Reviewer's report

Title: Obesity - Epidemiological Burden from a European Perspective. A Systematic Review

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Reviewer: Dexter Canoy

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Manuscript: Obesity # Epidemiological Burden from a European Perspective. A systematic Review

This paper is an important document showing the prevalence of an increasingly important public health problem. In this report, the investigators described the prevalence of obesity in Europe by systematically reviewing published data. Considering the enormous amount of literature published around the area, the authors have to be commended for painstakingly reviewing the articles relating to their research question. However, I do have a few comments which I hope the authors can clarify.

Major compulsory revisions:

The authors claimed that there is a need to show prevalence of obesity based on measured rather than reported BMI. They highlighted some studies wherein prevalence data varied because of reporting biases but these, I believe, are rather smaller studies. Other than mentioning that the prevalence in France were relatively low which could be due to the use of self-reported measures, is this a uniquely European phenomenon? I was expecting that there might be some comparisons to be drawn from the reported prevalence of obesity using self-reported and reported measures especially from the US (for example, comparing the prevalence of the NHANES reports versus BRFSS, Nurses Health Study, American Cancer Prevention Studies). Considering that many epidemiological studies report a very high correlation between measured and self-reported BMI (usually over 0.90), I wonder how much of the low prevalence in France is due to underreporting of actual weight for height? How does the overall obesity prevalence scenario, as gathered from their systematic review, compare to other published data in Europe (and elsewhere) that might have included self-reported estimates? Although it is not necessary for the authors to do a systematic review on the obesity prevalence based on self-reported BMI, comparisons with some key publications could be useful or if there is no such data to compare to in Europe, I think this is an important finding to report. As a reader, I would be keen to see any under- or over-estimation of the obesity prevalence as there are sectors in the society that suggest that the problem of obesity is overblown. Perhaps there is a need to compare their findings with that of other populations so we could have a better grasp of what is the European perspective of the obesity problem really means.
In describing the search strategy, the investigators excluded terms that could be relevant (weight, excess weight/fat, fatness, body size, etc.) Further, if some of these terms are not on the title or abstract, the investigators could miss out on prevalence data that are imbedded in studies that are not focused on prevalence of obesity but might have the right population and the appropriate measurements reported in the paper. Could the authors please discuss whether or not they are missing out important data and how failure to incorporate these data could affect their overall findings?

One of the important criteria that the authors set out was that the prevalence estimates should be based on the representativeness of the age structure of the population under study. How did they assess this criterion? What is their source for the age-, sex-, year- and country-specific population structure? Would it have been better if they age-standardised the prevalence estimates to the overall European population age distribution? These details need to be mentioned if the authors expect that their methods can be replicated.

Minor essential revisions:

Did the authors decide a priori on how to handle estimates if several figures are reported from within the same population sample covering different time periods (such as in serial cross-sectional studies)? It would be useful to describe how such data should be handled.

Some findings are baffling. For example the prevalence of obesity in Spain varied greatly even if the age range included in the estimates were comparable. This large variation seems also unrelated to the time coverage of the study (based on visual inspection of the data). Is there a plausible explanation for this wide variation?

Can the authors define what is of “epidemic proportions”? Or does it only apply to specific countries in Europe? Moreover, the large variation in prevalence across populations does not seem to suggest to me that it is of “epidemic proportion” for all countries. Is there anything to learn from countries with lower obesity prevalence?

It is helpful if authors indicate references for some of their statements even if these are seemingly widely known. For example, it would be useful to mention the appropriate reference suggesting that geographic differences in the obesity prevalence could be explained by socioeconomic conditions (there were references on the same topic noted later in the discussion); reference to the Mediterranean diet being considered a healthier dietary pattern than the Central European diet; reference relating to changes in the population structure could be due to migration from Eastern Europe.

Little coverage has been given on temporal trends. I think there is enough data from the selected sources to describe temporal trends within the time period of interest (from 1990s in this case). Authors should consider using this information to add more support to their comment on the increasing obesity prevalence over
time. For example, the 30% increase in the prevalence in the UK between 1943 and 1965 is a very small change as compared to a 3- to 4-fold increase in prevalence between the 1980s and 2000s. Perhaps, the obesity reaching "epidemic proportions" could be better described when temporal trends are shown.

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

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.