Reviewer’s report

Title: Stable socioeconomic inequalities in ischaemic heart disease mortality during the economic crisis: A time trend analysis in 2 Spanish settings

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Reviewer: Françoise Renard

Reviewer’s report:

Review of article "Stable socioeconomic inequalities in ischemic heart disease mortality during the economic crisis: A time trend analysis in 2 Spanish settings ".

The article addresses a very interesting topic; actually, the literature has shown a paradoxical impact of economic crisis on health, and particularly on cardiovascular mortality. It is crucial to examine how the poorest people are affected by the crisis.

However, in my opinion, the article should need major improvement before being published. It should also be reviewed for English by a native speaker. Deaths rates by EL should definitely be compared after age-standardization.

Major remarks

The method section is not sufficiently described.

If I understand in Barcelona you linked only the people who died, it was not a follow up study, while in Basque country it was a follow up study.

- Why did you proceed differently in the 2 settings ?
- What is the proportion of linked cases ?

Could you show the EL distribution of the population in the 3 periods in the census, including the missing EL ?

You broke down the EL in 5, which is quite unusual in recent years, since the proportion of people in the first level has dramatically declined over time. This leads to very small groups in youngest age groups, but moreover, it hinders comparisons with other studies. Could you justify your choice ?

How was the age variable introduced into the Poisson model ? Was it a 1 or 5 year variable, or was it with the large age groups that are presented ?

Which software did you use ?
Results

Table 1: please specify deaths rates are crude.

Could you show the Person-years of observation in the table?

The comparison of deaths rate should definitely be done on age-standardized rates, because age is a powerful confounding in mortality by EL!

So I cannot agree with the figure 1 and its comment, since it is based on crude rates comparison.

Please could you calculate and display in your figure age-standardized rates? This can easily be done in STATA with the command dstdize; (nb: it is also possible to get it as a result of a Poisson regression but more difficult).

All the descriptions in the beginning of the results sections for all-ages EL specific rates should be done on age-standardized rates.

Could you show the results of your regression stratified by setting and sex for all ages? how is age included in this regression?

I would suggest that, above the Poisson regression for RII calculations, you run and display the results of a Poisson regression (only stratified by sex and settings), and modeling the mortality rate examining the effects of age, period, EL and their interaction. To do so, you could model deaths in function of:

- the educational level (in simple class, not on relative scaled), the period and the age group, first as main effects only.

- Then you introduce interaction terms in another model, so age group*period, EL*period.

- Then, stratified by period also, interaction EL*age, which seems interesting! actually in males of Barcelona, there is no inequality in oldest men, but quite large in younger! This could explain maybe the important difference with Mackenbach 2015 for Barcelona at the same period, since Mackenbach showed inequality in premature (<75) mortality.

- It would probably be easier to describe your results starting from this output.

Could you please revise the results section for EN.

Discussion: maybe, before discussing the trends, you could first comment on the size of IHD inequalities (relative, absolute). Particularly low in men in Barcelona; but due to oldest men only. Any explanation for this?

Minor comments
L 101-104 please reformulate because unemployment rate in 2001 lower in Basque country.

L 142-143 and L 148-150 please review for EN

L.164 for age-adjusted education level specific mortality

Ref 11 12 : can you add more recent ref ? for instance with Mackenbach 2015
https://www.bmj.com/content/353/bmj.i1732

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