**Reviewer’s report**

**Title:** Annual Alveolar Bone Loss in Older Adults Taking Oral Bisphosphonate: A Retrospective Cohort Study

**Version:** 0  **Date:** 21 Jul 2019

**Reviewer:** Fabian Cieplik

**Reviewer's report:**

This study investigates the annual alveolar bone loss in a cohort of patients taking oral bisphosphonates (BIS) as compared to a control cohort without BIS over a period of 2 years. Although the topic of this study is interesting in general, there are a few aspects that need revision before this study may be ready for publication.

**Introduction:**

- In. 55-62: Most of the Ref.s cited here are quite old.. Aren't there more recent studies on that topic?

- In. 70-94: I would expect to add some detailed information about the BIS-related risks like osteonecrosis of the jaw (MRONJ)

- In. 96: "older adult patients" Please add information on the gender of these patients as most of the studies cited above included post-menopausal women

**Material & Methods:**

- please add information about ethical approval here (although this is also stated later in the Declarations section)

- In. 106/107: "as well as to show at least 2 posterior approximating teeth" Does this mean that most of your analyses are based on data from two teeth (i.e. one inter proximal bone loss) only? Is this really representative for a whole patient?

- The sample size of 26 patients in each group seems to be quite small for a case-control study. Furthermore, I am a bit surprised that there were only 30 patients with medical history of BIS-intake in the electronic health record of the Harvard Dental Center between 2008 and 2015?!

- In. 135/136: "one trained examiner" Please state initials of this examiner
Discussion:

- In. 200: mentioned instead of "mention"

- Please add much more detailed discussion and careful consideration of potential benefits of BIS in Perio patients as opposed to the risks of MRONJ with BIS. What about the risk of MRONJ with locally administered BIS (e.g. 1% alendronate gel)? Is there any data on that as compared to systemic intake of BIS?

- Please add a more detailed conclusion on whether BIS may be worthwhile further investigation as an adjunct in periodontal therapy.

Tables/Figures:

- Table 1: Instead of mean age, I would suggest to state median age as well as 25/75% percentiles. It is not clear to me, why a standard error is given for percentage of females or percentage of mild, moderate or severe periodontitis? This seems not be necessary?! (also applicable to the other tables)

- Table 4: What do these codes mean?! Why are they stated here? Were these periodontal therapies related to the measured teeth? For example if only teeth 36/37 and 46/47 were measured for alveolar bone loss in a patient, a periodontal surgery with GTR on tooth 16 may be not relevant.

- Figure 1: it may be better to show this data as a dot plot with one axis stating house income and the other stating periodontitis severity.

- Figure 2: is this figure really necessary?! Furthermore, it seems implausible to me that the measured values are only at baseline (timepoint "0") and after 2 years (timepoint "2") because (as far as I understood from the materials & methods section, ln. 105) patients were included when they had radiographs with an at least one-year interval. Therefore, there may be several values between baseline and 2 years?

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes
Are the conclusions drawn adequately supported by the data shown?  
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?  
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

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Please indicate the quality of language in the manuscript:

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