Author's response to reviews

Title: Relationship between tooth loss and mortality in 80-year-old Japanese community-dwelling subjects

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Author's response to reviews: see over
Dear Prof. Pafitis;

Thank you very much for your reply as well as sending comments from the Reviewers concerning our manuscript (MS: 8284165272983197). After reviewing those carefully, we made several changes to the text and believe that our study has been greatly improved. We trust that this revised version is now acceptable for publication in *BMC Public Health*.

Changes in the revised manuscript are highlighted in yellow. In addition, our responses to the reviewers are shown following. We sincerely thank the reviewers for their valuable insights and you for your interest in our work.

Yours sincerely,

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Following are our replies to the comments of the Reviewers:

Referee 1:
1. Study population: Do the 1282 individuals represent the entire population of Kyushu Island who were 80 years old?
   This study was designed as an investigation of 80-year-old population residing in the eastern area of Kyushu Island. The 1282 individuals initially contacted were all known 80-year-old individuals living in that eastern area in the 9 locations described in the text. The percentage of 80-year-old
individuals in those 9 locations was approximately 0.62% of all residents, while the percentage of all 80-year-old individuals residing in Kyushu was approximately 0.64%. We considered that the 1282 individuals initially contacted are representative of the entire population of Kyushu who were 80 years old at that time. Additional explanation has been added to the Methods section.

2. What is the power of this sample?
Power analysis was performed using the software “package G-power”. The statistical power of this study was found to be 87%, with sample sizes of 540 for n1 and 157 for n2, an effect size of 0.25, and an α value of 0.05 set (two tailed t-test with accuracy mode), which demonstrated reasonable power. This information has been added to the Methods section.

3. What is the right number?
The correct number is 108 of the subjects (58 males, 50 females) and the sentence has been changed in the revised version.

4. With regard to the two “males” in the Discussion section
The last “male” has been removed according to the comment.

Referee II:
1. With regard to editing of the text on page 5, last paragraph.
The sentence has been rewritten according to the comment.

2. Why 4 and 5.5 years interval were chosen?
The initial investigation was designed to cover the 4-year and 5-year periods from 80 years, after considering that Japanese life expectancy was 79.3 years old in males, and 86.1 years old in females. Actually the second investigation was performed at the age of 85.5 (not 85.0).

3. Was there any a priori sample size calculations?
Power analysis and sample size estimation were performed using the software “package G-power”. Before the investigation, a priori sample size calculation was found to be 620, with an effect size of 0.20, α value of 0.05, and β value of 0.20 set (t-test with accuracy mode), which suggested that 697 subjects was a reasonable sample size for the analyses.

4. What accounts for the difference between the mortality at 5.5 vs. 4- year follow-up of never-smokers males?
There are two possible explanations for this difference. One is related to the small number of mortality events among the males (11 of 78 subjects) during the 4-year follow-up period, as statistical power for 5.5-year events (n = 17) showed an increase of ~20% compared to that for 4-year events. Another possibility is related to survivor effects. In subjects who survived to age 85.5, the effect of smoking may have been reduced, allowing other covariates such as tooth loss to become strongly associated with outcome. These explanations have been added to the Discussion section.

5. What are possible reasons of a response rate of 54%?
We agree that this is an important issue. The response rate was related to the location of residence and individual health-oriented behavior. Individuals who lived in town areas showed, and who regularly attended check-up examinations by a family doctor or dentist had higher response rates.