

The Effectiveness of an Integrated Medical and Oral Health Program at Reducing Caries Experience



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INTRODUCTION

- There are many disparities that can lead to poor oral health including lack of dental knowledge, access to care, and low socioeconomic status, leading to untreated decay and a higher incidence of caries among preschool-aged children.⁶
- National surveys report that approximately one-third of children aged 2 to 5 years experienced dental caries in 1999-2002; 1 in 4 children aged 3 to 5 years living in poverty in 2009-2010 had untreated caries, 2.5 times that of other children; and only 4.1% of children younger than 4 years had professional fluoride treatments in 2009.⁶
- Involvement of primary care medical practitioners in oral health promotion has been proposed to address these oral health disparities because most children have more physician visits than dentist visits during the first 3 years of life.⁶ During the pediatric medical visits, the child's oral health would be monitored, prioritizing referrals, and help facilitate dental visits for the highest-risk children until they establish a dental home.⁶
- Through the Embedded Dental Hygienist Program, registered dental hygienists provide dental education and preventive services in the same appointment as the pediatric medical appointment. The visit with the hygienist involves a brief medical history survey, basic screening for clinical caries, assessment of caries risk, application of fluoride varnish, and preventive education including good oral hygiene and having a healthy diet.
- The program also emphasizes the importance of establishing a dental home at the dentist by 12 months of age. Recommendations reflect the joint position between the American Academy of Pediatrics and the American Academy of Pediatric Dentistry which states the dental home should be established no later than 12 months of age to help children and their families institute a lifetime of good oral health.²

PURPOSE

The purpose of this research is to determine the effectiveness of the Embedded Program, implemented in 2016, which involves early dental visits and dental education by registered dental hygienists during a patient's visit with the pediatrician. A chart review was conducted comparing caries experienced between embedded and non-embedded patients. The caries experience was documented by reviewing follow-up appointments by El Rio Dentists at El Rio Dental Clinics including Southwest and Congress location.

METHOD

This is a retrospective chart review study seeking to evaluate dental records of Embedded Program patients aged 4 and below. Data collected from 100 patients that started with the Embedded Program at age 4 years and below with follow ups will be compared to 100 patients that establish care aged 4 and below without the Embedded Program with follow ups. The following are the inclusion and exclusion criteria.

Inclusion Criteria

- Dental patients aged 4 years or less before 2021
- Patients who returned for a minimum of 2 (1st follow-up will be used as caries baseline for Embedded Program patients) follow-up appointments up to year 2021
- Male or Female patients of all ethnicities

Exclusion Criteria

- Pediatric patients with incomplete dental charts
- Patients who completed only 1 follow-up appointment or who failed to complete a minimum of 2 follow up appointments with the El Rio Pediatric Dentist
- Non-El Rio Community Health Center dental patients

FIGURE

Variable	level	Embedded Patients:		
		Overall	No	Yes
n		200	100	100
Age (years) (mean (SD))		1.69 (1.11)	1.84 (1.24)	1.53 (0.96)
Gender (%)	Female	106 (53.0)	52 (52.0)	54 (54.0)
	Male	94 (47.0)	48 (48.0)	46 (46.0)
Ethnicity (%)	American Indian	1 (0.5)	1 (1.0)	0 (0.0)
	Asian	3 (1.5)	2 (2.0)	1 (1.0)
	Hispanic	121 (60.5)	58 (58.0)	63 (63.0)
	Native Hawaiian	1 (0.5)	1 (1.0)	0 (0.0)
	Non-Hispanic Black	8 (4.0)	4 (4.0)	4 (4.0)
	Non-Hispanic White	55 (27.5)	28 (28.0)	27 (27.0)
Other (+multi)	10 (5.0)	6 (6.0)	4 (4.0)	
unknown	1 (0.5)	0 (0.0)	1 (1.0)	

Embedded Patients	DMFT (mean(SD))		
	Follow-up #1	Follow-up #2	Follow-up #3
No	1.98 (3.95)	3.28 (4.85)	4.44 (5.20)
Yes	1.11 (2.43)	2.31 (3.76)	3.15 (4.18)
	Follow-up #4	Follow-up #5	Follow-up #6
No	5.96 (5.70)	6.93 (5.98)	9.51 (6.19)
Yes	3.70 (4.62)	4.65 (4.83)	5.27 (4.17)

Variable	Overall	Embedded Patients		0.0141-test
		No	Yes	
#Treated teeth with caries (mean (SD))	4.30 (5.35)	5.22 (5.96)	3.37 (4.51)	

Embedded Patients	Frankl score (mean(SD))			
	Follow-up #1	Follow-up #2	Follow-up #3	Follow-up #6
No	1.15 (1.53)	2.31 (1.57)	2.67 (1.42)	
Yes	1.17 (1.60)	2.17 (1.66)	2.39 (1.39)	
	Follow-up #4	Follow-up #5	Follow-up #6	
No	3.01 (1.28)	3.37 (0.98)	3.38 (0.83)	
Yes	2.64 (1.28)	2.89 (0.94)	3.36 (0.67)	

RESULTS

- In this chart review, effectiveness of embedded vs non-embedded patients was measured by recording number of caries experienced, counting number of teeth with decayed, missing due to caries, filled teeth score (DMFT score) at every follow-up appointment.
- The baseline characteristics among embedded and non-embedded patients are presented in Table 1. A total of 200 patient charts were selected at random, 100 embedded and 100 non-embedded patients. Gender between the two groups overall was 53% females and 47% males. Majority of the patients were of Hispanic ethnicity at 60.5%, followed by 27.5% Non-hispanic white, and 5% marked as other including mixed ethnicity patients.
- Table 2 averages overall caries experienced between the 2 groups at each follow-up visit. Caries experienced increased overtime in both groups, but non-embedded patients experienced a higher amount of caries overall.
- Table 3 shows the number of treated teeth with caries between embedded and non-embedded patients. A t-test analysis was performed and shows that there was a significant difference (p<0.05) in caries rate between the two groups. Patients with embedded visits had less caries than those who did not.
- Table 4 Patients' behavior shows similar and consistent improvement in both groups at each follow-up visit.
- The embedded program allows the opportunity for dental hygienists to discuss oral care at home, diet and other potential dental concerns with parents. Dental hygienists also emphasized for parents to establish a dental home early on, a primary dental provider for their children. This early education and prevention strategy may have led to the significant finding of less caries experience by the embedded patients compared to the non-embedded patients.
- Non-embedded patients that visited the dentist tend to be older than embedded patients. Older patients tend to have more teeth erupted and more potential caries compared to younger embedded patients with less teeth erupted. This may have contributed to the less caries experienced seen in embedded patients.
- Another potential drawback could be that data collection was reliant on documentation by various dentists. It is difficult to say for certain that non-embedded patients never had dental care or education elsewhere before establishing care at the health center. Future research should aim for a larger sample size.

CONCLUSIONS

In conclusion, integrated medical and oral health programs show significant caries differences with less caries experienced in embedded patients compared to non-embedded patients. Further studies with larger sample sizes should be done to assess the success of integrated programs. Strategies to promote physician-dentist collaborations are needed to improve continuity of care for children receiving dental services in medical settings.⁶

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