

Association Between Parental Nutrition Knowledge and Childhood Caries

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Introduction

Early Childhood Caries is a major health disease and a prevalence of up to 85% has been reported¹. It remains highly prevalent in poor and near poor school aged children². Early Childhood Caries is defined by the American Academy of Pediatric Dentistry (AAPD) as “the presence of one or more decayed (noncavitated or cavitated lesions), missing (due to caries), or filled tooth surfaces in any primary tooth in a child under the age of 6”². The etiology of the disease is multifactorial, including a child's diet and nutrition. The literature shows that there is a negative correlation between a child's nutrition and presence of oral and dental health^{1,3}. The aim of this study to evaluate correlations between a parent's knowledge on child nutrition and the prevalence of active carious lesions their child has.

Methods

- Participants are being recruited by introduction to the project via conversation with the Pediatric Dental resident or the student doctor on the study. The survey participants are parents and/or guardians with children under the age of six that present to the UBSDM Pediatrics Clinic as new patients.
- An 8-question paper survey packet is given to parents and/or guardians willing to participate. The survey will describe the purpose of the study, the amount of time needed to complete the survey, and assurances of participant anonymity. The survey will examine the parent and/or guardian's knowledge on child nutrition.
- After parents finish taking the survey, the study team will take their child's age, sex, and deft score (Decayed, extracted, filled teeth) from their child's chart. When calculating deft score, the research team decided to not include incipient lesions due to differing opinions among providers.

Data and Results

Table 1. Demographic summary statistics of Study Participants

Characteristic	Overall N = 46	Female N = 22	Male N = 24
Age (years)			
Mean (SD)	3.76 (1.27)	3.86 (1.04)	3.67 (1.46)
Median (Q1, Q3)	4.00 (3.00, 5.00)	4.00 (3.00, 5.00)	4.00 (3.00, 5.00)
Min - Max	1.00 - 5.00	1.00 - 5.00	1.00 - 5.00
Children's deft Score			
Mean (SD)	4.7 (4.8)	3.5 (4.1)	5.8 (5.2)
Median (Q1, Q3)	4.0 (0.0, 8.0)	3.0 (0.0, 5.0)	5.0 (1.0, 10.5)
Min - Max	0.0 - 16.0	0.0 - 15.0	0.0 - 16.0
Parental Nutrition Knowledge Score¹			
Mean (SD)	4.00 (1.51)	4.18 (1.53)	3.83 (1.49)
Median (Q1, Q3)	4.00 (3.00, 5.00)	4.00 (3.00, 5.00)	4.00 (3.00, 4.50)
Min - Max	1.00 - 8.00	1.00 - 7.00	2.00 - 8.00

¹Parental nutrition knowledge scores were determined by the number of correctly answered questions on the survey.

