Reviewer's report

Title: Weight gain and incident obesity among male snus users

Version: 1 Date: 4 October 2010

Reviewer: Lars Ramstrom

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The current study, Weight gain and incident obesity among male snus users, adopts standard methods to establish measures of statistical associations, and as such it is well performed in a technical sense. However, the conclusions are uncertain due to uncertainties regarding the material and the interpretation of the results. Therefore some major compulsory revisions would be needed as pointed out by the comments below.

1). The study population of 9954 men represent less than half of the men in the original random sample of 50000 people. In order to judge the representativity of the study population it would be desirable to see a description of its composition with regard to various demographic variables in comparison with the original sample. Such a check of representativity is particularly important since the study population appears to deviate from the general male Swedish population with regard to the proportions of tobacco use categories. According to nationwide representative studies in 2001/2002 (Ramström/Foulds. Tob Control 2006) the male population of Sweden contained 13% “Exclusive snus users” (as defined by the current authors), 10% current + 3% former “Exclusive snus users”. In the study population the proportion of “Stable current users” (the key category in the study population) is less than half as large (4.5%) as would have been expected in a fully representative group (10%).

2). The interpretations of the observed results are all based on calculations of BMI. It would therefore be appropriate to include a discussion of the limitations of the BMI concept. For example, people with identical BMI might have quite different body constitution if they differ substantially with regard to the proportion of the body weight that is made up by fat or muscles respectively. Such differences can make comparisons unfair and/or introduce bias. In the current material the observed differences between regarding physical activity (for example between stable snus users and stable smokers) might entail such consequences. Similar bias may be present due to the lack of control of energy intake.

3). It is stated that the aim has been to study the association between use of snus and weight gain. According to Swedish sources (Rössner et al) the average weight gain among adults appears to be around 0.5% per year, i.e. around 2.5% over a 5-year period. It would therefore be most appropriate to study ORs for “above normal” weight gain, >= 2.5%, rather than >= 5%. Further, it would be more illustrative to give comprehensive data regarding actual weight gain
(average and SD) in different groups. Now such data are given only for stable snus users (1.9 kg, which seems to be around the population average) and for never snus users but not for stable smokers or any other categories.

4). Tables 2 and 3 present a large number of ORs, most of them being non-significant or just borderline significant on the 95% level. There is just one definitely significant OR, the one for weight gain after stopping smoking (something that has been well known since long). With respect to the uncertainties mentioned in the previous comments ORs with a CI starting close to 1.0 cannot be deemed as truly “significant” as a basis for conclusions. Virtually all ORs for specific groups fail to indicate a truly significant difference from the referent group, neither do they indicate any differences between groups of snus users and smokers. Consequently all interpretations should be very cautious and there is very little ground for any firm conclusions.

5). A revision would have to add more attention to the various uncertainties. This would include changes of language at various points. Although the wording in the main text is reasonably cautious, it should be even more cautious at some places. In the final paragraph the firm wording that snus use “entails” weight gain is not justified by the results. In the abstract the text under “Results” is definitely not supported by the data. The very last sentence there is not only inappropriately firm in formulation but also misleading by omitting to mention that the findings refer to possible effects on the “normal” weight gain by age. Thereby it gives an impression that snus use were a unique cause of weight gain. Altogether it should be pointed out that the current findings suggest that effects, if any, of stable snus use and stable smoking appear to be quite similar. The current study does not suggest that snus use or smoking “entails” weight gain, rather that a possible effect is too small to be easily detected.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

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'