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: 3 November 2014

Reviewer: Susann Bluher

Reviewer's report:

The study has investigated time trends over the past 20 years in the prevalence of metabolically healthy normal weight, overweight and obese adults. Data derived from three different Swedish data sets. Physical activity, smoking and education level were regarded as potential confounding factors. The authors report a large and significant increase in metabolic health since 1986 for all weight categories.

This study is very interesting, and the topic is extremely hot, since enormous research efforts have been made during the past years in the field of metabolically healthy obesity (MHO). A large number of studies have broadened our understanding of prevalence rates as well as pathophysiological concepts of MHO, but we are far away from understanding what MHO really means and what the underlying mechanisms are. In addition, applied definitions for MHO are quite heterogeneous, making comparison amongst studies difficult.

Majority of available studies in this field are either review papers or cross-section studies in certain populations. The reviewer is not aware of another longitudinal study with such a large number of participants that has investigated the MHO-trend over a time period of more than 20 years.

Results are important to advance our understanding of the phenomenon of MHO. The publication of the manuscript in the journal is suggested, following some (minor) revisions:

- Abstract: The result’s section is rather long compared to the other paragraphs. Some of the information of the result’s section could be shifted into the method’s section (for instance line 19: number of participants available in 2009

- Abstract, line 28: …” is.. less prevalent among overweight and obese subjects.” (compared to what?)

- Abbreviations should be explained when introduced for the first time, including the Abstract

- Strengths and limitations of the study are well discussed. However, to the best of the reviewers knowledge, this is one of the very first longitudinal analyses in this field over such a long period of time. This is a very important strength of the study that should be pointed out in the Abstract as well the Discussion of the manuscript

- There is a bunch of papers available in the field of MHO, including current
prevalence rates for different populations, including children and adolescents. The reviewer suggests to discuss the results of the paper more detailed in the context of the international literature and to compare the prevalence rates of the Swedish data sets with those of comparable studies from other countries. Is there anything known about prevalence of MHO in Swedish obese children and adolescents?

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

Quality of written English: Acceptable

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.