

# Effect of Frequency of Preventive Dental Visits on Treatment Outcomes



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## INTRODUCTION

- Early childhood caries (ECC) continues to be the single most common chronic childhood disease in the United States<sup>3</sup>. Globally, it affects almost half of preschoolers.<sup>3</sup>
- While oral health has generally improved in the United States, caries in ages two to five has increased<sup>2,4,5</sup>.
- The available evidence supporting or refuting the practice of six-month recall visits in preventing disease is very low quality and insufficient for drawing any conclusions<sup>13,14</sup>.
- AAPD recommendations are based on systematic reviews about fluoride use and not on any studies based on frequency of preventative visits that include fluoride varnish application, nutritional and oral hygiene counseling, and anticipatory guidance<sup>16</sup>.
- Because most office have patients on three or six month recall schedules, It is important to investigate the effectiveness of preventive methods has on future treatment needs

## PURPOSE

This retrospective study aims to examine the effect of more frequent preventive dental visits in children under 83 months on specific dental treatment modalities: general anesthesia, oral conscious sedation (OCS), nitrous oxide (NO), silver diamine fluoride (SDF), and emergency services.

## METHODS

- Inclusion criteria:
  - Age 0-83 months
  - History of a comprehensive oral exam in the study clinic
  - ASA I or presenting with mild systemic disease, such as asthma
- Exclusion criteria:
  - No recall visits following initial visit
  - Total number of dental visits was two or less
  - Visit time span was less than one month
  - Two year or longer gap between dental visits
  - ASA II, III, IV.
- Metrics collected: Age at initial visit, timeframe between initial visit and 83 months of age, the number of NO, OCS, SDF visits, treatment visits without any adjuncts, GA referrals, and number of emergency visits were recorded.
- The recommended interval of recalls was set at three months due to the high caries risk population and age of patients.
- Outcomes measured were the differences between number of treatment visits by age, number of recalls, and frequency of recalls.
- Data was collected on REDCap and statistical analysis was performed using R software and Microsoft Excel.

Figure 1

Number of Recalls by Age

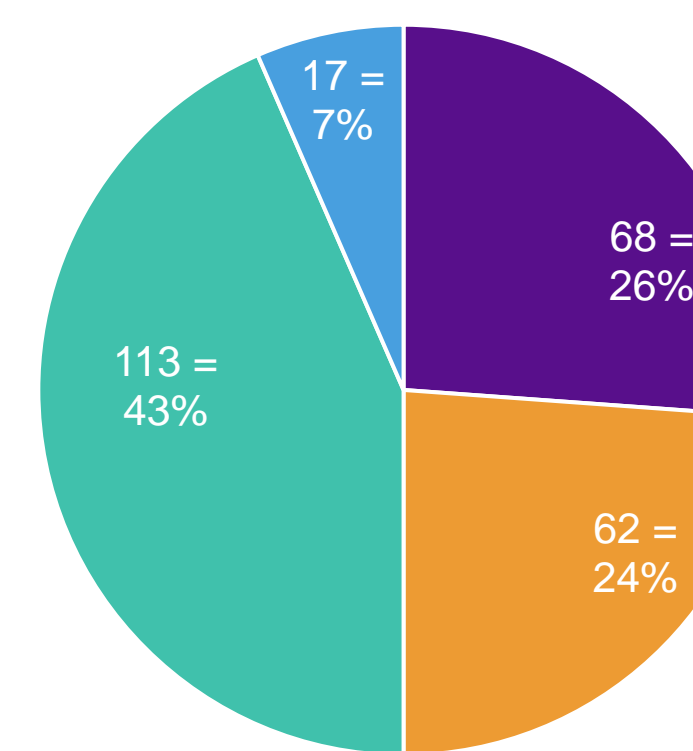
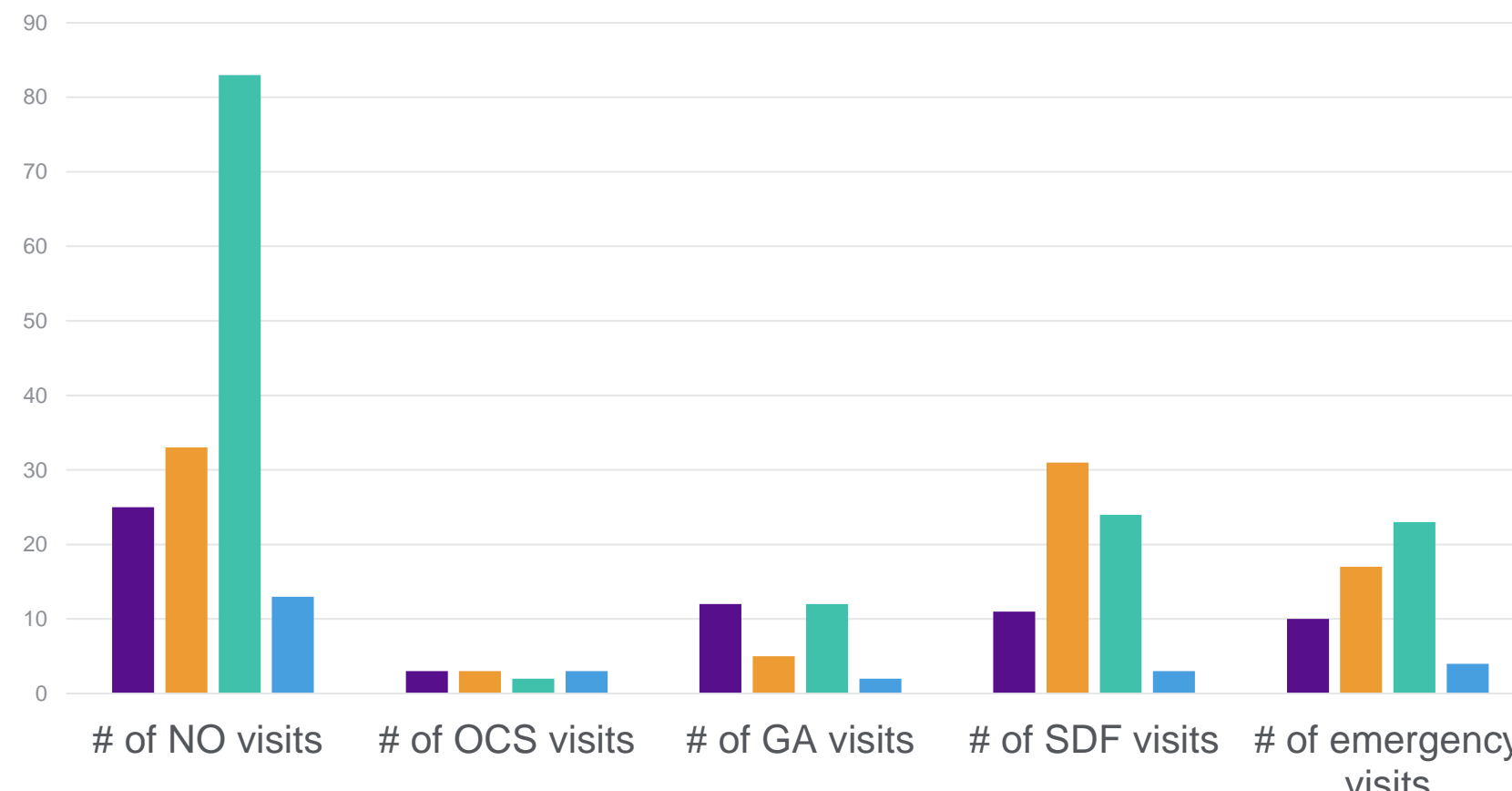


