Reviewer's report

Title: Selecting a comparison group for 5-year oral and pharyngeal cancer survivors: Two Methods

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Reviewer: Stewart M Bond

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This manuscript is interesting and, as the authors point out, addresses an important methodological challenge—identifying and selecting an appropriate comparison group—in research on groups with comorbidities and “at risk” health behaviors that may not be present in the general population.

Minor Essential Revisions:

1)Abstract (Results): This section should be reformatted. The authors use a combination of clauses and sentences with differing styles of punctuation (e.g., colons, periods, and semicolons).

2)Abstract (Conclusions): The conclusion should be expanded. This study not only documents the methodological challenges in selecting a comparison group for studies examining the late effects of cancer treatment among older individuals, as stated, but also groups that have disproportionate levels of comorbidities and at-risk health behaviors.

3)Introduction (Fourth Paragraph): The authors bring up tobacco and alcohol lifetime exposure initially in the paragraph but then only mention tobacco use and not alcohol use. Both should be addressed throughout the paragraph.

4)Methods (First Paragraph): The authors should include more information about the primary study. What was the purpose of the 20-minute telephone interviews?

5)Methods (First Paragraph): In the abstract the authors say “a professional call center” in this paragraph they say “professional research center.” These should be consistent.

6)Methods (Second, Third, and Fourth Paragraphs): Recruitment methods should be expanded. For example, the authors state, “A toll-free number was provided for those who did not wish to participate in the study.” It would be helpful to know what steps were taken to pursue those who did not call the toll-free number.

7)Methods (Second, Third, and Fourth Paragraphs): The recruitment flowcharts as referenced in the text do not provide this information and really fit with the Recruitment and Retention section under Results where they are also referenced.
8) Methods (Recruitment): The authors should indicate whether study participants received renumeration for being in the study?

9) Data Analysis (Last Paragraph, Fifth Line): Should state “…similar for the peer group and survivors on these variables…”

10) Results (Matching section): In the first paragraph, the authors state that age, sex, and education level varied between group selection methods. “…the listed sample produced a better match on age and sex than the peer-nominated group…; the peer-nominated group produced a better match on education than the listed sample…” These findings are also presented in the Results section of the Abstract. However, in the first paragraph in the Discussion section, the authors state, “…the quality of matching between the two methods of choosing a comparison group…did not differ except for education.” In the third paragraph, the authors state, “Our results suggest that both methods of selecting a comparison group yield similar matches to the survivor group with the exception of education level.” These should be consistent.

11) Table I: The group data do not always align with the “Characteristic” labels.

12) Table II: How did the authors determine means for categorical variables (e.g., sex and employment)?

13) Table II: It appears that the data are not normally distributed. In describing these characteristics it would be helpful to present medians and interquartile ranges. Does this have implications for the statistical techniques used? Since the authors emphasize, older cancer survivors in the text it would be helpful to know what the range of ages is for this sample.

14) Table II: The authors should indicate what resulted in the varied group sizes noted in the Table footnote.

I do not feel adequately qualified to assess the statistics. I believe that the manuscript should be reviewed by an expert statistician before a recommendation can be made regarding publication.

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**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.