Reviewer’s report

Title: Socioeconomic inequalities in suicide mortality before and after the economic recession in Spain

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Reviewer: Margda Waern

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Employing linkage of census and mortality registers, the authors explored trends in suicide mortality in relation to education level during three periods (two before the economic crisis and one during the crisis) in two Spanish regions (Barcelona and the Basque Country). Separate analyses are carried out for men and women and for three age groups. A main finding was that the relationship between educational level and suicide mortality remained stable in men over the study period despite the economic recession. Below please find my comments and suggestions that might improve the paper.

1. The title could be more informative. Since educational level is the exposure in focus for this paper, the authors could consider using that specific term in the title. The term "socioeconomic inequalities" gives the reader the impression that multiple inequalities are being assessed. Also, the current wording gives the impression that study involves only the period "during the recession", but the data cover 3 periods, two of which are prior to the recession.

2. Abstract: Also here it could be clarified in both the aim and the conclusion that educational level was the exposure of interest.

3. The introduction section could be more informative. Just as an example, the statement that "Nearly all European countries have experienced a marked increase in suicide mortality rates during the current economic recession" could be tempered as the two cited references demonstrate increased rates in men only. Overall, it was a bit difficult to get a grasp on this section. What is actually already known, and how the current study could be expected to add to the literature? What did the authors hypothesize/anticipate that they might find?

4. Study design and population: What was the rational for the age cutoff at 25? Since the highest education level was defined as 15 years or more, persons in their early 20's might have been included, which would increase the number of cases. I'm not necessarily saying they should have been, I'm simply asking about the rational for the cut-off.

5. In many suicide studies also uncertain suicides are included. The choice to include only deaths in the "X" series and not "Y" series could be discussed, as rates of uncertain suicides
(Y series) vary from country to country for example due to administrative differences in forensic categorization.

6. The section describing the different procedures employed for Barcelona and the Basque Country data could be better clarified. For the Basque data, (but not for Barcelona?) "deaths were weighted by the inverse of the proportion of cases". Please clarify.

7. It is stated that "The use of the RII can be interpreted was the ratio of mortality rates between the two extremes of the educational spectrum." It would also be interesting to get an estimate on how much suicide risk was reduced for each additional level of education in men.

8. Table 1 would be a bit easier to interpret if it were to employ a layout more similar to that in Table 2, that is with columns showing data for the two periods before and the one period during the recession. Also, the there is a massive amount of text within the Table 2 due to the extensive labels in the education level column. These labels could be shortened (No education, Primary education, Lower secondary, Upper secondary, University) as full descriptions of the different levels are shown in the methods text.

9. Figure 1: Heading should read "Suicide mortality rates" rather than "mortality rates".

10. Table 2: The heading does not seem to make sense. If I have understood correctly, both RII and SII are calculated to demonstrate differences in mortality between groups attaining lowest vs highest educational level, which means these results cannot be shown by educational level.

11. Table 2: "Pais Vasco" should be translated to English. Also, there seems to be a typo for the group of women over 65 (second to the last row in the table).

12. Last sentence in Results section (It is worth mentioning…): It would be helpful if results of statistical testing were shown- perhaps in a supplementary file?

13. The first paragraph of the discussion section could be restated to better clarify the key findings. It is stated in the second sentence of this paragraph that inequalities among men under 65 in the Basque Country showed a non-significant increase during the recension period with respect to the previous period. As there is quite a bit of overlap in the CIs of the RII values for these two periods, this non-significant finding might be toned down to allow for more focus on the key findings.

14. Discussion, paragraph 3 lines 2-4: It is stated that "Relative educational level inequalities in suicide mortality increased in the recession period only among men younger than 65 years of age in the Basque Country." Please show data supporting this statement in the Results section.
15. The discussion section as a whole could be deepened. Some examples: findings regarding RII and SII scores are scantily discussed, and a discussion of gender differences would be an interesting addition. There is some previous literature suggesting that suicide rates are more prone to "respond" to socioeconomic change in men than in women. In light of that, how do the authors interpret their own findings? Also, why do they think that the decline in mental health in less privileged groups observed by other authors is not reflected in suicidal mortality?

16. Limitations could be discussed. A major limitation is that information was lacking for employment, occupation, income, social class etc. The pros and cons of using of educational level as an indicator of socioeconomic inequality could be discussed. Also, the fact that a one tenth of the suicides could not be included due to missing info on education level should be listed as a limitation. Might it be possible that this could have introduced bias (ie persons with higher education more likely to be recorded in the education data base and thus more likely to be included in the study?)

17. Second to the last paragraph in the Discussion: Not sure I understood the statement that using RII and SII scores "allowed study of all educational levels simultaneously". In the methods section it is stated that these scores compare lowest and highest.

18. References seem appropriate and up to date. The title of reference 21 (in Spanish) could be shown in English in brackets, if this corresponds to journal style.

19. Minor comment: Redundant (identical) text is shown both under the heading Funding and under the heading Acknowledgements.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Unable to assess

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

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