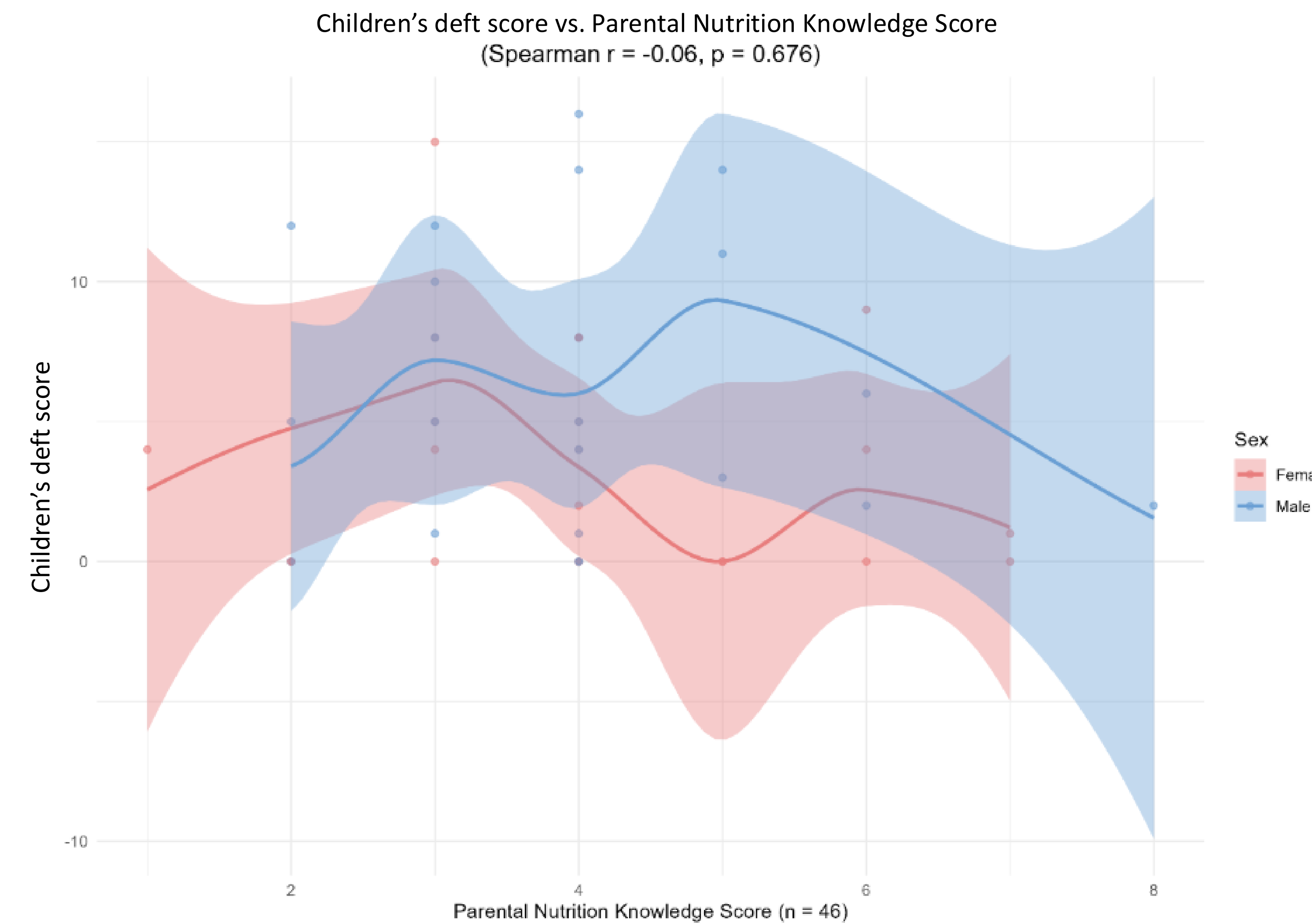


Figure 1 displays the relationship between parental nutrition knowledge score and children's DMFT score, stratified by sex.

Characteristic	Unadjusted		Adjusted	
	β (95% CI) ¹	p-value	β (95% CI) ²	p-value
Parental Nutrition Knowledge Score	-0.32 (-1.29, 0.64)	0.502	-0.22 (-1.10, 0.65)	0.606
Sex ²				
Female			—	—
Male			2.52 (-0.08, 5.13)	0.057
Age (years)			1.58 (0.55, 2.61)	0.004**

¹ β = regression coefficient (95% confidence interval).
²Reference group for Sex: Female. **: p < 0.01 (very significant).

Abbreviation: CI = Confidence Interval

- The correlation between parental nutrition knowledge score and children's deft was negligible and non-significant ($r = -0.06$, $p = 0.676$), indicating **no meaningful association between parental nutrition knowledge and children's dental caries experience**.
- In the unadjusted model, **parental nutrition knowledge score was not significantly associated with children's deft score** ($\beta = -0.32$, 95% CI: -1.29 to 0.64, $p = 0.502$), with each unit increase in parental nutrition knowledge score associated with a 0.31 decrease in deft score.

- After adjusting for children's age and sex, **parental nutrition knowledge score remained non-significantly associated with children's deft score** ($\beta = -0.22$, 95% CI: -1.10 to 0.65, $p = 0.606$).
- Age was a statistically significant predictor of deft score ($\beta = 1.58$, 95% CI: 0.55 to 2.61, $p = 0.004$), with **each additional year of age associated with an increase of 1.58 in deft score**.
- Sex showed an association, with **male children having a higher deft score compared to female children** ($\beta = 2.52$, 95% CI: -0.08 to 5.13, $p = 0.057$), though this did not reach statistical significance. The overall model was statistically significant ($F(3, 42) = 4.361$, $p = 0.009$) and explained 18.3% of the variance in DMFT score (Adjusted $R^2 = 0.183$).

Conclusion

Key Takeaways:

- Parental nutrition knowledge was **not significantly associated** with children's caries experience (deft score) after adjusting for age and sex. Therefore, parental nutrition knowledge does not indicate parental action or adherence to nutrition guidelines and recommendations
 - Providers can **consider discussing behavioral barriers and/or access to healthy foods** with parents and families in addition to nutritional education.
- The significant association between age and deft score reinforces the **progressive nature of caries over time**.
- These findings support the concept that **early childhood caries is multifactorial**, and that unmeasured variables (birth order, socioeconomic status, special health care needs, parenting style etc.) may account for disease variability.

Limitation

- Small sample size ($n = 46$) may have limited the statistical power to detect a significant association between parental nutrition knowledge and children's deft score, and results should be interpreted with caution
- When radiographic lesions are interpreted, providers were not calibrated and/or standardized. Therefore, exclusion of incipient lesions may underestimate the presence of early disease.
- Variables such as socioeconomic status, parental education level, oral hygiene home care, dietary habits etc. were not confounded for.

References:

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