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Azza Tagelsir Ahmed

Henry Goldman School of Dental Medicine

Brian Hodgson

Marquette University, brian.hodgson@marquette.edu

E. Angeles Martinez-Mier

Indiana University School of Dentistry

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Molar-Incisor Hypomineralization Studies

Azza Tagelsir Ahmed

Pediatric Dental Resident, Department of Pediatric Dentistry, Henry Goldman School of Dental Medicine, Boston, MA

Brian D. Hodgson

Associate Professor, Department of Developmental Sciences, Program in Pediatric Dentistry, Marquette University School of Dentistry, Milwaukee, WI

E. Angeles Martinez-Mier

Chairperson, Department of Cariology, Operative Dentistry and Dental Public Health, Indiana University School of Dentistry, Indianapolis, IN

The problem of demarcated hypomineralization defects of the permanent first molars (molar-incisor hypomineralization [MIH]) has been an emerging issue for oral health professionals around the globe. Yet, the first set of US-based epidemiologic data on MIH took as long as 2 decades from the time when MIH was first described by Weerheijm and colleagues.¹ In response to the June JADA article titled “Prevalence of Molar-Incisor Hypomineralization and Other Enamel Defects and Associated Sociodemographic Determinants in Indiana,” (Tagelsir Ahmed A, Soto-Rojas AE, Dean JA, Eckert GJ, Martinez-Mier EA, *JADA*. 2020;151[7]: 491-501), we attempt to highlight some of the challenges encountered during the course of an MIH epidemiologic school-

based data collection effort. The routes and challenges we describe below are contemplations based on 2 US MIH school studies from Wisconsin and Indiana.^{2,3}

Route/challenge 1. The principal problem in accessing school-based data through individual research projects is the complicated and multilevel recruitment and consenting processes dictated by US regulations. Local school districts' research review boards duplicate the reviewing process of the affiliated academic institution. Local school principals have authority to refuse access despite school board approval. Funding and personnel for schools' recruitment, consent delivery and collection, onsite project assistants and examiners, and adequate frequency of examiners' school visits for sufficient participant recruitment were all identifiable barriers. Many schools already feel overburdened by other numerous mandated activities and the addition of time for dental examinations may adversely affect the school schedules.

Route/challenge 2. The Indiana MIH study had most of the participants (305/337, 90.5%) and recruited them through an outreach school-based dental sealant program. This route had proved successful in comparison with the former route, and many of these dental school-affiliated programs offer appropriate teaching opportunities for predoctoral dental students. Setbacks to this route include the socioeconomic profiles of typical sealant programs, which would compromise the sample generalizability aspects and the complexity of incorporating adequate numbers of calibrated examiners into school-based sealant programs.

Alternative route 1. Collating national US MIH data from statewide oral health surveillance studies conducted by each state's department of health is 1 route and has been successful for some of the European MIH data.⁴ Approximately 30 states have updated oral health data surveys conducted from 2010 and later for US third grade school-aged children. A legitimate holdup to this route for collecting state or national MIH data is that these current surveys collect preidentified child oral health indicators and lack the workforce capacity and training to conduct any additional dental examinations for specific data on MIH.

Alternative route 2. Incorporating the MIH data within the National Health and Nutrition Examination Surveys (NHANES), the only national US survey that provides population-representative estimates of fluorosis, could be another alternative route. These national surveys have demonstrated enormous rise in the prevalence and severity of fluorosis in the 2011-2012 NHANES data. The misdiagnosis of MIH as fluorosis was not ruled out as 1 of the many rationalizations explaining the high rates of fluorosis in the 2011-2012 NHANES data when specific-tooth analysis of the 12- through 15-year-old children was carried out.⁵ This would foster the suggestion that collecting MIH data analogous to fluorosis data through these US national surveys would provide answers at numerous levels.

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