Caries Development Contributing Factors in Children Breastfed Beyond Age 1-Year

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Background and Purpose

- **Early Childhood Caries (ECC)** continues to significantly impact the oral and overall health and quality of life of children younger than 6 years of age.
- Breastfeeding **up until one year of age** has been established through prior research as being **protective** against the development of ECC, but much ambiguity exists around the relationship between ECC and **extended breastfeeding** (defined as breastfeeding beyond one year of age).[1, 2]
- **AAPD Current Policy:** There are benefits to breastfeeding during a child's first year of life, but breast and bottle feeding beyond one year of age are associated with ECC.[3]
- **AAP Current Policy:** Continue breastfeeding for 2 years or beyond, with breast milk only during the first 6 months of life and introduction of complementary foods at 6 months.[4] *Updated July 2022*
- There is **no clear guideline** as to the best way for pediatric dentists and other public health professionals to guide mothers and caregivers on the combination between optimal oral health / caries prevention and extended breastfeeding due to ambiguity around which lifestyle factors outside of breastfeeding are most associated with the development of ECC.
- **Hypothesis:** Certain lifestyle factors pose more risk than others for ECC development when occurring in conjunction with extended breast feeding, and the opinions of mothers/caregivers on this relationship can potentially impact ECC prevalence in their children.
- **Purpose:** This pilot study aimed to **(1)** evaluate which lifestyle factors contribute most significantly to the development of early childhood caries in children who are breastfed beyond one year of age, and **(2)** gain a better understanding of how mothers and/or caregivers' opinions on the subject is associated with ECC prevalence in their children.

Methods

- The pilot study protocol was approved by the University of Pennsylvania International Review Board.
- A 30-question survey was developed and provided to consented caregivers of ASA 1 children ages >1 year and <6 years old who were currently breastfeeding or had breastfed beyond 1 year of age (data collection occurred between mid-January and mid-March of 2023).
  - **Population:** Children with DMFT ≥1
  - **Control:** Children with DMFT 0
- **Sections of the survey included:** Diet, Breastfeeding Habits, Oral Hygiene, Sleep/Airway, Family History of Caries, Thoughts on Breastfeeding.
- Decayed, missing, filled teeth (DMFT) score was calculated at each patient's recall examination and recorded. Other demographic information recorded for each patient included age at visit, insurance (Medicaid / non-Medicaid), and allergies.
- Means, standard deviations, and proportions were calculated to extract data and potential correlation between survey responses and DMFT score (small sample size limited type of data analysis rendered).

Results

- **23** survey responses were recorded and analyzed.
- **14** surveys described patients with DMFT ≥1 **(61%)**, and **9** surveys described patients with DMFT 0 **(39%)**.
- Average DMFT score for population group was **5.4**.

General Demographics
- The average age for both subject groups was approximately **3 years old**.
- There were **19% more patients** with Medicaid dental insurance in the **DMFT ≥1** group.

Table 1. Demographics

DMFT SCORE	Total # Subjects	Average Age (Years)	% Medicaid Insurance	% Non-Medicaid Insurance
DMFT 0	9	3.1	67%	33%
DMFT ≥ 1	14	3.6	86%	14%

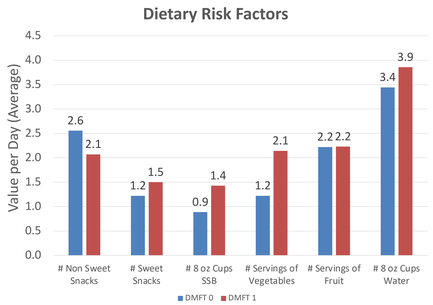
Results (Continued)

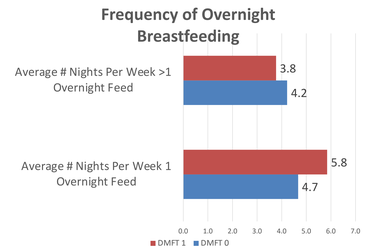
Diet
- No significant differences were noted between the control and population groups.
- Although not statistically significant, it was observed that children with DMFT ≥1 had on average **0.5 more cups of sugar sweetened beverages (SSB) per day**.

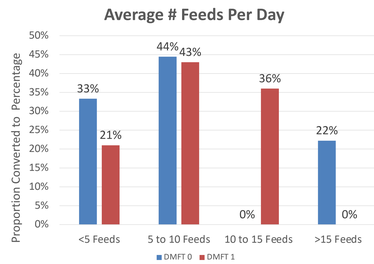
Breastfeeding Habits

Daytime
- **12% less children with DMFT ≥1** had <5 feeds per day.
- Proportion of children with DMFT 0 and DMFT ≥1 who had 5-10 feeds per day was **nearly equal**.
- **36% more children with DMFT ≥1** had 10-15 feeds per day.
- **22% less children with DMFT ≥1** had >15 feeds per day.

