

CAREGIVER AND MEDICAL PROVIDER PERCEPTION OF CHILD’S CARIES RISK

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Introduction

- The vast majority of US children do not establish a dental home by age 1 and about half do not see a dentist before age 2 (1).
- Low utilization of early dental visits limits opportunities for primary and secondary prevention of dental caries in young children.
- Due to relative frequency of young well-child visits, medical homes have unique opportunities to deliver preventative oral health services to those with barriers to dental care (2).
- Medical and dental providers can utilize a caries risk assessment (CRA) to bring guidance and awareness to parents while advocating for preventative oral healthcare.
- Accurate caregiver perception of the child's caries experience has been demonstrated in few studies (3).
- Heightened caregiver understanding of caries risk may influence adherence to recommendations for early dental visits and establishment of a dental home by age 1 (4).
- Minimal quality information exists on the reliability of CRAs completed by pediatricians compared to CRAs completed by pediatric dentists. (5)
- Medical graduates generally lack knowledge in oral health (6).
- Better understanding the agreement (or lack thereof) between dental and medical providers in assessing caries risk may lead to improved interprofessional collaboration and ultimately more robust disease prevention.

Objectives

1. Evaluate the relationship between dental home status and demographic factors.
2. Explore parent perception of a child's caries risk during a well child visit in a primary care setting.
3. Compare caries risk and caries experience perceived by caregivers with clinical determination by pediatric dental resident.
4. Investigate the accuracy of oral screenings and caries risk assessments completed by pediatric medical residents in comparison with a pediatric dental resident.

Methods

IRB-approved prospective questionnaire study (IRB # 2022-0938).

Inclusion criteria:

- Caregiver of children ages 1-5
- Presented to CCHMC Pediatric Primary Care for well-child visit

Exclusion criteria:

- Non-English speaking and/or reading caregiver
- Unable to complete oral screening of child

Caregivers/Patients who met criteria:

- Dental resident determined caries risk and oral health status by caregiver interview, oral screening, and American Academy of Pediatrics (AAP) Oral Health Risk Assessment (CRA)
- Dental resident completed additional questionnaire with caregiver pertaining to risk perception and dental history
- Pediatric medical resident completed oral screening and determined caries risk using AAP CRA (blinded from dentist findings and additional questionnaire)
- Caregiver received information about dental care options, if desired

Medical Resident Calibration:

- Exclusively PGY-2 and PGY-3 pediatric medicine residents
- Completion of live, in-person adapted Smiles for Life presentation given by dental resident on oral health, screening, and AAP CRA

Results

Table 1. Demographics

Variable	Category	Statistics (n=37)
Child Age (months)	12	3 (8.1)
	18	4 (10.8)
	24	9 (24.3)
	36	5 (13.5)
	48	7 (18.9)
Dental Home	Has Dental Home	15 (40.5)
	No Dental Home	22 (59.5)
Fluoride Varnish	Varnish <6mo ago	19 (51.4)
	No Varnish <6mo ago	18 (48.6)
White spot lesions	No	24 (64.9)
	Yes	13 (35.1)
Obvious Clinical Decay	No	30 (81.1)
	Yes	7 (18.9)
High Caries Risk	Low	12 (32.4)
	High	25 (67.6)
(Caregiver) Believed Cause of Cavities	Sugar Snacks/Foods	26 (70.3)
	Poor tooth brushing/flossing	5 (13.5)
	Family history of cavities	1 (2.7)
	Not seeing a dentist	2 (5.4)
	Not sure	3 (8.1)



American Academy of Pediatrics Oral Health Risk Assessment Tool

The American Academy of Pediatrics (AAP) developed this tool to aid in the implementation of oral health risk assessment during health supervision visits. Since a validated caries risk assessment tool does not currently exist, this tool includes factors known to be related to childhood caries. The form provides a framework to assist the pediatric clinician to identify risk as well as modifiable behaviors to optimize patient oral health.

Instructions for Use

Use this form in conjunction with the **AAP Oral Health Intake Form**, to collect information from parents/caregivers on home care and habits that contribute to both protective and risk factors. That information will help inform the **Action Plan** and the family's **Self-Management Goals**. The child is at high risk for caries if any of the risk factors below are reported or found in the physical exam. In the presence of multiple risk factors or severe clinical findings, the clinician may determine the child should be seen by a dentist as soon as possible.

Patient Name: _____ Date of Birth: _____ Date: _____

Visit: ☐ 6 month ☐ 9 month ☐ 12 month ☐ 15 month ☐ 18 month ☐ 24 month ☐ 30 month ☐ 3 year ☐ 4 year ☐ 5 year ☐ 6 year ☐ Other

RISK FACTORS		
Mother or primary caregiver had active decay in the past 12 months ☐ Yes ☐ No	Frequent snacking on sugary and/or sticky snacks ☐ Yes ☐ No	Medicaid eligible ☐ Yes ☐ No
Does not have an established dental home ☐ Yes ☐ No	Has not received fluoride varnish in the last 6 months ☐ Yes ☐ No	Special health care needs ☐ Yes ☐ No
Continual bottle/sippy cup use with beverage other than water ☐ Yes ☐ No	Does not have teeth brushed twice daily ☐ Yes ☐ No	
Does not drink fluoridated water or take fluoride supplements ☐ Yes ☐ No	Does not use fluoride toothpaste ☐ Yes ☐ No	
PHYSICAL FINDINGS		
Obvious decay ☐ Yes ☐ No	White spots or decalcifications ☐ Yes ☐ No	Visible plaque ☐ Yes ☐ No
Restorations present (Fillings or Silver Diamine Fluoride Present) ☐ Yes ☐ No	Swollen or bleeding gums (gingivitis) ☐ Yes ☐ No	

Oral Health Risk Determination: IF YES to any of the above, this patient is considered **HIGH** risk for dental disease. Determine ☐ **HIGH** / ☐ **LOW** risk; follow **Action Plan** below.

ACTION PLAN	
High Risk ☐ Every 3 months Refer to a dental home	Low Risk ☐ Every 6 months Set self-management goals with caregiver

SELF-MANAGEMENT GOALS	COMPLETED ACTIONS
Reviewed ☐ Brush twice daily with fluoride toothpaste. ☐ Regular dental visits for child and caregiver(s). ☐ Wear off bottle and use only water in sippy cup ☐ Less/no juice. No soda. ☐ Drink fluoridated water. ☐ Less/no junk food or candy. Replace with healthy snacks. ☐ Have teeth treated with fluoride varnish every 3-6 months.	Oral health risk assessment ☐ Yes ☐ No Visual exam of the mouth ☐ Yes ☐ No Fluoride varnish application ☐ Yes ☐ No Anticipatory guidance ☐ Yes ☐ No Referral to a dentist ☐ Yes ☐ No

MANAGEMENT OF HIGH RISK CHILDREN

High-risk children should receive professionally applied fluoride varnish. Caregivers should be counseled to brush teeth twice daily with an age-appropriate amount of fluoridated toothpaste. Referral to a pediatric dentist or a dentist comfortable caring for children should be made with follow-up to ensure that the child is being cared for in the dental home.

