Reviewer's report

Title: Looking at the smoking epidemic through the lens of population pyramids: socio-demographic patterns of smoking in Italy, 1983-2005

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Reviewer: Walter G W Ricciardi

Reviewer's report:

The paper “looking at the smoking epidemic through the lens of population pyramids: socio-demographic patterns of smoking in Italy, 1983-2005” does present a quite interesting and innovative view on smoking trends. Anyhow, I would suggest the Authors to implement the text in order to make it clearer. Furthermore the paper shows data which are old nowadays and, indeed, not so much useful for decision-makers. I would suggest the Authors to try to investigate the potential for forecasting of smokers pattern in the future. Please find below my further major compulsory revisions.

- Introduction
1. The Authors state that smoking is nowadays associated to social, cultural and material disadvantages but, indeed, the results do not agree with that. Furthermore, the paper does not deal with inequalities (or at least just partially). I would suggest rephrase the sentence.
2. I would recommend the Authors stressing the reasons why they did address the educational level. It is not clear by now.

- Methods
3. I would suggest the Authors to specify the sample size of each of the National Health Interview Surveys and to clarify if the questionnaires used throughout the period did show any change in questions regarding smoking habits.
4. I would request the Authors to specify age classes considered in the analysis early in method section and to provide the reader with the details of the classification of smoking status.
5. The Authors should specify reference time for population estimates (1st January of mid of the year?).
6. Why did the Authors use Italian male and female population combined in order to standardize rates?

- Results
7. I would suggest the Authors to maintain the classification of smoking status provided in the methods section (current/former/never). This is true also for the classification of educational level (i.e. in the last part of description of results about educational level the Authors speak about lower secondary level: what do they mean?)
8. Results are interesting but I would invite the Authors to discuss on potential bias (i.e. cohort/period effect). Repeated cross-sectional data may be biased and I did not see any comment on it. In particular, according to me, a more cautious description of figures 1 and 3 should be provided. I do not agree completely with the comment provided by the Authors on change in association between educational level and smoking status throughout the time.

- Discussion

9. I agree with the Authors about the importance of absolute numbers but, from a Public Health point of view, even though the number of smokers could be smaller in some age groups (such as the elderly) it should be taken into consideration that the burden of smoking in such groups could be higher because of the long time of exposure.

10. Limits of the study have been not discussed at all.

**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