Reviewer's report

Title: Type 2 diabetes attributed to lower educational levels in Sweden: A burden of disease study

Version: 1 Date: 15 April 2011

Reviewer: Anton Kunst

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Minor essential revisions

1. In the Discussion section, the authors may evaluate whether the impact of education on DM mortality is of similar size as its impact on DM prevalence. This is an implicit assumption made when the same PAF estimates are applied to both YLL and YLD. The authors may refer to studies that distinguish between mortality, incidence and/or prevalence, such as Espelt A et al in Diabetologia. 2008 Nov;51(11):1971-9.

2. In the Discussion section, the authors may evaluate whether a more refined educational classification should have been applied in this study, or in future studies. It should be noted that in the younger age groups, almost 50% of women are in the highest educational level. Further distinction might be made at higher educational levels. Note that the use of a higher reference group (tertiary or university education) is likely to result in higher PAF values.

3. The PAF approach is suggested to be a novel methodological approach. However, this approach has been applied several times before in the study of health inequalities. Recent examples include Mackenbach et al in J Epidemiol Community Health. 2010 Dec 19, and Moussa KM et al in Tob Control. 2009 Apr;18(2):92-7. I recommend that the authors acknowledge such previous work outside the CAR framework.

4. The authors suggest that the association between educational level and DM is about constant among high income countries or ‘economies’. However, the evidence of the above-mentioned study of Espelt et al (2008) clearly indicates that there are large differences within Europe, especially between north and south, in the magnitude of inequalities in DM prevalence and mortality. This should be acknowledged and take into account at several places, including the Conclusion paragraph.

5. In mainstream health inequalities literature, nearly all “risk factors” for DM are considered as “intermediaries” in the causal pathway between educational level and DM. Only a few factors are usually regarded as true “confounders” to this relationship, such as age, sex and country of birth. I therefore suggest the authors to revise the paragraph on “potential confounders” at page 13-14, and give much greater emphasis to “intermediaries”. The key question may be: how should intermediaries be addressed within the CRA framework?
6. With regards to the role of age, the authors recognise that associations may vary by age, but they conclude that “the ways this may have influenced the results is difficult to predict”. This is not true. A highly predictable finding is that, among elderly people, the relative magnitude of health inequalities (expressed in terms of RR’s) diminish with increasing age. See e.g. the paper of Huisman M, in J Epidemiol Community Health 2004;58(6):468-75. Taking into account diminishing RR’s would result in lower PAF values for higher age, and thus revert the age pattern that has been observed in the current study (higher impact at higher ages).

7. I suggest removing the age group 15-29 years from the analysis, or to confine the analysis to 20-29 or 25-29 years olds, because the population distribution according to completed educational level cannot be assessed for generations younger than about 25 years. The authors recognise that the results for the youngest group is biased due to this measurement problem. A common approach in much of the health inequalities literature is to confine the analysis to people older than about 25 years (see e.g. Huisman et al, cited above). An additional advantage of restricting the analysis to those age 20 or 25 and over, is that “contamination” with Type I DM cases is further reduced.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests