

BACKGROUND

- Early Childhood Caries (ECC)** is the most common chronic disease in young children, especially in disadvantaged populations. It can cause pain and infection, impacting eating, speaking, and sleeping¹.
- Nighttime bottle feeding** with liquids other than water increase ECC risk³. Educating caregivers about these risks and the importance of brushing with fluoridated toothpaste before bedtime is essential for ECC prevention⁶.
- Access to dental care** remains a challenge for many children, particularly those living in underserved areas. Barriers such as finding providers, limited appointments, and transportation issues contribute to delayed dental visits⁴.
- Utilizing frequent pediatrician visits in the first three years of life, often reaching up to 15 times, offers a unique opportunity for early education and intervention targeting **primary prevention** among high-risk groups².
- Teledentistry** has become an effective method for enhancing pediatric dental care access, allowing dental professionals to offer treatment advice, patient monitoring, diagnoses, screenings, and oral health education remotely⁵.



OBJECTIVES

Objectives: Assess the effectiveness of motivational interviewing (MI) delivered via teledentistry to caregivers in improving oral health behaviors in children 6-35 months (**Primary outcomes:** toothbrushing behaviors, fluoride toothpaste usage, and nighttime bottle/breastfeeding).

Hypothesis: 1) MI through teledentistry is more effective than providing oral health materials alone in improving behaviors, and 2) that the effect on behaviors from educational materials, dental products, and teledentistry differs among these interventions.

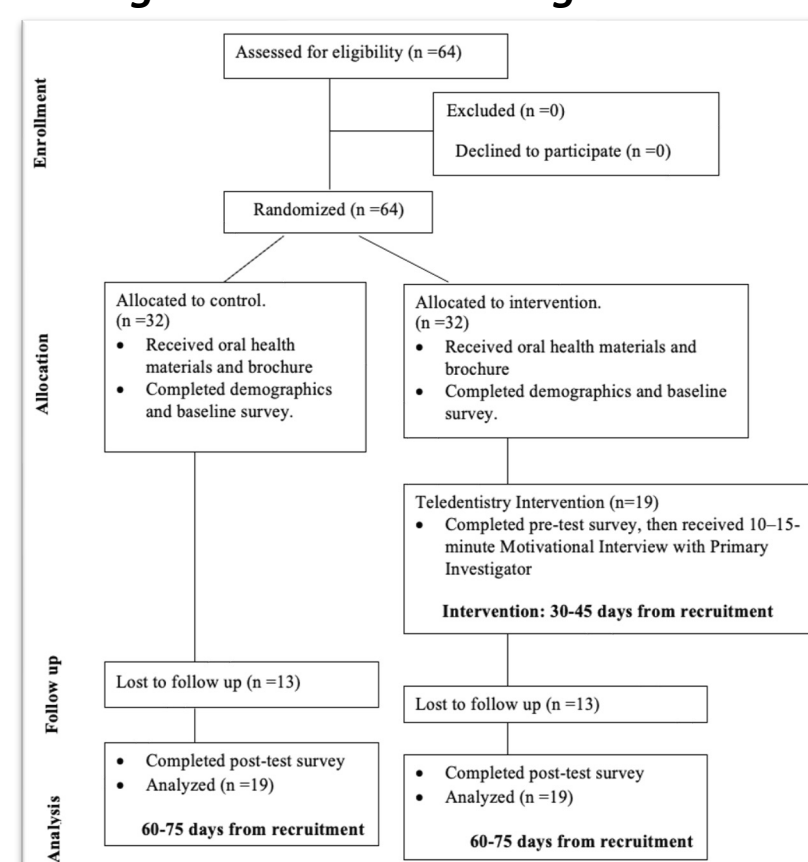
METHODS

Study Type: Randomized Controlled Trial

Study Setting/Population: Caregivers of healthy children with well-child visits were recruited from the UIH Dept. of Pediatrics from Aug-Dec 2023 for this RCT. IRB # 2023-0780

Inclusion Criteria: Caregivers were legal guardians, fluent in English, and had telephone access. Children were healthy, 6-35 months with no previous dental treatment beyond preventative procedures.

