Reviewer's report

Title: Relationship between Bone Mineral Density and Remaining Teeth and Its Related Physiological Factors in Postmenopausal Women

Version: 3 Date: 11 February 2015

Reviewer: Marushka L Silveira

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This is an interesting article about the association between bone mineral density and teeth retention among postmenopausal Korean women.

Minor Essential Revisions
1) Suggest stating the study population ‘Korean women’ in the title.
2) Line 58: typo ‘relate’ and ‘ageing’.
3) Line 84: Grammar error ‘can be happen’
4) Line 129: Suggest mentioning the number of participants for whom a right femur was measured instead of the left measure.
5) Line 131: Suggest including a reference for the T-Score.
6) Line 142: Suggest rewording childbearing age to ‘age at first child’s birth’.
7) Suggest stating the SAS version used.
8) Line 161: Suggest including the standard deviation and range of age.
9) Lines 162-163: Approximately half of the participants had osteopenia would be more accurate instead of most participants.
10) Line 166: typo ‘loner’
11) Line 167: longer duration of oral contraceptive is associated with osteoporosis.
12) Line 233, 239: Grammar error ‘will be need’, ‘is need’ and ‘to women suffer from’
13) Table 6: Recommend reporting standard errors. Suggest restricting all p-values and estimates to 2 decimal places.

Major Compulsory Revisions
1) Abstract: The authors state that prior studies proposed a relationship between osteoporosis and oral health, but do not report the observed direction of the association. Also suggest highlighting the research gap. Recommend specifying that the study is cross-sectional in design as the line ‘were held from 2008 to 2011’ could suggest a prospective design. In the sentence ‘were assessed by trained researchers’, were the researchers blinded to study hypothesis, if not, there is likelihood of bias. In the results, would suggest specifying the direction of association for the main variables of interest. The authors should be careful of
overstating the implications of their findings, given the cross-sectional nature of the study.

2) Suggest that the authors briefly explain the relationship of bone mineral density to osteoporosis and recommend that they consistently use either ‘bone mineral density’ or ‘osteoporosis’ as their variable of interest.

3) Line 87: Suggest defining and stating the role of osteophage and osteoblast.

4) Line 101: It is not clear what has a common pathway. Could the authors elaborate.

5) Line 104: Could the authors elaborate which countries, and how it relates to trends in Korean women.

6) 108: Suggest avoiding the use of ‘cross-sectional’, thus recognizing the possibility of other prior studies in general.

7) I have some concerns regarding the appropriateness of combining data from the two surveys. Could the authors clarify if the target populations and sampling design differed between the two data cycles.

8) Lines 135-137: the text in the abstract should match the main text regarding the examiners conducting dental and bone assessments. The abstract states that trained researchers conducted the examination, while in the main text, it is stated that radiological instrument technicians and dentists conducted the assessments.

9) Line 146: The authors should justify why the normal and overweight categories were combined.

10) Line 150: It is not clear what the authors mean by ‘integrating’

11) Lines 151-152: Suggest stating which variables were analyzed using the tests specified. The sentence could be broken down to describe univariate, bivariate, and multivariable analyses separately while referring to the respective tables.

12) Could the authors clarify if remaining teeth met the normality assumption for linear regression.

13) Line 155: Not clear what the authors mean by ‘affected’.

14) Suggest justifying why a path analysis was conducted. At present, it is not clear.

15) The authors should provide greater detail in table 1, highlighting the key socioeconomic and health-related characteristics of the participants.

16) Tables 2, 3, 4, and 5: P-values for analyses on remaining teeth incorrectly calculated from Chi-square tests. ANOVA would be a more appropriate test.

17) Lines 169-173: Suggest reporting results from tables 3 and 4 separately. As the authors stratified by age, they should consider commenting on whether the association between physiological factors and BMD and remaining teeth differed according to age. Specifically, was there evidence of effect modification?

18) Lines 179-182: the regression estimates need to be interpreted, especially in the context of the clinical relevance of a unit change in the remaining teeth.
present.

19) Lines 186-195: Suggest including a path diagram to better explain findings and more detailed report of findings from the path analyses. The authors should consider interpreting the magnitude and direction of observed associations, as stated by the primary aim.

20) Lines 212-213: suggest rewording as the sentence is unclear. Suggest using separate paragraphs for each aim to discuss the observed findings and their relation to prior findings.

21) The authors should also consider commenting on the results from the path analyses and how it relates to findings from the regression analyses.

22) Although, findings are interesting, there is need for replication in further prospective studies, which should be acknowledged in the discussion. Finally, if replicated, the authors should comment on how these findings can be translated to policy and practice.

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

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

**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