Reviewer’s report

Title: Gender differences in the association between adiposity and major depression: a cross-sectional study of 140,564 UK Biobank participants.

Version: 1 Date: 3 January 2014

Reviewer: Pim Cuijpers

Reviewer’s report:

This paper examines the association between depression and obesity in a large sample, using different measures of obesity. The strength of the study is its large sample size, but there are also several weaknesses.

One important problem is that the representativeness of the sample is not clear. The sample size is indeed huge, but it is not clear how participants were recruited. I assume that this information is not given in order to keep the paper brief, but it is essential information. Without it, it is not possible to assess the representativeness of the sample.

What worries me is that the mean age is 57 years, with a SD of 8. That does not suggest that this is a very good representation of the population, because young people (<30) and very old people (>75) are underrepresented. I am sure whether this is a true problem (because the numbers in other age groups are still large enough), but it should be described clearly by the authors.

The other main problem is the method to measure depression. Too bad that they did not use a normal standardized diagnostic interview to assess the presence of major depression. The measure they now use is clearly not adequate. Many people who are depressed never seek treatment for it. Furthermore, many people who seek treatment for nerves or anxiety also have a low mood, without meeting criteria for major depression. So, this measure is not adequate. It does give an indication of depression, but it is not the best way to assess depression. If they would have used the full PHQ-9 would have been better.

Has the current method been validated and are data on sensitivity and specificity available?

Smaller issues:

p.5: none of the included studies were conducted in the UK: why is this relevant? Plos Med is not a UK journal.

p.8, third line: what is the difference between Asian and Chinese?

p.9: a p-value of 0.05 does not seem adequate in such a large sample size.

p.10: it is not clear why information on depression was not available for almost 20% of the participants. Any systematic missings?
p.11, line 8: with evidence of a linear relationship. This is important information that can not be described as brief as this. How was this examined, and what were the exact outcomes?

p.13, line: being underweight was not associated with major depression. This worries me, as eating less than normal is one of the main symptoms of depression. Could this be the results of the method to define depression? Or maybe the selection of participants?

p.13: here the authors refer to a study (Wiltink et al) who also used several methods to define obesity, while the main reason for the current study was that no earlier studies were conducted using several methods. This study should be described in the introduction and it should be made clear why the current study still is needed.

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