Reviewer’s report

**Title:** Nitrous oxide occupational exposure in conscious sedation procedures in pediatric dental ambulatories: a pilot retrospective observational study in an Italian pediatric hospital

**Version:** 0  **Date:** 12 Aug 2018

**Reviewer:** Pedro Christian Aravena

**Reviewer’s report:**

The purpose of this article is to evaluate the nitrous oxide exposure of the pediatric hospital staff.

While the article is interesting, the content of the text requires a selection to improve the compression of its content.

Summary.

The study design is not clear. I suggest to describe like a descriptive study design with two phases: a bibliographic analysis on the environmental safety policies and gas concentration analysis in the dental office, indicating dates of study, number of clinics evaluated and statistical analysis of the data.

The researchers say that "the results obtained from the analysis of the biological samples were compared with those that arise from environmental monitoring" and then says "No differences were found in the environmental concentrations of nitrous oxide recorded for the various types of dental procedures performed." However, there is no a statistical test that allows us to conclude this assertion. I suggest analyzing.

Introduction:

It presents the necessary foundations to do the study. However, the bibliographic analysis can be included in this item, as well as the presentation of the questions in dental care.

Methodology

Although it has a clear order, it has some important flaws of methodological information such as: Study design, selection criteria for dental clinics and personnel involved in analyzing, type of sample taking place (dental office, surgical room), handling protocol of urine samples and statistical tests to compare gas concentrations according to the type of dental procedure (written in the manuscript summary).
An approval certificated (informed consent, ethics committee) is required given the handling of biological material of the participants.

Result:

The researchers do a detailed analysis of the health policies of the Italian Ministerial Memorandum and some architectural recommendations and pediatric dental clinics. However, it is important to add some inter-national data on gas concentrations such as:

- The American Conference of Governmental Industrial Hygienists (ACGIH) has assigned a limit value (TLV) of 50 ppm (90 mg/m3) as a TWA for a normal 8-hour workday and a 40-hour workweek [ACGIH 1994, p. 28].
  (http://www.osha.gov/SLTC/healthguidelines/nitrousoxide/recognition.html)

- National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limit (REL): 25 ppm, 46 mg/m3 TWA over the time exposed
  (http://www.cdc.gov/niosh/npg/npgd0465.html)

- ICSC International Standards specifically warns that exposure should be avoided by pregnant women (http://www.cdc.gov/niosh/ipcsneng/neng0067.html).

The type of dental procedure and the concentrations of the gas proposed in the summary are not described.

It is not clear why there are no measurements in all study participants (e.g. II Nurse, II Dentist, Physician)

Discussion

The proposed text bases the observed results. However, a comparative analysis of other studies showing environmental concentrations of Nitrous Oxide in other medical and dental procedures is lacking.

In turn, this item can be complemented with the bibliographic analysis made in the results.

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

Yes

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

No
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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I recommend additional statistical review

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