Reviewer’s report

Title: Improved metabolic health among the obese in six population surveys 1986 to 2009. The Northern Sweden MONICA study.

Version: 2  Date: 17 October 2014

Reviewer: Kurt Svardsudd

Reviewer’s report:

Minor Essential revisions
This is an interesting manuscript on an important health issue. I have a few comments.

1. In the definition of metabolic health, treatment for high blood pressure, hyperlipidaemia, and possibly other factors was not taken into account as long as the level of the treated factor was within the recommended span. In the Discussion section, page 8, line 28-29, this decision is motivated by the sentence: ‘The choice was made to include those treated to values below the cutoffs since they should be considered to be as metabolically healthy as untreated subjects with similar values’. How do the authors know that?? In the SBU report "Moderately elevated blood pressure" (SBU - The Swedish Council on Technology Assessment in health Care. J Int Med 1995; suppl 737) it is reported that of the over-risk for stroke associated with high blood pressure only 38% may be reduced by treatment, and for myocardial infarction only 16% of the over-risk may be reduced by treatment. This means that even well treated subjects have a substantial remaining over-risk for cardiovascular disease that treatment cannot account for.

In this case an alternative might be that subjects with hypertension, hyperlipidaemia, and diabetes, treated or untreated, are classified as being metabolically unhealthy. It would probably not change the conclusions of the study, but perhaps make the reasoning and the results more acceptable. If the authors do have evidence that treatment pressing risk factors down to normal levels results in a total relief of the over-risk, please refer to that evidence. Otherwise, this issue warrants a far deeper discussion than the present one and also an estimate of the potential bias.

2. Page 3, line 23-24: ‘For each survey 250 men and 250 women from each 10-year age group were randomly selected from population registers’. This sentence is a contradiction in terms. ‘Randomly’ means that the choice of subjects was based on chance alone, while ‘selected’ indicates that the choice was non-random (cf. selection bias). I suggest that ‘randomly selected’ be exchanged to the professionally used expression ‘randomly sampled’.

Level of interest: An article of outstanding merit and interest in its field
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