Reviewer’s report

Title: Risk for cervical herniated intervertebral disc in dentists: a nationwide population-based study

Version: 0 Date: 15 Oct 2018

Reviewer: Samannaaz Khoja

Reviewer's report:

This study is an interesting analysis of the risk of cervical herniated intervertebral disc in dentists using a national insurance database in Taiwan. While the study addresses a topic that is not well researched and brings up an important occupational concern for health care professionals, the rationale to support the current study is not articulated well in the introduction. Also, the methods section has several areas that need clarification or re-organization. I would recommend that the authors use the STROBE statement (www.strobe-statement.org) while revising the manuscript. Using the STROBE as a guide will help ensure that vital information necessary in the reporting of observational study designs is communicated to the readers. My specific concerns and comments related to the manuscript are detailed below:

Introduction:

1) Rationale to conduct the study is not compelling: The authors are requested to provide some more background related to their concern of a greater risk of C-HIVD in the dentist population. For example, what are the typical working hours and typical procedures that require prolonged forward head posture? How much time is spent during these procedures in forward-head during a procedure that would increase their risk to C-HIVD more than other health care providers. Providing this information would potentially support the argument for conducting this analysis. Also, in general what is the average prevalence of neck disorders in dentists and is it higher than the general population or other health care providers? While there are references (#4, 6, 7, 8) from studies that have investigated neck disorders in the dentists, there is no discussion about what those studies found and how those results support the current analysis. Authors are requested to provide additional information to support their study rationale.

2) Please state the study aims (and/or hypothesis) at the end of the introduction. This sentence is missing from the introduction.
Methods:

1) Please state the study design: this seems to be a retrospective cohort study using a national database, but it is not mentioned in the methods section.

2) The information about the database is slightly confusing. The authors mentioned they used a 2009 registry. Was the data in this registry only cross-sectional or did it include data on dentists prior to 2007 and five years after 2011? Also were ICD9 codes identified from the same insurance database?

3) Could the authors clarify the data collection and follow-up period? In the methods you mention that you identified dentists between 2007 and 2011, but later in results you mentioned that you calculated the 5-year cumulative incidence. Did you follow your study sample for 5 years post 2007-2011? Was follow up period from 2012-2016? Please clarify in the text.

4) The eligibility criteria is confusing to follow. The authors note that dentists with a C-HIVD prior to 2007 were excluded but there is no explanation following this exclusion criteria. Several paragraphs later the authors mention they intend to calculate incidence rate which explains why prior C-HIVD was excluded. However, this explanation should immediately follow the exclusion criteria of prior C-HIVD. Please re-organize and include this sentence within the paragraph for study inclusion/exclusion.

5) For the two matched groups: Were both the general population and health care provider groups matched with the dentists on age and sex? Please clarify in text

6) Statistical analysis: The authors need to include how cumulative incidence over 5 years was calculated from the variables in the dataset. You mention that you traced medical histories of dentists between 2007 and 2011, which is only two years. This point will be clarified if you provide the period of follow-up.

7) Please provide some supporting statement for selecting the underlying comorbidities and controlling for them in the analysis. Why was BMI or obesity not included?

8) The number of dentists, general population, and health providers in the sample is right now in the middle of the methods section (page 9, line numbers 8-13) . I would suggest move this to the beginning of the results section since this is an observational study design. Alternatively, this sentence can be moved closer to the beginning of the paragraph under "Identification of dentists, general population and health care providers"
9) What was the rate of missing data in this study? How big is the registry and how many dentists had missing information on diagnosis or comorbidities etc, and had to be excluded from the analysis?

Results:

1) 5-year cumulative incidence is mentioned for the first time in the results section. Please indicate in the methods how this was calculated.

Discussion:

1) It would be beneficial if the authors provided some discussion on the future directions for this research. How do you intend to build on this research if these findings are validated in other studies. If younger dentists have a higher risk of cervical herniation, how would this impact the dental profession? And would there be preventative measures that can be implemented in their work environment?

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

No

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?
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