. The paper is clearly written, the origin of the data is sound, and the results bring interesting focus on the particular situation of pre-school children in whom the few international data available suggest a possible link between sugar-sweetened beverage consumption and obesity risk. Consequently the present article is of interest to the readership of Nutrients.

Major problem

The main problem with the paper (for the statistical analyses and interpretation of the results) is the ambiguous content of the category "packaged juices" which does not discriminate between type of juice (100% pure juice, fruit drinks with different levels of sugar added, etc.) It does include pure fruit juices, without any sugar added, provided they were commercial products. Pure fruit juices made at home, the exact same products, were not included. This tends to suggest that the same substance is fine when it is home-made but bad when it is bought from a company, a very strange idea raising suspicion about the mechanisms of action. This is particularly important since other studies have not reported any link between obesity and 100% pure fruit juices in children (some are cited in the discussion of the paper). Therefore we have two problems with this beverage category (1. within category confusion of different products, 2. the same substance can belong in and out of the category) that should be justified and addressed in the discussion.

Targeted comments:

The present title refers to a cohort study and therefore to longitudinal observations. However the data presented here are cross-sectional. Any confusion should be avoided.

The consumption of SCB in the present population appears to discriminate socio-economic status, with lower classes consuming a lot more than the higher groups. Although analyses were computed with adjustment for socio-economic variables, the observations overlap to a large degree with a very well-demonstrated socio-economic gradient of obesity in developed countries. This should be addressed in the discussion.

The obese did not only consume more SCB but also milk (p<0.001). This observation deserves a thorough discussion.
In the discussion (lines 263-264), the energy content of the daily intake of packaged juices is reported as 155 kJ on the average and 230 kJ in the obese. The text adds that this "may contribute" to obesity in the long term. If not as a marker of lower socio-economic status, what can be the potential mechanism of this very low difference in intake? Another question pertains to the consumption of home-made juices. Table 1 does not provide any data about home-made juices. Then, it remains entirely possible that non-obese children ingested the same amount of juices if you include home-made juices.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

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I am able to assess the statistics

Quality of written English
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Needs some language corrections before being published

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1. I received consulting honoraria from the International Fruit Juice association (2016-2018). 2. I do not hold any stocks or shares 3 and 4. I am not applying for any patent and did not get any money from organisation holding patents 5 and 6. No other financial or non-financial competing interests.

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