Figure 1: CONSORT Diagram



RESULTS

	Intervention	Control
Caregiver Age (in Years)	Mean (SD) 28.53 (5.66)	Mean (SD) 29.59 (5.58)
Caregiver Relationship to Child		
Mother	31 (96.88%)	29 (90.63%)
Father	1 (3.13%)	3 (9.38%)
Marital Status		
Married	17 (53.13%)	20 (62.5%)
Single, never married	15 (46.88%)	12 (37.5%)
Child age (in Months)	Mean (SD) 15.5 (7.61)	Mean (SD) 14.69 (7.45)
Child Gender		
Female	15 (46.88%)	20 (62.50%)
Male	17 (53.13%)	12 (37.50%)
Child Race		
White	6 (18.75%)	6 (18.75%)
Black	15 (46.88%)	21 (65.63%)
Other (including 2 or more races)	11 (34.3%)	5 (15.63%)
Child Ethnicity		
Hispanic or Latino	15 (46.88%)	9 (28.13%)
Not Hispanic or Latino	17 (53.13%)	23 (71.88%)
Place of Residence		
Chicago	26 (81.25%)	26 (81.25%)
Outside of Chicago	6 (18.75%)	6 (18.75%)
No. of children <18 in the household	Mean (SD) 2.06 (1.13)	Mean (SD) 1.88 (1.13)
No. of adults 18+ in the household	Mean (SD) 2.34 (1.43)	Mean (SD) 2.06 (1.13)
Dental Insurance Type		
Medicaid/Medical Card	25 (78.13%)	27 (84.38%)
Private or Self-Pay	7 (21.88%)	5 (15.63%)

* no significant difference between intervention and control for any of the demographic variables. Tests were run using independent t-test, Chi-squared test, or Fisher's exact test

	Intervention	Control
Oral Health Knowledge		
Not or Somewhat Confident	22 (68.75%)	19 (59.38%)
Very Confident	10 (31.25%)	13 (40.63%)
Bottle Usage (per week)		
0 nights	19 (59.38%)	16 (50.00%)
1-6 nights	4 (12.50%)	4 (12.50%)
7 nights	9 (28.13%)	12 (37.50%)
Breastfed at night		
Non Breastfeeders	30 (93.75%)	29 (90.63%)
Breastfeeders	2 (6.25%)	3 (9.38%)
Cleaning teeth frequency		
0 nights	18 (56.25%)	18 (56.25%)
1-6 nights	6 (18.75%)	8 (25.00%)
7 nights	8 (25.00%)	6 (18.75%)
Cleaning teeth tools		
Do not Clean	18 (56.25%)	17 (53.13%)
Toothbrush and/or Adjunct	14 (43.75%)	15 (46.88%)
Person cleaning teeth		
No One	18 (56.25%)	16 (50.00%)
Someone (child or legal guardian)	14 (43.75%)	16 (50.00%)
Toothpaste usage		
Fluoride Toothpaste	5 (15.63%)	10 (31.25%)
Fluoride Free or No Toothpaste	27 (84.38%)	22 (68.75%)
Has child been seen by a dentist		
Yes	1 (3.13%)	6 (18.75%)
No	31 (96.88%)	26 (81.25%)

* no significant difference between intervention and control for any of the demographic variables. Tests were run using independent t-test, Chi-squared test, or Fisher's exact test

