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COMMENTARY

Dentistry and Obstructive Sleep Apnea

Commentary on Smith et al. Anthropometric and dental measurements in children with obstructive sleep apnea. *J Clin Sleep Med* 2016;12(9):1279–1284.

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The study in this issue of the *Journal of Clinical Sleep Medicine* by Smith et al.[1] attemps to establish a possible link between some palatal and dental measurements, in addition to other body measurements, and the presence of obstructive sleep apnea in children. Their justification was that no previous study simultaneously measured and analyzed all of these variables.

First, I would like to thank the authors to remind all of us about the potential useful participation of an oral health professional in a multidisciplinary management team for pediatric OSA. I would like to comment on some of the portrayed implications of the findings of this study.

It was reported that the three measured intertooth distances were statistically significantly different between groups, namely distances between the first deciduous molars, second deciduous molars, and first permanent molars. These three measurements encompass transverse dimensions of the posterior region of the maxillary dental arch. It has to be noted that distances between other teeth were not considered, as well as the fact that the shortest distance between two contralateral teeth may not necessarily reflect a tooth body displacement, but it may just reflect a tooth crown rotation. A better measurement reflective of the tooth theoretical center should have been considered.

In the study impact section, discussion, and conclusions, the authors claim that they were able to demonstrate that these dentally related measurements were (statistically) significantly larger in the OSA sample. The use of term "demonstrate" has a strong connotation that appears to be out of place due to some methodological limitations discussed in this commentary. More importantly the identified difference, although statistically significant, cannot be considered clinically meaningful. Differences around 1 mm are hardly clinically important and may actually reflect just measurement errors. This should become clearer when the above-mentioned normative distances are in the 30–40 mm range. Therefore the reader may find it hard to justify the clinical use of such small intertooth distances for OSA screening purposes. To further emphasize the lack of discriminative values of such distances, no differences were noted between different OSA severity degrees.

Another point to consider is the fact that maxillary intertooth or palatal vault measurements, as related to a potential palatal constriction, are not the only craniofacial characteristics associated with OSA.[2] A recent proposal[3] for a screening tool that would facilitate the identification of children with altered craniofacial features among OSA children in ENT clinics visually depicts some of those additional characteristics. It may be more likely that a combination of several of these would be a better screening tool than any of them individually. In this regard only dental casts were considered for this study.

Regarding the sample origin, it is to be expected that the experimental group encompassed significant OSA cases with a few significant signs and symptoms, hence their referral for full PSG study, while the control group had absence of OSA signs and symptoms, but no PSG to confirm such diagnosis. Therefore there is a theoretical gap encompassing children with mild to moderate forms of OSA that are not normally referred for PSG assessment. This is important because it is likely that the moderate to severe cases can be screened/diagnosed relatively easily by conventional standard of care approaches, while mild OSA degree cases may go undetected in real life scenarios. It can be argued that this type of population would be the most benefited by alternative screening methods that may allow timely referral for full assessment. It should also be noted that the control sample was obtained from a preoperative area and may not be representative of the population.

The authors choose to utilize four questions to screen for OSA among the control sample. It is not clear why those specific questions were selected when validated questionnaires existed. It appears that the PSQ questionnaire is the one with the best discriminatory capability,[4] although likely only as a screening tool to justify proper referral for full assessment.

Regarding the age sample of the study it seems interesting that the authors state that OSA peaks in preschool children nevertheless the sample itself encompasses a larger age spectrum (2–12 years of age). Maybe focusing only on preschool children (or at least the subsample around that age could have been analyzed separately) would have been advisable to identify if there were differences or lack of them in such specific age group.

As an additional comment in the fourth paragraph of the introduction, the authors attempt to explain the hypothesis behind dentoalveolar changes in children with significant decreased airflow during sleep. A missing part of the portrayed chain of events is that due to the relatively continuous mouth opening during sleep to facilitate increased airflow into the lungs. The tongue, which is inserted in the mandible, is therefore positioned lower in the oral cavity moving it away from the palatal vault where it is usually passively positioned. This likely affects the dentoalveolar equilibrium of forces that keeps teeth positioned inside their alveolar hosting. By positioning the tongue downward, there are now no inside forces produced by the tongue applying lateral forces to the lingual surfaces of the maxillary teeth and therefore the cheek muscular pressure (forces pushing the posterior maxillary teeth lingually) pushes those teeth medially collapsing the upper dentoalveolar arch transversally.

In summary, this is an attempt to consider other useful anthropometric measurements to screen for potential OSA in children. Unfortunately the above-stated limitations in regards to the measured oral distances severely limit the applicability of these findings. Nevertheless this is pilot study that should make us all aware of the potential of integrating oral cavity findings in the multidisciplinary assessment and management of such multifaceted health problem as OSA in children. The authors should be praised for this.

CITATION

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