Reviewer’s report

Title: Relative analgesia and licensed dentists: practices and opinions interplay from a national survey

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Reviewer: Jason H Goodchild

Reviewer's report:

This manuscript describes a very small survey of Brazil dentists’ use and opinions on nitrous oxide and oxygen sedation; termed ‘relative sedation’ by the authors. It becomes obvious very quickly that clarity and comprehension of the manuscript could be improved by an English language editor. The study suffers from some flaws, most notably the small sample size. Additionally, the manuscript is sampling the Brazilian dentists who are already trained to do nitrous oxide and oxygen sedation; it would have been more helpful in understanding opinions on its use/non-use if non-trained dentists were included as well. To only include the trained dentists (i.e., having completed the BCD 96-hr certification course) creates a bias towards nitrous oxide because presumably the certification course was voluntary. Put another way, the authors sampled individuals predisposed to a favorable opinion on nitrous oxide and oxygen sedation, and excluded others that may not have gotten certified because of unfavorable opinions, costs, or unrealized value of the technique.

Considering the total number of dentists in Brazil, this was an extremely small sample.

Other issues with the manuscript:

1) The Title should be revised so that “nitrous oxide and oxygen sedation” is included somehow. For example: Relative analgesia (nitrous oxide and oxygen sedation) and licensed dentists: practices and opinions interplay from a national survey of Brazilian dentists.

2) Abstract, Background, page 2: “relative analgesia’ should be defined in the first sentence. Perhaps like, “Relative analgesia (RA), defined as the use of inhalation sedation with nitrous oxide and oxygen, has been used as one ...”

3) Abstract, Results, page 2: The authors should consider revising the sentence, “Through nine statements intended to measure...” for clarity and comprehension.

4) Key Words, page 3: ‘Relative Analgesia’ should be added

5) Background, page 3: The first sentence, “Relative analgesia (RA) refers to the use...” is almost a direct quote from another publication (Saudi Dental Journal 1994;6:35-41.) Pulling up the Saudi Dental Journal article (titled, Use of Nitrous Oxide Relative Analgesia in Children) it is suggested that the term relative
analgesia was originally introduced by Guedel in 1937 and refers to the first stage of analgesia attained during nitrous oxide and oxygen sedation. Furthermore, relative analgesia is not a commonly used term to describe nitrous oxide and oxygen sedation in the United States and has been considered confusing by at least one author (Emerg Med J 2004;21:646-647.). If the authors choose to use the term relative analgesia in this manuscript they should clearly define it, including its origins.

6) Background, page 3, first paragraph, second sentence: “RA aims at helping fearful and/or anxious patients…” This sentence should be revised for clarity and comprehension. Nitrous oxide and oxygen sedation doesn’t really help patient feel more confident, it makes them feel more relaxed. If fearful/anxious patients are more relaxed than they may more easily tolerate invasive dental procedures. It doesn’t take away fear/anxiety, but rather facilitates coping.

7) Background, page 3, second paragraph, second sentence: “Nevertheless, even in countries where…” A reference should be provided for this sentence.

8) Background, page 3, second paragraph, third sentence: “General dental practitioners in the United States, for example…” The authors cite an article published in the International Journal of Pediatric Dentistry that is a survey of dentists in Northern Ireland.

9) Methods, page 4: Was this survey undertaken with help or assistance from the BCD? How did the authors get the complete names of the dentists who completed the nitrous training course? The authors should describe how they got this information. Is it freely available online? Why did the authors limit the survey to only email? With such a small sample size regular mail is feasible. Approximately 10% of the potential sample size did not even have an email address.

10) Methods, page 4, second sentence: Should the sentence be, “According to the BCD, there were 652 licensed dentists…”

11) Methods, page 4, 6th sentence: “From 652 eligible dentists, 305 were excluded because they could not be localized…” What does this mean? They could not be located?

12) Methods, Questionnaire Development, page 5: In the development of the survey questionnaire the authors tested it on a total of 22 dentists. Were these same dentists also surveyed during the data collection period and were their responses included in the results? This may introduce bias in approximately 8% of the sample size (22 of 281).

14) Methods, Data collection and analysis, page 6: How were complete questionnaires returned? By email, fax, mail?

15) Results, page 7: The final sample size was quite small (136-9=127). Considering the population of Brazil (~195 million) and the number of dentists (~160,000), this sample size is extremely small.

16) Results, page 8, first sentence: “Considering RA practice as a dependent variable (yes or no)…” Again, this is a survey of dentists that have all taken the certification course. The better question is why are the dentists not using RA who have completed the 96-hr certification course? Cost? And assuming that there are 160k dentists in Brazil, 652 dentists represents 0.4% of dentists in the country. Why don’t the other 99.6% of dentists in Brazil offer the service or attend the certification course? Why isn’t nitrous oxide and oxygen sedation training offered in the dental school curriculum like in other countries? Also, I do not understand the number in this sentence [i.e., 76% (n=76)], the authors should check this.

17) Discussion, page 9, second paragraph: “As these kinds of deficiencies are easily identifiable, we hypothesize that this group of dentists…” Was this tested? Consider replacing ‘hypothesize’ with ‘suspect’. The same for the last sentence of the same paragraph.

18) Discussion, page 9, last paragraph: This should be revised to include the American Dental Association’s position on the provision of nitrous oxide and oxygen sedation by dentists.

19) Discussion, page 10, second paragraph, first sentence: “Respondents usually agreed that RA has favorable…” This sentence needs to be revised for clarity and comprehension.

20) Discussion, page 10, second paragraph, fourth and fifth sentences: Are these sentences basically the same. Please revise. What are the cultural aspects that contraindicate nitrous oxide use? Is nitrous oxide equipment and gas really cost prohibitive?

21) Discussion, page 10, second paragraph, last sentence: What are the environmental risks of nitrous oxide? Are the authors referring to nitrous oxide’s effect on greenhouse gases? If so, it has been reported that anesthetic-related nitrous represents 1% of global production and this accounts for 0.05% of the Greenhouse effect. (Anaesthesia 1998;53(3):213-215.)

22) Discussion, page 10, third paragraph: The sentence should be revised to, “In Brazil, a study showed that 93.7% of anesthesiologists surveyed disagreed that licensed dentists are adequately prepared to provide RA after the 96-hr training course required by the BCD.” Why? The authors of this paper suggest that there may be some financial motivation of anesthesiologists to limit dentists’ ability to provide this service.
23) Discussion, page 11, first paragraph: Should ‘ostensive’ by ‘extensive’?

24) Discussion, page 11, second paragraph: second to last sentence: Should ‘require’ be ‘acquire’?

25) References: #7 is incorrect, see bullet 13 above

26) Table 2: Why did the authors have separate indications for fearful and anxious patients? Is it possible to tell the difference between fear and anxiety easily? Are dentists really able to distinguish?

27) Figures 1 & 2 are not needed.

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

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests