Reviewer's report

Title: Socioeconomic inequalities in cardiovascular mortality and the role of childhood socioeconomic conditions and adulthood risk factors: a prospective cohort study with 17-years of follow up

Version: 2 Date: 1 August 2012

Reviewer: Susan Bondy

Reviewer's report:

This is an important and interesting study and analysis. It is also a really concisely and clearly communicated paper given the extent of the analysis. One real strength of the study is the availability of good quality self-report data for both adulthood and for a specific and consistent point in time at age 14. It is a strength of the study that it has sufficient sample size to restrict the analysis to participants age 40 or older at baseline, whereas many general population mortality studies look at baseline recruitment from a very large range of ages (for reasons of sample size) making it difficult to interpret the stage of life represented by baseline data and creating, really, far too large a range of follow-up time periods which reflect different life stages. The literature review is concise and appropriate and the fact that they address (succinctly and fairly) the competing hypotheses of the critical period and pathway models. The analysis is correct, well (and concisely) documented and easy to follow. No major concerns about the interpretation of findings.

Minor compulsory revisions:
- Numbers of observations in the models should be repeated in table titles or footnotes.
- The methods state that missing values were retained as separate categories (there could be debate over the approach of retaining missing values as separate categories, but this reviewer accepts the practice). However, neither these categories nor the numbers of missing observations by covariates or across covariates in multiple survival analysis models are presented in the results tables. If the degree of list-wise deleted observations is small, it may be wise to merely allow the observations to drop out of multivariable models as is sometimes advocated by Sander Greenland and some others. Furthermore, if the global impact of missing observations is small then complicated procedures such as multiple imputation should probably not be entertained even should this come up in review. However, clarification about the extent of missing data and how missing answers were handled is essential.
- Under methods for alcohol consumption, please clarify if ‘units’ and ‘drinks’ mean the same thing.
- Vegetable ‘use’ should be vegetable consumption.
- With respect to the contributions of smoking, alcohol use and other factors on
mortality, for direct comparisons with other studies, it would be useful to comment on the population studied in terms of how high the prevalence rates were for smoking, obesity, etc, relative to other populations used in similar studies cited, or relative to the general European population at the same time. Within this manuscript, the reader should know if this city-specific sample (and those who agreed to participate) was particularly clean-living with respect to rates of smoking, obesity and heavy drinking as the absolute prevalence of risk factors do affect the attributable mortality.

The authors may be asked to weigh in more strongly as to whether they feel it is then more or less fruitless to seek to achieve CVD prevention by focusing on school-age children. There is theoretical merit in primary prevention of the behavioural risk factors in adulthood through intervention with youth and young adults, but hard evidence of impact on actual long-term disease prevention isn’t always available. However, there is increasing evidence shows that prevention less far upstream (within 10 years of what would be the onset of CVD and other diagnoses which share risk factors) may provide more bang for the buck.

Discretionary revision, but I’m strongly recommending this change as it would also add a new outcome and increase the impact of the paper:

This reviewer advocates for a definition of normal weight with a lower limit in the order of 20, as opposed to 18.5. Increasingly, large cohort studies are appearing which have been able to subdivide the BMI 18.5-25 range into smaller groups with an additional (still arbitrary) cut-off of 20 becoming popular. Where this is done, it is common to find that mortality starts to increase below 20 in most middle-aged populations, relative to 20-25. (The point of increase may be as high as <22 in older adults, especially women, although nobody yet has the perfect cut-off across all populations and baseline ages). The lower limit of 18.5 really represents acute malnutrition and eating disorders. Any ‘normal’ weight definition that goes all the way from 18.5 to <25 is a mix of lowest risk for BMI and increased risk, and so makes for a poor reference category. The use of the 18.5 to <25 ‘normal’ range remains common, but the sample size here should allow for finer definitions, and this may result in greater explanatory power for adult BMI.

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

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

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

**Declaration of competing interests:**

I declare that I have no competing interests