Reviewer's report

Title: High prevalence of obesity, central obesity and abnormal glucose tolerance in the middle-aged Finnish

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Reviewer: Kristian Midthjell

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This is an important paper focusing on the great and worrying increase in risk factors for and the occurrence of type 2 diabetes. The paper is well written and organized, and do not seem to need extensive improvements. Even though I have some major comments below, my recommendation would clearly be to accept the paper if the comments below are properly commented.

Major Compulsory Revisions

1.
The authors do not distinguish between type 1 and type 2 diabetes, but state that all with diabetes had T2D. In Background, paragraph 2, they refer to the study by Ylihärsilä et al as showing the prevalence of type 2 diabetes, while that paper do not distinguish between type 1 and 2, but say that “although we did not separate type 1 and type 2 diabetes, the observed prevalences in the present study may be generalized to represent PRIMARILY (marked by referee) type 2 diabetes”.

In the current paper the authors state (Methods/Definitions, paragraph 1: “Individuals who reported that they have diabetes were not included in the OGTT and were classified as known T2D”.

In Norway type 1 diabetes in the adult population constitutes about 15-20% of the diabetic persons; in the present population of 45-75 is shold be at least that much, and this should be commented by the authors.

2.
There is a little uncertainty concerning the diagnosis of IGT/IFG. According to the WHO 1999 correctly referred in “Definitions”, paragraph 1, all with both IFG and IGT are classified as IGT (FPG 6.1-6.9 mmol/l and 2hrBG 7.8 to 11.0 mmol/l). Why then the heading in table 2: “AGT= at least one of TT2D, IGT or IFG”, which seems to imply that one person might have more than one of these diagnoses, and that the total number with AGT do not represent the total no of persons. This needs clarification.

3.
The tables contain overlapping categories, for instance BMI in tables 1, 3 and 5 (BMI 25-30 and BMI >= 30), and waist circumference in tables 4 and 5 (94-102 and >= 102, 80-88 and >= 88). This might be OK if a sufficient number of decimals are used in the calculation of BMI, but the table text "25-30" implies that
all with a BMI of 30 are included. In waist circumference the precision in measurement is not mentioned in the methods section, but a measurement closer than to the nearest whole cm seems impractical, meaning that those with a waist of 102 and 88 cm might also fall in two categories. I suppose this may be only a misprint, but if not the calculations might have to be repeated and the tables adjusted.

Minor Essential Revisions

1. The title and the conclusion in the paper, as well as the abstract, imply that the main aim of the study is the prevalence. This is, however, not mentioned in the aims of the study (“Background”, last paragraph), which only focus on the associations between abnormal glucose tolerance and BMI/waist circumference.

2. Discussion, paragraph 3, points to four references (25-28) to the statement that “many cases of diabetes remain undetected for many years”. As far as I can see the references are all to cross-sectional studies not addressing the duration of unknown diabetes. Ref. no. 26 also seems a little dubious as the prevalence according to the English abstract is established in a clinical setting using a reflectometer (One-Touch, Lifescan).

3. A small detail: Results, paragraph 1, table 1. The total prevalence of obesity (BMI >30), is in the text reported as 23,6, while in the table as 23.8 %.

4. Table 5, heading: "diabetic" should not be used as a noun; use for instance "diabetic patients", "people with diabetes"; people should not be characterized by their disease.

5. Discussion, 5. paragraph, line 7: "those for central obesity between 1.9 and 2.6" should be rephrased to "-1.9 in women and 2.6 in men"

Level of interest: An article of importance 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.