Reviewers report

Title: Breast and prostate cancer: an analysis of common epidemiological features in mortality trends in Spain

Version: 2 Date: 2 October 2014

Reviewer: Kota Katanoda

Reviewers report:

This paper examined the similarities and differences between the trends in female breast and prostate cancers using an APC model and correlation analysis. The presented data will be useful for considering the etiology of both cancers, but, there are several unclear points as follows.

[Major]
1. Authors presented a hypothesis of common causal pathways underlying the two cancers, such as hormonal, metabolic, and genetic factors. If authors depend on this hypothesis, they should discuss the trends or geographical variations in these factors. For example, authors argue that the changes in mortality reflect hormonal changes (e.g. in Conclusions), no data were presented supporting this interpretation.

2. Also, authors attributed the increase in incidence to the spread of screening without referring to screening rate. How the screening rates changed after the introduction of mammography or PSA?

3. Authors discuss in a way that suggests a causal relationship between the decrease in prostate cancer and the spread of PSA screening. The effect of PSA screening in terms of decreasing mortality is still under dispute, even after the accumulation of RCT studies. Therefore, and considering the ecological study design of this study, authors should discuss this point in a more unassertive manner.

[Minor]
4. [Abstract] The sentence “Correlation between the incidence…” is not clear. More specific expression should be used for Results.

5. [Methods] The correlation analysis uses “spatial” correlation, not “temporal” correlation. Please describe it clearly.

6. [Results] The 3rd paragraph (“The change points detected…”) is suitable for the footnote of Figure 1.

7. [Page 6] Please spell out “p.a.”.

8. [Table 3] Regarding the fit of the models, AIC should also be shown.

9. [Methods] APC analysis was done for mortality only? Please note it more clearly.
10. [Figure 4] How do these plots change when the analysis is limited to the populations where mammography or PSA is not spread yet? The correlations are strengthened?

11. [Page 8, last two lines of 1st para.] Unit is missing for 2.8 and 4.6.

12. [Page 9, 2nd and 3rd paragraph] The improvement of survival rate may merely be attributable to the changes in stage distribution. The decrease in population mortality does not come about as a natural result of the increase in survival rate.

13. [Page 13, 3rd paragraph] Authors stated that prevalence of obesity is recently increasing. However, as shown in Figure 1, breast cancer is decreasing both for incidence and mortality. How are these phenomenon interpreted?

14. [Page 11-12] Please cite relevant reports (meta-analysis or comprehensive report) for the relationships between processed-food and cancers.

**Level of interest:** An article whose findings are important to those with closely related research interests

**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.