Caregiver Education, Oral Health Behaviors, and Childhood Caries

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Introduction

Background

- Early childhood caries (ECC): one of the most prevalent noncommunicable childhood diseases.³
 - o Severe effects on children, families, and health system.
 - Racial/ethnic disparities → Hispanics: highest prevalence; Non-Hispanic Whites: lowest prevalence.¹
- Many factors influence ECC.
 - o Factors range from proximal (i.e. biofilm) to upstream (i.e. policy).
 - Upstream factors have ability to influence factors downstream of them.
 - Modifiable factors (can be intervened upon) versus non-modifiable factors.
 - Caregivers' education: pivotal factor for ECC²; however, considered non-modifiable.

Aims

- Motivating question; because caregivers' educational attainment is influential for ECC, but is non-modifiable, we seek to understand factors that are downstream of (and associated with) caregiver education that are potentially modifiable and can be intervened upon.
- Examine associations between caregiver education, early childhood caries experience, and 6 modifiable oral health behaviors (OHBs).⁴ Determine whether these associations differ by race/ethnicity.



Methods

Data

- Questionnaire (n=7,850) and clinical data (n=6,404) collected in ZOE 2.0 study (community-based, state-wide, mutli-ethnic study).
- Children ages 3-5 enrolled in NC Head Start centers.

Variables

- ECC: dmfs index (ICDAS ≥3 level).
- Caregiver education: low education: some elementary or some high school education; higher education: high school or higher.

Analysis

- Bivariate testing: association between caregiver education and OHBs.
- Multi-level, mixed effects Poisson regression modeling: association of selected OHBs plus caregiver education with ECC.

Results

Children of caregivers with low education had 42% higher mean dmfs compared to higher education counterparts (Table 1).

- Association <u>weakest</u> for Hispanics (22%).
- Association <u>strongest</u> for Non-Hispanic Whites (58%).

Differences between education levels existed for 3 OHBs.

Toothbrushing frequency, nighttime bottle-feeding, fluoridated toothpaste use.
Accounting for the 3 OHBs in adjusted models did not appreciably modify the association between

ca	caregiver education and ECC (Table 2).						
		Mean ratio (95% CI) of dmfs (ICDAS>=3)	Table 1. (left)		Mean ratio (95% CI)	Mean ratio (95% CI) of dmfs (ICDAS>=3)	
	Entire sample	1.42 (1.30, 1.55)	between caregivers' low education and their children's caries experience overall and within racial/ethnic groups (compared to bioher		of dmfs (ICDAS>=3)	once adjusted for nighttime bottle feeding	
	African Americans (non- Hispanic black)	1.31 (1.09, 1.58)		Entire sample	1.42 (1.30, 1.55)	1.45 (1.32, 1.59)	
	Hispanics	1.22 (1.04, 1.42)		African Americans (non-Hispanic black)	1.31 (1.09, 1.58)	1.32 (1.11, 1.58)	
	Non-Hispanic whites	1.58 (1.19, 2.09)					
	American Indian/Alaskan Native/1+ race/ others	1.43 (0.98, 2.10)	education counterparts).	Table 2. (above) Accounting for nighttime bottle feeding in adjusted models.			

Conclusions

- Low caregiver education is a significant risk factor for ECC.
 - Effects vary by race/ethnicity.
- Differences in OHBs between education levels existed.
 - Differences were minimal.
 - Differences did not appear to mediate deleterious influence of low parental education on children's dental caries experience.
- Results suggest the modifiable OHBs alone do not fully explain the association.
 - Other factors associated with education likely at play.

References & Acknowledgements

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Research reported in this presentation was supported by the 2024-2025 Grover C. Hunter Fellowship.