Reviewer's report

Title: Factors associated with having less than 20 natural teeth in rural adults: A cross-sectional study

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Reviewer: Marco Peres

Reviewer's report:

This study aimed to examine the prevalence of number of remaining teeth and associated factors by using a convenience large sample of adults from a rural area of Taiwan. This is a timely and relevant theme in oral health research. However, the present manuscript presents some important theoretical and methodological shortcomings which should be carefully addressed by the authors. As the authors stated, by adopting a convenience sample is not possible to generalise the study’s findings. However, it is important to ensure study’s internal validity by using validated instruments, adopting rigorous data quality control measures, and performing appropriate statistical analyses.

Specific comments

Abstract
Refrain from using p values; 95% Cis are more informative.

Introduction
The rationale for the study and the biological plausibility of the association (if causal) between metabolic syndrome and tooth loss should be described. It is important to justify what new knowledge this study adds to the field.

I would suggest including, where possible, systematic reviews on the relationship between tooth loss and general health.

Contrarily to what the authors state (page 2, lines 71 to 74; and also in the discussion section, page 10, lines 246 and 247), there is no evidence that flossing the teeth daily and undergoing dental check-ups every 6 months may prevent dental caries and tooth loss. The references to support such strong statement are weak (23-24). Again, please use strong and well design studies, ideally systematic reviews with meta-analysis, to support such statements.

Methods
The authors should explain how the sample was calculated (by providing some parameters) and selected; and if the interviewers were blinded. All used instruments for data collection should be referenced or explained in details. The validity of self-reported number of teeth in this particular population must be informed.

There is no clear justification of why using t test for comparisons when the NRT is a discrete outcome variable. Have you tested the normal distribution of the outcome? It seems to me very unlikely the number of dental teeth have a normal
distribution. Also it is important to justify the use of logistic regression given that the prevalence of the outcome is relatively high.

The authors should explain the multivariable modelling; the criteria to enter and to keep variable in the models; and which variables (and why) were considered confounders.

Results

Please refrain from repeating what the readers can see in the tables and the use of too many p values. I suggest replacing ± with 95% confidence intervals which are much more informative.

Discussion

The bidirectional association and potential temporal ambiguity between the main exposure (metabolic syndrome) and tooth loss should be discussed. As aforementioned the items related to the study’s internal validity must be addressed.

Level of interest: An article of limited interest

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