Correspondence

Prevalence of obesity in elementary school children and its association with dental caries

To the Editor

I have 2 comments on the interesting study by Farsi et al[1] on the prevalence of obesity in elementary school children and its association with dental caries (DCs). First, based on employing body mass index (BMI) standards and the detailed rubric for dmf/DMF scoring according to the National Institute of Dental Research (NIDR) to determine obesity and DCs, Farsi et al[1] found that the overall DCs activity was inversely proportional to the obesity. Farsi et al[1] did well in comparing that finding with other studies depicting positive or negative association between obesity and DCs. They addressed some factors controlling such association, namely socio-economic status, eating practice, and lifestyle.[1] I presume that the following 2 points might be additionally contributory and could partly explain the conflicting association of DCs with obesity. A) In many parts of the world, BMI is used to evaluate obesity in the clinical settings. Recently, there are growing concerns on the accuracy of using BMI standards to precisely detect overweight/obesity. This is based on the notion that because BMI, which is calculated using the average height and weight for age, changes widely during growth, a constant cut-off point cannot be set for children.[2] B) In the dental literature, there are many proposed diagnostic criteria of DCs to be employed in the clinical setting. The NIDR employed by Farsi et al[1] is an old dmf/DMF scoring system for DCs dated back to 1991.[3] The diagnostic criteria used in NIDR were intentionally conservative; to maximize examiner consistency, the general rule employed in that scoring system was that when the choice exists between 2 possible diagnoses, the less severe possibility ought to be recorded. Thus, for example, a clear-cut clinical signs of cavitation must be present before a tooth surface is considered "decayed".[3] The lack of consistency among the contemporary criteria systems for DCs limits the comparability of outcomes measured in epidemiological and clinical studies. Thus, International Caries Detection and Assessment System (ICDAS) criteria were developed by an international team of caries researchers to integrate several new criteria systems into one standard system for DCs detection and assessment. Using ICDAS, dental examiners first ought to determine whether a clean and dry tooth surface is sound, sealed, restored, crowned, or missing. Afterwards, the examiners must classify the carious status of each tooth surface using a 7-point ordinal scale ranging from sound to extensive cavitation. Histological examination of extracted teeth was found to increase the likelihood of carious demineralization in dentin as the ICDAS codes increased in severity. The criteria were also found to have discriminatory validity in analyses of social, behavioral, and dietary factors associated with DCs. The reliability of examiners to classify tooth surfaces by their ICDAS carious status was noticed to range between good and excellent (kappa coefficients ranged between 0.59 and 0.82).[4] Evaluation of the ICDAS platform has found that the system is practical; has content validity, correlational validity with histological examination of pits and fissures in extracted teeth; and discriminatory validity.[4] Moreover, ICDAS represents a clinical scoring system that could be used in dental education, clinical practice, research, and epidemiology, and it provides a framework to support and enable personalized total DCs management for improved long-term health outcomes.[5] Recently published evaluation of DCs using DMFT/dmft index and ICDAS in both obese and non-obese children has shown interesting results.[6] The mean DMFT value was 0.98 in obese children and 0.57 in the non-obese children, without significant differences between groups (p=0.206). The mean dmft value in the non-obese children (1.66) was higher than in obese children (0.95) with significant differences between groups (p=0.021). According to ICDAS criteria, there was a higher prevalence of non-cavitated enamel lesions in obese children (10.5%) compared to the non-obese children (1.9%), with significant differences between the groups (p<0.001).[6] Non-cavitated enamel lesions could be better detected by ICDAS before progression of these lesions to cavitation.[5] I presume that if Farsi et al[1] employed ICDAS criteria in the methodology, the study results might be altered.

Second, in comparison to the inverse association between DCs and anthropometric parameters reported by Farsi et al,[1] a recently published systematic review of longitudinal studies on such association revealed interesting results. There were 1338 studies, with 59 potentially effective studies (κ = 0.82) and 17 effective studies (κ = 0.88). Among 17 effective studies, 2 studies in which DCs was used to predict anthropometric measurements consistently found an inverse association and 15 studies in which anthropometric measurements were used to predict DCs were inconsistent, with results appearing to be influenced by non-uniformity of assessments, setting, and procedure of measurements; age and ethnicity of participants; and confounders of

doi: 10.15537/smj.2017.4.18393

DCs. It was concluded that evidence of the association between anthropometric measurements and DCs is conflicting and remains inconclusive.[7]

Mahmood D. Al-Mendalawi
Department of Pediatrics
Al-Kindy College of Medicine
Baghdad University
Baghdad, Iraq

Reply from the Author

The authors would like to thank Dr. Al-Mendalawi for his comments. It is noteworthy his knowledge in dental screening methods, which is uncommon for a pediatrician. However, using the method Dr. Al-Meddalawi is suggesting would have resulted in a higher prevalence of dental caries as the suspected carious lesions would have been considered as carious. This would ultimately result in an even higher association between caries and obesity. In dental screening on a large scale, suspected and non-cavitaed lesions are best marked as non-carious.

Deema Farsi
Department of Pediatric Dentistry
King Abdulaziz University
Jeddah, Kingdom of Saudi Arabia

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