Reviewer's report

Title: Periodontal status and related variables: A cross-sectional feasibility study of the German National Cohort

Version: 2
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Reviewer: ABDULLAH Sulaiman ALSWUAILEM

Reviewer's report:

1. Is the question posed by the authors well defined?
   The aim of the study as stated by the authors in lines 131-132 “to provide an overview of the prevalence of periodontitis on the basis of the data collected in this feasibility study and to report factors which are related with this outcome” is somewhat vague and general. Authors are advised to be more specific in addressing the aim of the study.

2. Are the methods appropriate and well described?
   ... Authors did not clarify why these four states (or centers) (i.e. H, A, B, & G) were selected. ... Also authors did not elaborate much on the inclusion and exclusion criteria for their sample.
   ... Authors did not specify the response rate. 311 subjects agreed to participate, but no mention of the total number of subjects requested to participate.
   ... In the study, clinical (oral) assessment was performed by hospitals’ nurses trained by experienced dentist. Nevertheless, this paper did not report intra-examiner and inter-examiners reliability. This important when we consider that assessment was performed by several nurses in different centers and that fact that inaccuracy in measuring periodontal pocket is a common problem even with experienced examiners.
   ... In the study, presence of periodontal disease was assessed using PD pocket depth as described in CPITN. Although many studies have used CPITN to assess the periodontal status, however, it is well recognized that periodontal pocket depth measurement may not accurately measure the periodontal disease (invalid method). Clinical attachment loss is the best available method to assess periodontal disease .Take for example this scenario. If a patient has a pocket depth of 3 mm and there is a 2mm gingival recession. Based on the method utilized by authors this tooth will be labeled as no/mild PD where in fact it should be labeled as moderate PD. Authors acknowledge this fact in the discussion section (line 337-43).
   ... I would have loved to see consistency in the assessment across different participating centers. For example, half-mouth measurement was carried out on H center and full-mouth in other centers. Also, BOP was not performed in G center and performed in other centers. In the assessment of dental status parameters (lines 173 – 176), full-mouth for all centers except B center. No
explanation for this lack of consistency was mentioned in the paper. In same issue of lack of consistency, authors indicated that measurement of PD pocket was performed at least in 2 sites (lines 159 – 160). This suggests to me that determination of the number of sites examined in each tooth was left to each examiner.

... Authors indicated that data for Berlin were adjusted to full mouth (line 175)..<br>The authors did not elaborate on the method they have used to do this adjustment. I am assuming that the value was multiplied by 2. If this is the case, one would wonder if such process would produce a valid score as in many instance a patient may have a crown on the left side not the right.

.....it would have been nice if the quantity of alcohol consumed was assessed along with alcohol frequency.

... Authors used specific blood parameters and did not elaborate why they have used these parameters and not others more important markers such as C-reactive protein.

3. Are the data sound?

In line (215-6): In contrast to the sites of BOP the distribution of PD differed significantly between study centers (p=0.001 and 0.35). Not quite sure if I understand this sentence correctly and whether the authors mean p=0.001 and p=0.35.

Since there were fewer subjects in the 6+ mm of pocket in different centers (N=45), would the authors consider merging the whole data into one set and consider it for analysis as a one center?

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?

Yes

5. Are the discussion and conclusions well balanced and adequately supported by the data?

Yes

6. Are limitations of the work clearly stated?

... Authors used self-reported diabetes. Diabetes in many instances might be a silent disease and using self-reported status of D may lead to underestimation of the disease.

Authors reported the difficulty of obtaining reliable reading from nurses. Also, they highlighted the importance of using clinical attachment loss which was not used in this study.

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?

Yes

8. Do the title and abstract accurately convey what has been found?
to me the title is somewhat general and do not provide the reader enough knowledge about the content of the paper.

9. Is the writing acceptable?

In line 183 authors stated that “School education was grouped in two levels as A-Level (13 years) and less.” I believed this sentence need to be rewritten to reflect clear description of the two levels.

In line 265-6 authors stated: “In future analyzes oral hygiene should be noted at least in a questionnaire.” Would suggest changing the word analyzes to analyses. And again in line 340

In line 290-3 authors stated: “However, in case of periodontal diseases blood parameters have to be treated with caution. Whereas other variables could have a direct causal link to periodontitis, higher values of laboratory parameters like leukocytes and HbA1c might be due to inflammations. Hence, interpretation of results based on laboratory parameters is limited.”

Would suggest adding few words to explain the sentence:

“However, in case of periodontal diseases blood parameters have to be treated with caution. Whereas other variables could have a direct causal link to periodontitis, higher values of laboratory parameters like leukocytes and HbA1c might be due to inflammations from other parts of the body. Hence, interpretation of results based on laboratory parameters is limited.”

Authors may need to consider rephrasing this sentence (line 299-301) to make it more coherent. “ These findings are in concordance with literature, where a significant increase of leukocytes in subjects with periodontitis compared to healthy subjects in most of the reviewed articles [48] is shown.

…. Authors used a reference in line 304 (Nemeth, Rivera et al. 2004). This reference is not listed among the references of this paper. Also, the style used in mentioning 2 authors followed by et al is not commonly used in literature and not consistent with the style used by the authors in this paper.

Authors used this term SOPs (line 314) (possibly: standard operating procedures)

without referring to definition of this term for readers who may not be familiar with this term.

General:

In line 97 authors stated that “Periodontitis is a chronic infectious disease which results in biofilm formation on root surfaces and subsequent destruction of periodontal tissue.” Authors are advised to rephrase to acknowledge that fact periodontitis is believed to be caused by host reaction to pathogenic bacteria present in the biofilm in periodontal pocket.

In line 104 authors stated that periodontitis “leads to higher risk for ischemic [18, 19] and hemorrhagic stroke [20], cardiovascular disease [21, 22], myocardial infarction [23, 24] and systemic diseases [25, 26]. There is existing low evidence that suggest a possible association between PD and aforementioned medical
conditions. Hence, the statement would be probably better rephrase like “it may lead to higher risk for ischemic… etc ”

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

**Quality of written English:** Acceptable

**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