Prevalence of pulpotomy treatment failure performed in primary teeth in a hospital setting versus dental office environment: a 2-year follow up

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INTRODUCTION

Early childhood caries (ECC) is the most common chro childhood disease requiring early intervention. If caries is untreated in a primary tooth, the tooth may require more invasive procedures such as a pulpotomy. Though pulpotomies have a relatively high success rate (87.5-10 over 2 years)^{1,2}, certain factors may lead to failure, bringi success rates down to as low as 46.1-66.6%.^{3,4}

Dental treatment in the pediatric population often requ utilization of various environments and behavior management techniques.^{5,7} Non-pharmacological behavi management (NPBM)⁶, nitrous oxide (NOX)⁸, or oral conscious sedation (OCS)⁹ may be utilized in the dental office, while general anesthesia (GA)⁹ often requires a hospital setting. Along with providing a safe environment pediatric dentist aims to perform optimal dental treatmen Previous studies have shown that less successful procedures resulting in need for retreatment are found to higher in OCS patients.⁸

Despite these studies, there is a lack of research evaluating the long-term prognosis for primary tooth pulpotomies performed in different treatment settings.

PURPOSE

- To investigate whether there is a difference in prevaler of pulpotomy treatment failure in primary teeth of dent patients treated in a hospital setting versus an office environment.
- This study hypothesized that in patients between ages pulpotomies performed in an office environment were associated with a higher prevalence of treatment failu compared to a hospital setting over a 2-year follow-up

METHOD

- A retrospective chart review was completed by conven sample with data from 106 teeth.
- The study population included patients ages two to eig from the NYU Langone Health-affiliated health center located in Massachusetts who underwent therapeutic pulpotomies under NPBM, GA, OCS, or NOX and presented for a 2-year follow-up.
- The data was collected from 01/01/2013-12/31/2018
- Chi-square and t-test analyses were used to evaluate treatment outcomes.

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	Overall (106	In-Of	fi <u>ce (55)</u>	Hospital	þ
te	eeth)			(51)	
Age (mean (SD)) 4	.92 (1.27)	5.42 (1.21)	4.39 (1.11)	<
Gender (%)					1
Male 6	51 (57.5%)	32 (58	3.2%)	29 (56.9%)	
Female 4	5 (42 5%)	23 (41	8%)	22 (43 1%)	
Ethnicity (%)		(0
Non-Hispanic White 2	24(226%)	15 (27	7.3%)	9 (17 6%)	
Non-Hispanic Black 6	(22.070)	2 (3 6	······································	$\Delta (7.8\%)$	
Hispanic 6	(0.170)	2 (0.0	20/2)	34(667%)	
Non-Hispanic Asian 9	(8.5%)	5 (0 1	0/2 /0)	$\Lambda (7.8\%)$	
Othor 1	(0.0%)	6 (10	70) Q%)	$\Lambda (7.8\%)$	
	(0.370)	0 (10.	370)	4 (7.070)	
			NAGEIVII		
In-office			55 (51.9	%)	
Non-pharmacological	behavior manag	gement	/ (6.6%)	0()	
Nitrous Oxide			35 (33.0	%)	
Oral Conscious Sedati	ion		13 (12.3)	%)	
Hospital					
General Anesthesia			51 (48.19	%)	
TABLE 3: OUTCOME	ES AT 2-YEAR	FOLLO	V-UP		
TABLE 3: OUTCOME	ESAT 2-YEAR Total (106	FOLLO	N-UP	Hospital (5)	1) r
TABLE 3: OUTCOME	ESAT 2-YEAR Total (106 teeth)	FOLLO In- (55	N-UP Office	Hospital (5	1) p
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TABLE 3: OUTCOME Radiographic findings Furcation Radiolucency Periapical Radiolucency Pathological Root Resor No radiographic signs of failure No radiographic findings noted Clinical findings Spontaneous Pain Pain on Percussion Abscess/ Draining Fistul Excessive Mobility No clinical signs of failur No clinical findings noted Outcomes at 2-year follow- No treatment necessary Treatment Failure (Monit Treatment Failure (Extract Early Pathological Exfoli Natural Exfoliation	SAT 2-YEAR Total (106 Image: Solution of teeth Sat (26.4%)	FOLLON In-(55) 13 13 36 000 2000 10 36 10 36 10 36 10 36 10 36 10 110 <td>N-UP Office (23.6%) (23.6%) (18.2%) (65.5%) (65.5%) (65.5%) (2.7%) (2.7%) (2.7%) (18.2%) (2.7%) (18.2%)</td> <td> Hospital (5 15 (29.4%) 3 (5.9%) 19 (38.0%) 25 (49.0%) 1 (1.9%) 3 (5.9%) 1 (1.9%) 3 (5.9%) 1 (1.9%) 3 (5.9%) 1 (1.9%) 8 (15.9%) 2 (3.9%) 16 (31.4%) 2 (3.9%) 16 (31.4%) 2 (3.9%) 15 (29.4%) 21 (41.2%) 5 (9.8%) 0 (0.0%) 10 (19.6%) 31 (60.8%) </td> <td></td>	N-UP Office (23.6%) (23.6%) (18.2%) (65.5%) (65.5%) (65.5%) (2.7%) (2.7%) (2.7%) (18.2%) (2.7%) (18.2%)	 Hospital (5 15 (29.4%) 3 (5.9%) 19 (38.0%) 25 (49.0%) 1 (1.9%) 3 (5.9%) 1 (1.9%) 3 (5.9%) 1 (1.9%) 3 (5.9%) 1 (1.9%) 8 (15.9%) 2 (3.9%) 16 (31.4%) 2 (3.9%) 16 (31.4%) 2 (3.9%) 15 (29.4%) 21 (41.2%) 5 (9.8%) 0 (0.0%) 10 (19.6%) 31 (60.8%) 	

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RESULTS

- the Hispanic ethnic group. (Table 1)
- NOX. (Table 2)
- (p-value 0.19). (Table 3)
- studies. (Table 3)

CONCLUSIONS

- final restorations.

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Patients treated were younger in the hospital (4.39 years old on average) compared to in-office (5.42 years), which was a significant finding (p-value < 0.01). Teeth treated were highest in

While teeth treated were divided almost evenly in the in-office vs. in-hospital groups, most treatments in-office were performed under

• Treatment was found to be unacceptable in 23.6% of teeth treated in-office versus 39.2% treated in-hospital. This difference in outcomes between treatment environments was not significant

Overall, success rates in this study (76.4% in-office, 60.8%) in-hospital) were found to be consistent with success rates in other

Though success rates of dental treatment are generally higher for teeth treated in the hospital compared to teeth treated in a dental office, this study found that pulpotomy success rates were higher in teeth treated in-office (76.4%) versus in a hospital setting (60.8%). However, the difference was not significant. Different factors may lead to varying treatment success rates, including attempts to perform "heroics", operator technique or level of experience, choice of pulpotomy materials, or quality of

Proper case selection, provider training, and material selection is key. Pulpal status of teeth should be determined through radiographic and clinical evaluation, with consideration of reported signs and symptoms. Furthermore, 6-month follow-ups should be stressed in order to closely monitor pulpotomy-treated teeth.

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