Reviewer's report

Title: Risk of Tobacco-Related Multiple Primary Cancers in Bavaria, Germany

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Reviewer: Juan Alguacil

Reviewer's report:

The question addressed by the authors is well defined. Authors have estimated the risk of developing a tobacco-related subsequent primary cancer (TRSPC) in persons with a tobacco-related first primary cancer (TRFPC) compared with the general population in Bavaria, Germany. Methods used seem appropriate, and are well defined.

Minor essential revisions:

- The first sentence (with its corresponding bibliographic reference) of the introduction on mortality rates should be replaced for a sentence (with its corresponding bibliographic reference) on cancer survival during the same period in Germany.

Major Compulsory Revisions

- A comment should be added on the methods section on the reason not to provide data on histological type of the tumors. A sentence should be added at the discussion section acknowledging the limitations of not analyzing data by histological type (specially for esophageal, lung, and stomach cancer).

- Results section needs a major revision. Tables 2-7 should be reduced. Six tables for reporting all results is OK for a monograph, but not for a research paper. I suggest that Tables 2-7 are collapsed into two tables (new Table 2 one for each of the digestive tract cancers as TRFPC; and New table 3 for each of the non-digestive tract TRFPC), with the same format as tables 2-7, but that should only include results for which a statistically significant SIRs are found. Current tables 2-7 could be shown as supplementary material at the journal website, or at the authors’ institution website.

- An additional Table (new table 4) should list locations with mutually significantly increased risks. Only the pairs names should be listed (without SIRs and EARs), plus a column on whether the association was consistent for both genders, plus the list of common risk factors for both locations. That Table should be commented at the discussion section.

- The discussion should comment whether differences on cigarette smoking prevalence and intensity between men and women correlate with the magnitude of the differences on the SIRs observed by sex for each location.


- Discussion should also include some comments on the radiotherapy and chemotherapy as sources of Second Primary Cancer. A summary table with the preferred tumor treatment in Germany for each tumor location would be useful. The conclusion should also be toned down, and take into account the limitation of the role of tumors secondary to cancer treatments. I.e. leukemia, lung cancer...

- Descriptive paragraphs on results at the discussion section should move to the results section. Discussion should be limited to the interpretation of the results.

**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