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Results

Table 2. Distribution (percent) of dental home by age

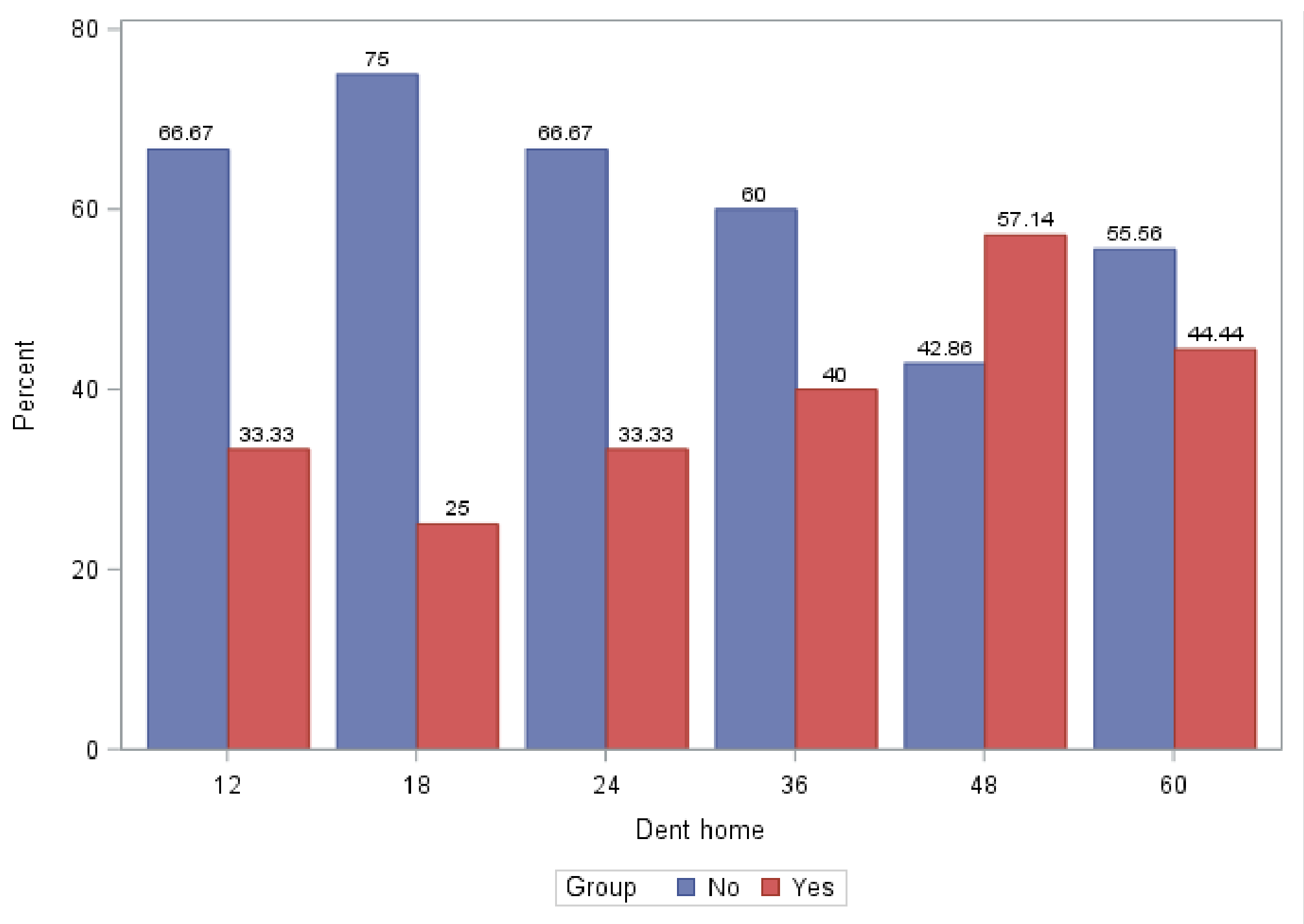


Table 3. Associations

	Dental Home			P-value
Varnish	Has Dental Home	No Dental Home		0.045
Varnish <6mo ago	11 (57.89)	8 (42.11)		
No Varnish <6mo ago	4 (22.22)	14 (77.78)		
	Obvious Clinical Decay			P-value
SHCN	No	Yes		0.002
No	27 (93.10)	2 (6.90)		
Yes	3 (37.50)	5 (62.50)		
	Obvious Clinical Decay			P-value
Caregiver: Does your child have cavities?	No	Yes		0.021
Yes	1 (25.00)	3 (75.00)		
No	18 (90.00)	2 (10.00)		
Unsure	11 (84.62)	2 (15.38)		
	Caregiver: Will your child develop cavities?			P-value
Toothbrushing Routine	Yes	No	Unsure	0.003
Excellent	3 (50.00)	0 (0)	3 (50.00)	
Good	3 (16.67)	10 (55.56)	5 (27.78)	
Acceptable	0 (0)	2 (16.67)	10 (83.33)	
Poor	0 (0)	0 (0)	1 (100.00)	
	Caregiver: Will your child develop cavities?			P-value
Dental home	Yes	No	Unsure	0.053
Dental home	0 (0)	7 (46.67)	8 (53.33)	
No dental home	6 (27.27)	5 (22.73)	11 (50.00)	