	Intervention	Control	P-value*
Oral Health Knowledge			
Not or Somewhat Confident	2 (10.53%)	7 (36.84%)	0.12
Very Confident	17 (89.47%)	12 (63.16%)	
Bottle Usage (per week)			
0 nights	12 (63.16%)	8 (42.11%)	0.01
1-6 nights	7 (36.84%)	3 (15.79%)	
7 nights	0 (0%)	8 (42.11%)	
Breastfed at night			
Non Breastfeeders	18 (94.74%)	19 (100%)	1
Breastfeeders	1 (5.26%)	0 (0%)	
Cleaning teeth frequency			
0 nights	3 (15.79%)	6 (31.58%)	0.04
1-6 nights	6 (31.58%)	16 (84.21%)	
7 nights	10 (52.63%)	3 (15.79%)	
Cleaning teeth tools			
Do not Clean	3 (15.79%)	6 (31.58%)	0.45
Toothbrush and/or Adjunct	16 (84.21%)	13 (68.42%)	
Person cleaning teeth			
No One	3 (15.79%)	6 (31.58%)	0.45
Someone	16 (84.21%)	13 (68.42%)	
Toothpaste usage			
Fluoride Toothpaste	16 (84.21%)	7 (36.84%)	0.003
Fluoride Free or No Toothpaste	3 (15.79%)	12 (63.16%)	
Has child been seen by a dentist			
Yes	3 (15.79%)	1 (5.26%)	0.6
No	16 (84.21%)	18 (94.74%)	

*Chi-Squared and Fisher's Exact Test

	Intervention		Control	
	Baseline vs. Pre-test	Pre-test vs. Post-test	Baseline vs. Post-test	Baseline vs. Post-Test
Oral Health Knowledge				
Not or Somewhat Confident	0.046	0.008	0.0009	NS
Very Confident				
Bottle Usage (per week)				
0 nights	NS	NS	NS	NS
1-6 nights				
7 nights				
Breastfed at night				
Non Breastfeeders	NS	NS	NS	NS
Breastfeeders				
Cleaning teeth frequency				
0 nights	0.03	NS	0.0047	0.008
1-7 nights				
Cleaning teeth tools				
Do not Clean	0.03	NS	0.0047	0.03
Toothbrush and/or Adjunct				
Person cleaning teeth				
No One	0.03	NS	0.0047	NS
Someone (child or legal guardian)				
Toothpaste usage				
Fluoride Toothpaste	0.01	0.01	0.0003	NS
Fluoride Free or No Toothpaste				
Has child been seen by a dentist?				
Yes	NS	NS	NS	NS
No				

*P-value reflects Chi-Squared or McNemar's Test

KEY FINDINGS

- Intervention and control groups were allocated randomly with no baseline differences. Both groups showed diverse demographics and were predominantly Medicaid-enrolled (**Table 1**).
- Intervention and control groups were allocated randomly with no baseline differences between knowledge or oral health behaviors. Knowledge and behaviors showed significant opportunity for improvement in both groups (**Table 2**).
- Post-intervention knowledge and oral health behaviors showed differences between groups (**Table 3**):
 - Bottle usage frequency:** intervention group used bottles less than the control group
 - Cleaning teeth frequency:** control group brushed less frequently than intervention group
 - Fluoride toothpaste usage:** control group used fluoride toothpaste less than intervention group
- The control group's teeth cleaning frequency improved by receiving oral health cleaning tools, but knowledge, bottle usage, and toothpaste use did not improve (**Table 4**).
- The intervention group's knowledge, teeth cleaning frequency, parental assistance with brushing, and toothpaste usage increased by receiving oral health cleaning tools. This change was sustained post-intervention. Oral health knowledge and toothpaste usage further improved following the teledentistry intervention (**Table 4**).

CONCLUSIONS

- Oral health products** effectively initiate oral health behaviors, while **motivational interviewing** significantly reinforces this knowledge and encourages behavioral changes, specifically in cleaning teeth frequency, tools used, person cleaning child's teeth, and fluoride toothpaste usage.
- Motivational interviewing (MI)** via teledentistry significantly improves caregivers' oral health behaviors, particularly nighttime bottle feeding, more effectively than simply providing oral health products and written educational material.
- The study highlights the potential of **teledentistry** as a valuable tool for delivering impactful and accessible oral health education to caregivers, especially those from low socioeconomic backgrounds in primary care settings.

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