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Integral Role of Non-Dental Providers and Fluoride Dissemination

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Abbreviations

AAP: American Academy of Pediatrics; POHS: Preventive Oral Health Services.

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Globally, 621 million children are impact by dental caries [1]. Early childhood caries is a significant oral health issue and public health problem [2]. Untreated tooth decay has many short-term and long-term implications, such as pain, infection, and missed school days, and is linked to frequent emergency department visits and substantial treatment costs.

The effectiveness of appropriate fluoride use for dental caries prevention is well-documented. Unfortunately, fluoride is now under attack in the United States. Community water fluoridation was heralded as one of the top public health achievements of 20th century, but two states have now banned it and others are considering such actions [3]. The Food and Drug Administration is considering a ban on prescription fluoride supplements [4]. These actions have largely been fueled by misinterpretation and misrepresentation of research findings, decreased public trust in healthcare and public health, and a federal administration that amplifies misinformation.

With the availability of water fluoridation decreasing and fluoride hesitancy rising, non-dental healthcare providers play an increasingly critical role in early oral health education and disease prevention. Furthermore, the American Academy of Pediatrics (AAP) recommends that pediatricians include preventive oral health services (POHS) such as parental education and fluoride varnish application as a part of a child's wellness visit [5]. Primary care providers are uniquely positioned to provide these services due to frequent well-child visits early in infancy. The 2007–2016 Medical Expenditure Panel Survey found that 88.8% of infants visited a PCP annually, compared with only 3.6% who had a dental visit [5].

We surveyed pediatric medicine residents (n=23) at a program based in Chicago, IL, to assess their reported frequency and comfort in providing fluoride education and varnish applications. Of the respondents, the majority (56.5%) reported that they provided fluoride education sporadically if time allowed during their patient's appointment and 34.8% reported that they never provide fluoride education. Only 9% of residents reported they provided fluoride education when they noticed the eruption of the first baby tooth.

A binomial test (H0: $p=0.5$ vs H1: $p<0.5$) was conducted with survey answers dichotomized as positive or negative indicators of fluoride education being provided. Pediatric medicine residents showed an overall tendency to not provide fluoride education regularly and not apply fluoride varnish regularly, which was statistically significant ($p<0.05$).

All state Medicaid programs reimburse non-dental healthcare providers for POHS, including fluoride varnish application [6]. Despite widespread coverage for POHS, adoption by non-dental providers has been varied as reflected in the clinical practice of the surveyed pediatric medicine

residents. Residents cited lack of education and training in their residency program as the most common reason for not providing fluoride education or varnish application for their patients.

Although there have been multiple studies on oral health initiatives and the integration of oral health into pediatric primary care, oral health education and training have been plateauing [7]. A 2019 study that surveyed pediatric medicine program directors revealed that just over half of the programs reported that their residents received 1–2 hours of oral health education and only 38% received three or more hours [7]. The study found that out of the 92% of respondents, only 26% were satisfied with their residents' level of oral health knowledge.[9] While infant wellness visits include a myriad of assessments and anticipatory guidance that must be completed within a short period of time, infant oral health remains an important component of these visits. There is a clear disconnect between residents' oral health training and how that training is implemented clinically in infant well-child visits. Improving PCP training during their residency programs will likely improve their comfort in providing oral health education and delivering oral disease prevention services.

The results of this survey reinforce the commonly reported barriers in implementing oral health education and fluoride varnish in the clinical setting: lack of proper training, difficulty integrating procedures into the office, resistance from support staff, and lack of time [8]. The barriers to including more oral health training continue to be a lack of time, competing priorities, and lack of faculty expertise in oral health [7]. However, providing caregivers of infants with this vital education can have a significant impact on that infant's oral health outcomes. Caregivers directly influence their children's oral health and hygiene practices, and children whose caregivers lack oral health knowledge have a higher rate of dental caries [9].

The limited results of this survey provide insights on the pediatric medicine resident perspective and indicate a need for a closer look at oral health training for non-dental providers. In high-risk populations, it is even more important to promote timely education on appropriate fluoride use and establishing a dental home. Infant oral health could be improved with inclusion of non-dental healthcare providers. Laying the foundation of positive oral health begins in utero, emphasizing the importance of educating caregivers. This responsibility falls upon the shoulders of the healthcare community, specifically PCPs and dentists, who play a crucial role in educating caregivers on tools that can mitigate ECC. Streamlining and calibrating fluoride education provided by dental and non-dental providers can combat mixed messaging and prevent the spread of misinformation.

Improving non-dental provider comfort with providing these integral preventive services improves access to oral care for vulnerable patient populations and ultimately improves population oral health outcomes.

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