Reviewer's report

Title: Sex dependent risk factors for mortality after myocardial infarction: individual patient data meta-analysis

Version: Date: 15 October 2014

Reviewer: Miguel Martinez-Gonzalez

Reviewer's report:

This study explored the effect of interactions of risk factors on all-cause mortality in patients with myocardial infarction based on individual patient data meta-analysis from 16 observational studies.

1. Is the question posed by the authors new and well defined?
   Yes

2. Are the methods appropriate and well described, and are sufficient details provided to replicate the work?
   Yes

3. Are the data sound and well controlled?
   Yes, with some limitations of missing data and important variables that were not available

4. Do the figures appear to be genuine, i.e. without evidence of manipulation?
   No

5. Does the manuscript adhere to the relevant standards for reporting and data deposition?
   Yes

6. Are the discussion and conclusions well balanced and adequately supported by the data?
   Yes

7. Do the title and abstract accurately convey what has been found?
   Yes

8. Is the writing acceptable?
   Yes

Please make your review as constructive and detailed as possible in your comments so that authors have the opportunity to overcome any serious deficiencies that you find and please also divide your comments into the following categories:

- Discretionary Revisions (which are recommendations for improvement but which the author can choose to ignore)
Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Major Compulsory Revisions (which the author must respond to before a decision on publication can be reached)

Once you have done this, there are also some questions for you to answer, including one that asks whether you think the article is of sufficient importance to be published in BMC Medicine or whether it is more suited to one of the subject-specific BMC journals. If the work is sound but not up to the standard required by BMC Medicine we will give the authors the option of publication in a subject-specific BMC journal.

BMI is not the best predictor of mortality, waist circumference is definitively better.

Further details about the predictors used for multiple imputation and whether only one or multiple data sets (i.e., multiple imputation) were used for analyses.

Authors need to do their best for explaining in very clear and lay terms the methodology that they have used. They need to use terms that can be understood by the usual average reader of the journal who is not a specialist in advanced multivariable modeling.

Authors need to represent graphically the most important interactions that they have found in order to clarify their meaning, magnitude and direction. The current Figure 1 is complicated and it is not easy to understand. It is essentially a Table instead of a Figure.

There is not any mention or explanation on whether these interactions are only quantitative or they are also qualitative (because they change the direction of the association). The magnitude (size) of the differential effect is perhaps more important than just to state that the interaction term was statistically significant.

The main limitation is that you could not include all relevant predictors in your analyses such as blood pressure or heart rate or ECG findings. There is no mention of educational attainment, marital status or socioeconomic status that can act also as predictors of mortality.

Please include always (also in the tables) the 95% CI for the areas under the ROC curves.

Please correct: Sonofi-Aventis Groupe // Sanofi-Aventis Groupe

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:
I declare that I have no competing interests