Reviewer’s report

Title: Causal assessment of smoking and tooth loss: A systematic review of observational studies

Version: 2  Date: 21 December 2010

Reviewer: Thomas Dietrich

Reviewer’s report:

This manuscript presents a systematic review of the evidence from observational studies for a causal association between smoking and tooth loss. This is clearly an important topic as tooth loss is perhaps the most important in dentistry with huge impact on public health in terms of morbidity and health care cost. I am not aware of any such reviews in the literature and therefore this review is very timely.

My enthusiasm for this manuscript is tampered by several concerns that the authors may wish to consider.

Major compulsory revisions:

1. Although the manuscript is overall well written, I have difficulties to understand what the authors mean in several passages/statements and I wonder whether this may be due to some language/terminology difficulties and whether getting help from an English speaking epidemiologist could be helpful. Examples include:

1.1. The second paragraph on page 6 is an example, where I am just not sure what the authors are trying to say.

1.2. What is meant by ‘definition of tooth loss with the number of lost teeth due to reasons other than edentulism’? (page 6, third para)

1.3. Page 5, first paragraph - unclear....

2. Another problem is that the terms case-control and cross-sectional study seem to be used interchangeably. Although I didn’t check the original papers, referred to as case-control studies are probably most if not all studies are actually cross-sectional. Is this what the authors refer to in the first sentence, paragraph 3, page 6? It would be important to avoid inappropriate use of the term case-control study – even if quality criteria would have to be adapted to cross-sectional studies.

3. The electronic search strategy should be specified.

4. There are problems with data abstraction/interpretation. Although I didn’t check all papers, in Table 2, the effect sizes reported for our own study (Dietrich 2007) for example pertain to specific categories of smoking history (heaviest category of current smokers and former smokers with longest time since
cessation, respectively – in fact, we did not report estimates for all current or all former smokers vs. Never smokers) and it is therefore not appropriate to suggest they are effect sizes for current or former smokers.

5. This also highlights another problem that the authors do not address, i.e., that effect sizes may vary quite a bit because the level of exposure within groups of current or former smokers may vary substantially between studies. For example, in the Dietrich 2007 study of health professionals, many former smokers had quit many many years ago, while in another study exposure among former smokers might have been more recent. Related to the above is that the authors do not address the issue of time since cessation when they discuss what they describe as a natural experiment.

6. The issue of history of tooth loss and periodontal disease and its treatment in multivariable analyses discussed on page 13/14 is indeed interesting (in fact inclusion of either previous tooth loss or perio disease in a model would be clearly inappropriate), but it is unclear how this relates to the present systematic review? Was this done (inappropriately) by some of the presented papers? If so, this should be reported and discussed accordingly.

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests