Author's response to reviews

Title: A reappraisal of the quantitative relationship between sugar intake and dental caries; the need for new criteria for developing goals for sugar intake.

Authors:

Aubrey Sheiham (a.sheiham@ucl.ac.uk)
Philip T James (JeanHJames@aol.com)

Version: 2 Date: 22 May 2014

Author's response to reviews: see over
Dear Sir/Madam,

Re: MS: 791649021258637 - Research article - The quantitative relationship between sugar intake and dental caries; the need for new criteria for developing goals for sugar intake - Aubrey Sheiham and Philip T James - BMC Public Health

With reference to your email dated 15th May 2014 here are our answers to your request for more details below.

a) Please provide more methodological detail in general so that the study can be replicated and specifically on the systematic review carried out.

Response: We did not carry out a systematic review. We state in the introduction that “Given that the recent systematic review by Moynihan and Kelly [3] showed a clear relation between sugars and caries, another systematic review of this issue is not warranted.”

We may have erroneously given the impression that we did a systematic review by stating in the first line of the Methods section that “Primary data were first obtained by a systematic review of nationally representative prevalence and incidence data on caries that contained sugar intakes specified either by dietary surveys or by national intake assessed from the UN Food and Agriculture Organisations Food Balance Sheet data derived in a standard way from industrial and other criteria specified by national governments.” We did not do a systematic review but reviewed data bases.

To ensure that the major emphasis of the paper is seen appropriately we now propose to change the title of our submission to "A reappraisal of the quantitative..."
relationship between sugar intake and dental caries; the need for new criteria for
developing goals for sugar intake. Aubrey Sheiham and Philip T James. We have
also deleted the words systematic review and rephrased the sentence as follows.
“Primary data were first obtained from nationally representative prevalence and
incidence data on caries that contained sugar intakes specified either by dietary
surveys or by national intake assessed from the UN Food and Agriculture
Organisations Food Balance Sheet data derived in a standard way from industrial
and other criteria specified by national governments.”

We consider that what we have written about our methods is sufficient for others to
replicate what we have done. We go into considerable detail on the methods used
apart from naming the experts we contacted. In the acknowledgements we now
specify our gratitude to a specific individual who provided us with a particular type
of help. We refer to the papers from which we obtained the original Japanese data so
that a reader could if they want to, get hold of the same data.

b) Please adhere to PRISMA guidelines and provide a checklist as an additional file.

Response: As we have not done any systematic reviews PRISMA guidelines are not
needed.

c) Acknowledgements: By way of a section ‘Acknowledgements’, please acknowledge
anyone who contributed towards the article by making substantial contributions to
conception, design, acquisition of data, or analysis and interpretation of data, or who
was involved in drafting the manuscript or revising it critically for important
intellectual content, but who does not meet the criteria for authorship. Please also
include the source(s) of funding for each author, and for the manuscript preparation.
Authors must describe the role of the funding body, if any, in design, in the
collection, analysis, and interpretation of data; in the writing of the manuscript; and
in the decision to submit the manuscript for publication. Please also acknowledge
anyone who contributed materials essential for the study. If a language editor has
made significant revision of the manuscript, we recommend that you acknowledge
the editor by name, where possible.
The role of a scientific (medical) writer must be included in the acknowledgements
section, including their source(s) of funding. We suggest wording such as 'We thank
Jane Doe who provided medical writing services on behalf of XYZ Pharmaceuticals
Ltd.' Authors should obtain permission to acknowledge from all those mentioned in
the Acknowledgements section.

**Response:** We acknowledge the help of Dr Fumiaki Shinsho who helped us with the translation of papers from Japanese and for obtaining permission to use one of the figures. We have his permission to acknowledge his help. We have no sources of funding. We wrote the article and no other writer or editor was used.

d) Conflicts of interest should be ‘Competing interest’.

**Response:** We have changed what we had to ‘Competing interest’. We have none.

We hope that you are satisfied with our responses and that our paper can start the peer review process. We attach the adapted paper

Yours Sincerely,

Aubrey Sheiham

W. Philip T. James
The Editor,
BMC Public Health

Dear Sir/Madam,

Intakes of dietary sugars have been linked to dental caries and a higher risk of some chronic diseases, such as obesity and diabetes.

Our paper is an important addition to the scientific literature because it re-examines the old information on the dose response relation between sugar and caries and finds the current conclusions fundamentally mistaken. The relationship is vital for policy makers as the current review of international WHO guidelines on acceptable levels of sugar intake is based on previous research that showed that the dose response relation was sigmoid and not linear with a 10% value as appropriate.

The original WHO value of 10% was generated in the 1980s and was based on the sugar/caries relationship, but no analysis of the lifetime burden of caries induced by sugar is available to see whether this 10% level is optimum and compatible with low levels of caries.

A recent extensive systematic review for the WHO’s Nutrition Guidance Expert Advisory Group (NUGAG), that we refer to in our paper, was conducted with input from ourselves on translated papers and new concepts concludes that there is a clear relationship between sugar intakes and dental carries but does not consider the interactions with fluoride at all. Indeed WHO analyses have always been based on children’s caries rates and therefore have neglected completely the greater burden in adults. Furthermore, that review, although helpful, was based on intervention trials on children and did not analyse the dose response relation nor the levels of caries in populations of all ages with very low levels of sugar intakes.

What our study now leads to a new set of conclusions:

a) There is a log-linear relationships to sugar intakes from 0%E to 10%E sugar
b) A 10%E sugar intake induces a costly burden of caries
c) A large burden of dental disease in adults does not occur if sugar intakes are limited to <3% energy intake
d) Adult as well as children’s caries burdens should define the new criteria for developing goals for sugar intake
e) Public health goals need to set sugar intakes ideally <3% with <5% as a pragmatic goal, even when fluoride is widely used.

We are therefore submitting the attached as a research article.

We suggest the following Academic Editors to handle our manuscript:

Recommended reviewers: Prof John Cummings, Emeritus Professor of Experimental
Gastroenterology, Medical Research Institute Mailbox 3 Ninewells Hospital and Medical School Dundee DD1 9SY j.h.cummings@dundee.ac.uk

Professor Andrew J. Rugg-Gunn Emeritus Professor of Preventive Dentistry, WHO Collaborating Centre for Nutrition and Oral Health, Newcastle University. andrew@rugg-gunn.net

Professor Paula Moynihan WHO Collaborating Centre for Nutrition and Oral Health Centre for Oral Health Research Institute for Ageing and Health Newcastle University, UK P.J.Moynihan@ncl.ac.uk

We have no competing interest and we have not received any funding in relation to this publication.
The idea for the paper was conceived by Professor James. Professor Sheiham provided the scientific material and content for the paper and obtained permission for reproducing the graphs. Both authors drafted the paper.

Yours Sincerely,

Aubrey Sheiham

W. Philip T. James