Nighttime
- **DMFT ≥1 group** had only 1 overnight feed **1.1 more days** per week than DMFT 0 group.







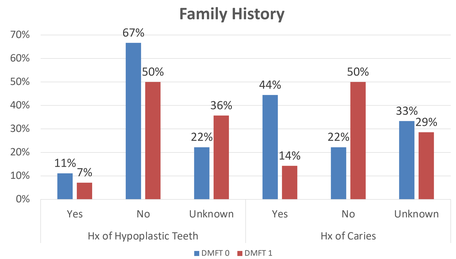
Oral Hygiene
- There were no significant differences between the DMFT 0 and DMFT ≥1 groups with respect to the oral hygiene parameters displayed in Table 2.

Table 2. Oral Hygiene

DMFT Score	Average Days Per Week Where Toothbrushing Took Place	Average Nights Per Week with Food/Drink Between Brushing and Bedtime	% Using Fluoridated Toothpaste
DMFT 0	6.7	1.2	67%
DMFT ≥ 1	6.1	1	71%

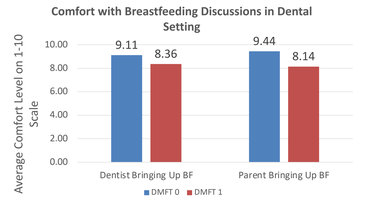
Sleep / Airway
- **44% of children with DMFT 0** and **14% of children with DMFT ≥1** were reported to snore at night.
- **11% of children with DMFT 0** and **21% of children with DMFT ≥1** were reported to be primary mouth breathers.

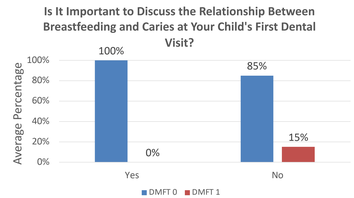
Family History
- **Hypoplastic Teeth:** There were **less children in the DMFT ≥1 group** who had a family history of hypoplastic teeth.
- **Caries:** There were **less children in the DMFT ≥1 group** who had a family history of caries.



Results (Continued)

Opinions on Breastfeeding
- In children with **DMFT ≥1, parents were slightly less comfortable** discussing breastfeeding with their child's pediatric dentist, regardless of who initiated the conversation (dentist or parent).
- **100% of caregivers of children with DMFT 0** felt that it was important to discuss the relationship between breastfeeding and caries at their child's first dental visit.
- **85% of caregivers of children with DMFT ≥1** felt that it was important to discuss the relationship between breastfeeding and caries at their child's first dental visit.





Anecdotes from Parents
- "This discussion should take place at birth independent of breast or bottle." – Caregiver of child with DMFT ≥1
- "I would love for my dentist to tell me how they believe the length of breastfeeding my daughter affected her current dental health and how it will impact her adult teeth." – Caregiver of child with DMFT ≥1

Discussion / Conclusions

- Results from this pilot study indicate that **there is still much ambiguity** as to which lifestyle factors most heavily impact the development of ECC in children who experience extended breastfeeding.
- In our study population, there were **more children with DMFT ≥1 (61%) than DMFT 0 (39%)**.
- Although not statistically significant, the following observations can be made about specific lifestyle factors:
  - Diet: No distinct conclusion can be made relating DMFT score to specific dietary habits
  - Breastfeeding Habits: Number of feeds per day and number of overnight feeds cannot be correlated to DMFT score
  - Oral Hygiene: Oral hygiene practices were generally similar among control and population groups
  - Sleep/Airway: No distinct conclusion can be made relating DMFT score to specific sleep habits
  - Family History: No distinct association can be made between history of hypoplastic enamel or caries to DMFT score
- Limited survey results indicate that there **may be an association between DMFT score and caregiver's comfortability** discussing the relationship between caries and breastfeeding with their child's dentist.
- Limited survey results indicate there **may be an association between DMFT score and caregiver opinions** on discussing the relationship between breastfeeding and caries at their child's first dental visit.
- Our study has several limitations:
  - The **small sample size** limited the ability to perform advanced statistical analysis, and therefore results were based on extrapolations from numerical calculations including means and standard deviations. Statistical significance could not be calculated.
  - The exact number of months that a child was breastfed beyond one year was not calculated, and should be calculated as more data is collected for this study.
  - Due to limited availability of providers to collect data, it is likely that several potential candidates were missed during the period of data collection.
- Goals for the future include to build a larger data set through continued data collection, and for this study to demonstrate the importance of creating space in dental visits for conversations regarding the relationship between breastfeeding and dental caries.

References

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