Reviewer's report

Title: Associations between subtypes of depression and different measures of obesity (BMI, WC, WHtR, WHR)

Version: 1 Date: 12 January 2013

Reviewer: Radboud Marijnissen

Reviewer's report:

This paper examines the association between BMI and different measures for abdominal obesity to somatic vs cognitive depression and different mental conditions in a cross-sectional population based study.

MAJOR COMPULSORY REVISIONS

1* The question is not really original as it was examined already before. However previous research concerned only participants aged 50 to 70 years, so the study of Wiltink is original in the fact that also younger people are included. They should pay attention about this topic. The main question is why they dont use longitudinal data.

2* The aim of the study in the abstract is too vague: what is meant by different mental conditions? More important the aim of the study in the background section (page 4) is not well defined: Wiltink et al compare BMI and different measures of abdominal obesity in what context? According the abstract they compare the associations between BMI and different measures of visceral obesity with somatic vs cognitive depressive symptoms? In the results and the conclusion there is nothing about the different mental conditions. The authors must have a clear aim of the study.

3* In the hypothesis: Page 5 Following the vascular depression hypothesis…. Etc.. Why do they refer to the vascular depression hypothesis? I dont understand why they expect a closer relation according the vascular depression hypothesis. Again mental conditions is too vague. All of a sudden (page 5) also anxiety and Type D are mentioned as included, but in the introduction there was nothing told about any relationship between obesity and personality or anxiety from literature. There are no references about the vascular depression hypothesis of Alexopoulos. It is better to leave the vascular depression hypothesis.

4** The conclusion in the abstract should be based on the main findings of the paper. The important finding of somatic vs cognitive depressive symptoms is missing here.

5* The data are chaotic and proper interpretation is very difficult. They should have used the variables as continuous variables. Its unclear what the mean depressionscores are for the whole sample, probably very low, as it is a population based study. In discussion there no attention for that. So it is not
possible to interpret the data well. The conclusions are not all supported by the data. So conclude only that what is supported by the data.

6. The methods are also chaotic and not well described. The methods should be reduced to only the relevant matters (see below).

MAJOR COMPULSORY REVISIONS

Specific comments

1. Throughout the paper it is disturbing what is the focus of the study: different clusters of depression, other mental conditions etcetera.

2. The authors mention: subtypes of depression or somatic depression. It is better to use somatic affective depressive symptoms and cognitive affective depressive symptoms as it is not quite clear if there is a subtype of ‘somatic’ depression.

BACKGROUND

3. The background should focus more on depressive symptoms and obesity. Suddenly (sentence 19) they mention that visceral adipose tissue seems to play…. Depression. Please add references. There is no reference about the vascular depression hypothesis. In the background the authors should introduce this hypothesis, also about the other potential mechanisms linking obesity and depression (page 3/4). The authors should explain what they mean with anthropometric measures, this is not clear for the readers. Throughout the paper, some German words are included like und in the sentence 20: A Dutch study with 1284 participants aged between 50 and 70 years.…

METHODS

Sample

4. Persons with physical or mental inability were excluded: it is important to know what kind of physical or mental inability?

5. The methods should be reduced to make it less chaotic. The reader only wants to know: what is the sample, what are the primary outcome measures (and how were they measured?) and what are the potential confounders. After that describe the statistical methods.

6. Primary outcome measures:

* depressive symptoms: Focus on PHQ-9. PHQ measures depressive symptoms and a score of 10 or above is seen as indicative for diagnosis of major depression. The factor analyses in previous studies was done in a sample with coronary heart disease. It would strengthen the paper to conduct a factor analysis of the PHQ-9 in this large population based sample. For more clear paper its better to quit personality and other mental conditions. Its totally unclear why physical activity, the likert scale is introduced and why (page 7) the quartiles of physical activity is introduced. The problem is that the covariates are not
described well.

* Obesity: page 7 well described.

7*The potential confounders are missing and should be described well on basis of literature (age, sex, lifestyle (smoking/alcohol/physical activity, psychotropic drugs know to affect body weight), somatic comorbidity).

8*Why do they exclude participants with underweight? (page 8) I suppose it is because it is known that there is a Ushape relationship between obesity and depressive symptoms and because the authors want to examine the linear relationship between depressive symptoms and obesity? Please explain with adequate references!

9*Statistical analysis
   It is should be clear why they use quartiles and not continous variables.
   Its better to mention here previous factor analyses and preferably their own factoranalysis because this is another sample than cardiac.

10*RESULTS
   The resultsssection should start with the sample characteristics. They exclude only 30 people. Were the no missing items or was there no violating the rules for reliable measurement? What is the final study sample? 5000-30=4970? Table 1 is about 4970 participants?

11*Table 1 should be in the results section. There are too much results in the table. Why do the authors give the results for female and male? The sample characteristics should be about the whole sample and only show those results which are necessary to show. What is the meanscore on PHQ-9 for whole sample. You need this to interpret the results.

12*Figure 1: not necessary for the main aim of the study (if this is in the abstract)

13*Then about the final results: the depressive scores and anthropometrics should have been used as continuous varibles. I dont understand why only age in model 1. It is not clear in text or table-legend why they adjust for all those covariates like depersonalization, type D etcetera. The legend is not clear.. what is psychotropic medication N06AA? Etcetera. Explain FH etcetera.

DISCUSSION AND CONCLUSION

14*This section should start with the main conclusions according to the aim of the study. On page 11 it is explained that the analyses were fully adjusteds fora ge... cardiovascular riskfactors.. etcetera.. physical activity is missing. The authors start with repeating the resultsssection and a kind of explaining table 2.

15*On page 11 they conclude that the finding of association between somatic depression and wc in men is consistent with report demonstrating an increased risk of depression in initially nondepressed men with high visceral fat. This is not demonstrated in the papers used as references.
The connection with the vascular depression hypothesis is not clear at all, even the connection with inflammation. In the discussion the authors should compare with the literature and it's not clear why they make the connection.

The main concern indeed is the high risk of finding relations by chance, the main strength the large sample size. An important limitation is also measuring visceral fat by WC, CT would have been better. There might be also an underlying latent variable that may explain both variables like childhood abuse or genetics.

**Level of interest:** An article of limited interest

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

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I DECLARE THAT I HAVE NO COMPETING INTERESTS