

Children Oral Health Symptoms: A Preliminary Study on the Beneficial Role of the Oral Microbiota

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BACKGROUND

Dental caries are linked to acute and chronic disease in children. Oral symptoms related to poor oral health in children influence their quality of life, school attendance and their growth and development.^{1,2} Recently oral microbiota has been suggested to be associated with oral symptoms.^{3,4}

PURPOSE

To understand the relationship between oral microbiome and oral symptoms in children and the influence of oral health behaviors such as toothbrushing and flossing.

METHODS

Design & Sample

Cross sectional correlational design. A convenience sample of 16 children school age 7-12 years attending a community dental clinic in the Midwest.

Research Questions (RQ):

1. Is there a relationship between children's oral microbiota and oral symptoms?
2. Does oral health behavior influence this relationship?

Instruments

1) Demographics, 2) Oral symptoms, 3) Oral health behaviors, and 4) Dental records

Bio-specimen

Oral swabs collected from six different sites

Bio-specimen Analysis

PCR amplification and sequencing of 16SrRNA gene using Fluidigm and MiSeq

Statistical Analysis

Descriptive statistics; Pearson's correlations or Spearman's Rank order correlation (RQ1); and general linear model or generalized linear model (RQ2)

SAMPLE CHARACTERISTICS (N=16)

- Most participants were Hispanics (28.6%), followed by Caucasian and African American (21.4%, each), and Asian and Bi-racial (14.3%, each). Two participants opted out from reporting race.
- More than half of the participants were male (62.5%). Average age was 9 years old (range: 7-12 years), half of them in 2nd and 4th grade (25% each).
- Half of the participants had parents who are both working. Number of household habitants was 5 on average (range: 2-8).

Table 1. Oral Symptoms (N=16)

Oral Symptoms	Frequency	Percentage
Pain	Never	50%
	Once or Twice in past month	12.5%
	Sometimes	25%
	Often	12.5%
	Others	6.3%
Sore Mouth	Never	62.5%
	Sometimes	12.5%
	Often	12.5%
	Everyday or almost every day	6.3%
	Others	6.3%
Pain while Drinking/Eating	Never	43.8%
	Once or Twice in past month	18.8%
	Sometimes	18.8%
	Often	18.8%
Food Stuck	Never	12.5%
	Once or twice in past month	25%
	Sometimes	43.8%
	Others	18.8%
Mouth Odor	Never	43.8%
	Once or Twice in past month	12.5%
	Sometimes	18.8%
	Often	12.5%
	Everyday or almost every day	12.5%
School Absence	Never	87.5%
	Once or Twice in past month	6.3%
	Sometimes	6.3%

Table 2. Oral Health Behaviors (N=16)

Oral Health Behaviors	Frequency	Percentage
Brushing	Every day	43.8%
	Twice daily	43.8%
	More than twice	6.3%
	Others	6.3%
Use Toothpaste	Every day	50%
	Twice daily	25%
	More than twice daily	12.5%
	Once a week	6.3%
	Others	6.3%
Flossing	Every day	6.3%
	Twice daily	6.3%
	More than twice daily	6.3%
	Once a week	12.5%
	Once a month	6.3%
	Others*	62.5%
Mouth Wash	Every day	37.5%
	Twice daily	18.8
	Once a week	6.3%
	Others**	37.5%
	Reminds you about oral care	Myself
Parents	68.8%	
Grandpa/Grandma	6.3%	

*Do not floss or sometimes

**Never or do not know

Oral specimens are currently being analyzed at The Carver Biotechnology Center, University of Illinois at Urbana-Champaign

CONCLUSION

The findings from this study will provide baseline knowledge needed to help develop oral health interventions aimed at optimizing oral microbiota to improve oral symptoms.



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