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Updated caries risk assessments model incorporating *Scardovia wiggsiae*

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Early Childhood Caries (ECC) is the most prevalent chronic infectious disease in children and adolescents. This multifactorial disease affects 25% of children in the US and can have significant impact on the child's quality of life. Microbiological, particularly *Streptococcus mutans*, and dietary factors are primary contributors in the development of ECC and its most aggressive form Severe ECC (SECC). Recent re-assessment of SECC found a new caries-associated species *Scardovia wiggsiae*, and grouped foods by suspected cariogenic potential. We aimed to test these factors to improve discrimination between caries and caries-free children over that of *S. mutans* alone.

Data used was the microbiota from anaerobic culture (Tanner et al. 2011) and diet survey (Palmer et al. 2010). We evaluated two discriminating models: the microbiota alone and the microbiota with liquid cariogenic foods (juice, ice cream, jello, soda). In the microbial model, the ROC for *S. mutans* alone was 62.61%; adding *Streptococcus sobrinus* ROC 63.29%; adding *Scardovia wiggsiae* ROC 69.73%; adding *Veillonella parvula* ROC 75.26%; adding *Actinomyces gerensceriae* ROC 78.00%, and adding *Streptococcus cristatus* ROC 81.46%. In the microbiota/diet model the values for adding bacteria after diet were for *S. mutans* ROC 74.60%; adding *S. sobrinus* ROC 74.98%; adding *Scardovia wiggsiae* ROC 78.54%; and adding Veillonella parvula 80.62%.

We conclude that caries risk assessment has the potential for improvement using updated features including S. wiggsiae and grouped dietary components. Effective treatment and prevention strategies based on optimal risk models will allow care to be directed to children most at need.

Biography

Natalia Chalmers received a D.D.S. from the Medical University of Sofia (1999), and a Ph.D. (2008) and a certificate in Pediatric Dentistry from the University of Maryland (2012). She is board eligible for the American Board of Pediatric Dentistry and was the recipient of an NIDCR T32 Post-Doctoral Fellowship from the Forsyth Institute, Boston, MA. Her current research interests are Evidence-Based Pediatric Dentistry, the oral microbiome of severe early childhood caries and oral Graft-Vs.-Host Disease. In her leadership positions she is an officer of the IADR Women in Science group and a Fellow of the American Academy of Pediatric Dentistry Pediatric Oral Health Research and Policy Center. She has co-authored publications in highly regarded journals including the Journal of Dental Research, Journal of Bacteriology and the Journal of Clinical Microbiology.

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