Author's response to reviews

Title: Association between Diabetes related risk factors and clinical periodontal parameters in Type-2 diabetes mellitus

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Author’s response to reviews: see over
Dear editor,

We deeply appreciate that you reviewed with your sincere consideration about our manuscript. We tried to do our best to answer your questions which are very critic and important to improve this research. What we have done for your comment is as follows:

1. Some of the basic language of the manuscript needs revision. From the outset, periodontal diseases should be considered as discrete. i.e., gingivitis, which is exceedingly common, is not the same as periodontitis, which is rather less common. When this is done the authors will not say that periodontal disease is common, and they will realise that gingivitis and periodontitis do not exist on a continuum, which will influence their analysis.

   Answer:
   We changed the expression “periodontal disease” to “periodontitis” in 7 sentence. We revised as follows.

   -> periodontitis occurs primarily in adults and its incidence increases with age.
   -> The prevalence of periodontitis is higher and its symptoms are more severe in individuals with diabetes, compared with non-diabetics.
   -> Frequently observed oral conditions in patients with diabetes include dental caries, xerostomia (dry mouth), tooth loss, gingivitis, cheilitis, increase of glucose level in saliva, and periodontitis.
   -> Other research groups have reported that the prevalence of periodontitis increased with the duration of diabetes.
   -> Periodontitis is reversible in patients with well-controlled diabetes and the outcome of its treatment in patients with diabetes is similar to that in non-diabetics[25].
   -> In addition, periodontitis is preventable with adequate oral hygiene practice[31].
   -> To conclude, self-care of diabetes and good oral hygiene practices are important in reducing the extent of periodontitis among individuals with type-2 diabetes.

2. The authors need to define terms such as HbA1c when they use them.

   Answer:
   We defined HbA1c in material and methods section as follows.

   -> Information on HbA1c, expressed as the percentage of hemoglobin that is glycosylated and FBG were collected from the medical records of participants who had visited hospital regularly, with their permission.

3. Although the main paper starts off by being careful about attributing cause and effect, parts of the manuscript, especially the abstract see the observed relationships as causative. This is not
possible in a cross-sectional study.

Answer:
We agreed with reviewer’s comment. We revised as follows in abstract.

-> The aims of the present study are to describe periodontal health status of individuals with type-2 diabetes and to explore the relationship between diabetes related factors such as glycosylated hemoglobin, fasting blood glucose, duration of diabetes and compliance to diabetes self management and periodontal health status.

4. In addition, although the authors use multiple regression analysis, their design does not wholly account for confounding. The authors need to account for confounding between oral health behaviours (toothbrushing, tobacco use, dental attendance, diet and consequently periodontal health) and the factors that caused diabetes in the first place (eg diet) and each person’s ability to manage their diabetes (eg diet).

Answer:
In multiple regression analysis, we already accounted for confounding factors (gender, age, smoking, drinking, education level, frequency of tooth brush, oral health education and perceived self-oral health status) but just missed out comment about confounding factors. So we add comment to the table4 as follows.

-> *Adjusted for gender, age, smoking, drinking, education level, frequency of tooth brush, oral health education and perceived self-oral health status.

5. Diabetic Sick Role Behaviours is a complex construct that is not easily measured. The authors should describe how their interview schedule was devised, how it was operationalised for the analysis and how the data were validated.

Answer:
We appreciate the reviewer’s comment. We used the term, Diabetic Sick Role Behaviours just to express the extent of compliance to diabetes self management. We agree that “Diabetic Sick Role Behaviours” is too complex construct to express our intention. So we change this term to “compliance to diabetes self management” and revised as follows.

-> By assessing compliance to diabetes self management, which describes the degree to which a patient correctly follows medical advice about self management of diabetes such as diet, medication regimen and exercise, we tried to evaluate the relation between behavior factor of diabetes patient and periodontal health.

-> Questionnaire on compliance to diabetes self management, modified from the questionnaire developed by Park(1985) consists of 15 questions (4 questions about diet control, 2 about exercise, 2 about insulin treatment, 6 about self-monitoring blood glucose and general
management, and 1 about diabetic education)[22,29]. Each question was rated on a 4-point Likert scale (1 = all of the time and 4 = never) with higher scores indicating poor diabetes management. Mean value of all question was calculated individually.

6. Reliability data are required for all the clinical examinations.

Answer:

We appreciate sincerely to point out what we have overlooked. We are very sorry that we did not measured intra-examiner error. In spite of that, we think that result of oral examination may be reliable because one trained dentist performed oral examination and panoramic x-ray view of all subjects was taken. We hope for your indulgent view of this shortcoming.

7. The analytic strategy should describe how each of the variables was handled. For instance both CPI and Russells Index are ordinal indices that are treated as numeric data in the tables. This is of particular concern because these indices aggregate both risk factors for disease and signs of disease. A more valid way of using CPI is to treat it as an ordinal index and to describe the proportion of participants who reached each category (eg X% had a CPI score of 4).

Answer:

We totally agree with reviewer’s comment. But we needed to treat CPI as numeric data, considering for following feature of this study. As mentioned in introduction, the prevalence of periodontitis is higher and its symptoms are more severe in individuals with diabetes, compared with non-diabetics. Because this study was aimed at subjects with type-2 diabetes mellitus, 88% of subjects had CPI score of 3 or 4(35.2% had a CPI score of 3, 52.8% had a CPI score of 4) meaning periodontitis. Just 12% of subjects had CPI score of 2. Therefore we calculated average value of CPI of 6-tooth to differentiate each subject and to facilitate comparison statistically. If it is essential to treat CPI as ordinary index, we can do that in next revision of maunuscript. We hope to have chance to be informed in next review whether to treat CPI as ordinary index is necessary or not.

8. Russell's Periodontial index is little used now and largely duplicates CPI so it should be deleted entirely.

Answer:

We entirely agree with reviewer’s comments. Russell’s periodontal index is little used for various reasons i.e. it needs to take x-ray view to measure alveolar bone level. But as mentioned in discussion section of manuscript, this index has the merit of being objective because of x-ray view. In spite of many merit, CPI has weakness i.e. sensitivity to individual error according to examiner’s finger pressure and examinee’s response when measuring periodontal pocket depth.
Therefore we thought that combining of the two methods (CPI, Russell index) is helpful to assess periodontal health more accurately. But we respect reviewer’s opinion very much. If it is essential to delete Russell’s PI, we can do that in next revision of manuscript. We hope to have chance to be informed in next review whether deletion of Russell’ PI is necessary or not.