Reviewer's report

**Title:** Cardiovascular inflammation in healthy women: multilevel associations with state-level prosperity, productivity and income inequality

**Version:** 1  **Date:** 7 December 2011

**Reviewer:** Luana Giatti

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The association between the macro-level context and biomarkers of cardiovascular inflammation is still little studied. This paper contributes with the study about relation between the context, especially state-level socioeconomics conditions, and atherosclerosis disease. Strengths of the analysis include the extensive individual level data and the ability to examine whether state level factors are associated with inflammatory markers. The statistical analyses also are appropriate for the structure of their test. The manuscript is well-written and cites relevant literature.

**Major Revisions**

1. The manuscript objectives need to be included in the abstract.

2. Objectives of the paper could be clearer. It is clear that the authors evaluated whether state-level socioeconomic are associated with biomarkers of cardiovascular inflammation. However, they investigated the biomarkers variability according to personal household income and state-level socioeconomic conditions and then they conducted a multivariable analysis, adjusting by covariates

3. The hypothesis was included at page 8 last paragraph. It should be removed to the introduction.

4. The household personal income is an important variable in this analysis. Why did the authors use personal household income? Why did they not use other individual socioeconomic indicator?

5. The characteristics of participants with missing data at personal household income suggest that they were participants with more income. What were the assumptions of the procedures used to imputation the missing value for income? Did the approach use considered the possible systematic difference between the complete cases and incomplete cases? If not, what are the implications for the results?

6. What is the propensity score predicting body mass index? A reference about this index should be incorporated.

7. How was diabetes measured? Is it self-reported?
8. What was the average number of respondents per state? What was the range of number of women per state?

9. The results in Figure 1, 2 and 3 showed that hsPCR tend to be most sensitive to variation at state-level socioeconomics conditions. But the results of the multivariate analysis showed that three biomarkers were associated with state-level variables without big difference. What could explain this change in results? What is the importance of the covariates in this change?

10. Could the presence of recent infection or inflammatory disease influenced the PCR level? Are these data available to evaluate?

Minor Essential Revisions

1. The population of the study should be described with more information, i.e, the baseline women’s age, how the participants were recruited.

2. The baseline data was obtained among 1993 and 1996. The state-level data were collected in 1990, except one of them. Could this difference influence the results?

Discretionary Revisions

1. Table 1: Response variables should be distinguished (or highlight) from other variables.

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'