Table 4. Agreement between MD and DDS residents

Variable 1	Variable 2	Cohen's Kappa coefficient (95% CI)	Association strength
Risk MD	Risk DDS	0.291 (-0.026, 0.608)	Fair
Decay MD	Decay DDS	0.648 (0.330, 0.965)	Substantial
White spot MD	White spot DDS	0.359 (0.049, 0.669)	Fair
Risk MD (PF Total MD=0)	Risk DDS (PF Total DDS=0)	0.165 (-0.268, 0.598)	None to slight

Results

Based on the current data:

- Having a dental home demonstrated no association with age (p=0.96).
- Children with a dental home were significantly more likely to have had a checkup/cleaning than those without (P=0.0015).
- Near-significant association between having a dental home and caregiver impression of future decay for child (P=0.053).
- Children with dental homes are more likely than those without a dental home to have fluoride varnish applied less than 6 months ago (p=0.045).
- Caregivers who felt their child had an excellent toothbrushing routine were significantly more likely to feel the child had higher risk of future caries (P=0.003).
- Children believed by their caregivers to have active cavities were more likely than other children to have clinical decay (p=0.021)
- There was a substantial inter-rater agreement between dental resident and medical resident in clinically identifying decay (k=0.65).
- There was only fair inter-rater agreement when it came to caries risk (k=0.29).

Conclusions/ Discussion

1. A dental home was not shown statistically to be protective against caries.
2. It is unclear how the dental home or income levels may relate to fatalistic oral health attitudes by caregivers.
3. Even with a medical home that applies fluoride varnish routinely during young well-child visits, children with a dental home would benefit from more consistent varnish applications.
4. There was no demonstrated association between caries risk status as determined by CRA and caregiver perception of caries risk.
5. The data confirms the findings of other studies stating caregivers have success identifying active decay in their children.
6. Results suggest that while physicians can clinically identify caries, their ability to assess caries risk to the level of a dentist is poor.
7. While CRA accuracy in the medical setting is helpful for family counseling and timely referral, identification of active caries likely has more clinical significance, especially with the advent of the CPT SDF code.
8. Future studies could evaluate physician confidence in oral screening, CRA, and SDF application as well as identify specific oral health knowledge gaps in medical education.

References

1. QuickStats: Percentage of Children Aged 1–5 Years Who Had Never Been to a Dentist, by Age and Year — National Health Interview Survey, United States, 2006–2016. MMWR Morb Mortal Wkly Rep 2018;67:261. DOI: <http://dx.doi.org/10.15585/mmwr.mm6708a8>external icon.
2. Prasad M, Manjunath C, Murthy AK, Sampath A, Jaiswal S, Mohapatra A. Integration of oral health into primary health care: A systematic review. J Family Med Prim Care. 2019 Jun;8(6):1838-1845. doi: 10.4103/jfmpc.jfmpc_286_19. PMID: 31334142; PMCID: PMC6618181.
3. Snell AK, Burgette JM, Weyant RJ, Crout RJ, McNeil DW, Foxman B, Marazita ML. Association between a child's caries experience and the mother's perception of her child's oral health status. J Am Dent Assoc. 2019 Jun;150(6):540-548. doi: 10.1016/j.adaj.2019.01.032. PMID: 31133175; PMCID: PMC6540812.
4. Baker SD, Lee JY, Wright R. The Importance of the Age One Dental Visit. Chicago, IL: Pediatric Oral Health Research and Policy Center, American Academy of Pediatric Dentistry; 2019.
5. Jin J. Screening and Interventions to Prevent Dental Caries in Young Children. JAMA. 2021 Dec 7;326(21):2223. doi: 10.1001/jama.2021.21302. PMID: 34874417.
6. Medical School Graduation Questionnaire: 2012. All Schools Summary Report. Washington, DC: Association of American Medical Colleges.