Figure 2

Dental Treatment by Age and Recall Visit



## RESULTS

- Of 260 charts included, 130 patients were under the age of 36 months at time of COE and 141 patients identified as female [Table 1].
- In total, 181 (69.6%) patients returned for fewer than six recall visits [Figure 1].
- The most frequent treatment modality was NO regardless of age and frequency of recall visits, with the most NO visits among patients 36-83 months of age with fewer than six recall visits [Figure 2].
- Patients who returned for six or more recall visits had significantly more SDF (P<0.001) and more OCS visits (p=0.014) [Table 2].
- Patients under 36 months of age had significantly more recalls (p<0.001), more SDF visits (p<0.001), fewer NO visits (p<0.001), fewer treatment visits without NO (p=0.005). On average, this age group returned for 5.92 recall visits (p<0.001) [Table 3].
- 14% of patients followed the recommended interval of 3-month recalls and had fewer treatment visits of all modalities [Table 4].
- Patients under 36 months with 3-month recalls had significantly fewer SDF (p=0.009) and NO visits (p<0.001) [Table 5].

Table 1

Demographics	
<i>n</i> = 260	
<b>Sex (%)</b>	
Female	141 (54.2)
Male	119 (45.8)
<b>Age (Mean (SD))</b>	35.5 (19.68)
<36 months	130
≥36 months	130
<b>BMI (%)</b>	
<85 percentile	5 (1.9)
≥85 percentile	255 (98.1)
<b>Number of recalls (Mean (SD))</b>	4.23 (3.48)
<b>Timeframe of visits (Mean (SD))</b>	31.05 (19.21)

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Table 2

Mean Number of Visits by Recall Count			
Type of Visit	Less than 6 recalls	6 or more recalls	p-value
Emergency	0.22	0.33	0.117
SDF	0.27	1.15	<0.001
Treatment w/o N2O	0.38	0.47	0.431
N2O	1.45	1.57	0.615
OCS	0.04	0.22	0.014
GA	0.13	0.10	0.496

Table 3

Mean Number of Visits by Age			
Type of Visit	Age <36 months	Age 36-83 months	p-value
Recall	5.92	2.55	<0.001
Emergency	0.25	0.25	0.908
SDF	0.80	0.28	<0.001
Treatment w/o N2O	0.25	0.55	0.005
N2O	1.06	1.92	<0.001
OCS	0.08	0.11	0.643
GA	0.14	0.11	0.468

Table 4

Mean Number of Visits by Frequency of Recalls			
Type of Visit	> Three months	Every three months	p-value
Emergency	0.27	0.08	0.002
SDF	0.59	0.25	0.005
Treatment w/o N2O	0.45	0.19	0.011
N2O	1.57	0.81	<0.001
OCS	0.11	0.03	0.095
GA	0.12	0.14	0.771

Table 5

Mean Number of Visits by Frequency of Recalls Under 36 months of age only			
Type of Visit	> Three months	Every three months	p-value
Emergency	0.26	0.13	0.221
SDF	0.86	0.33	0.009
Treatment w/o N2O	0.27	0.2	0.549
N2O	1.15	0.13	<0.001
OCS	0.08	0.07	0.818
GA	0.14	0.13	0.904

## DISCUSSION

- Reapplication of SDF increases caries arrest rate, which may explain the higher count of SDF visits in patients with six or more recall visits<sup>19</sup>.
- The reasoning for significantly more SDF visits and fewer treatment visits in children under the age of 36 months may be because of a tendency towards minimally invasive caries management approach in younger patients.
- Patients seen every three months had significantly fewer emergency, SDF, and treatment visits, suggesting that a higher frequency of recalls may be associated with lower dental treatment needs.
- Small sample size may contribute to the lack of statistical significance in OCS and GA visits.
- With only five eligible charts, results related to BMI were insignificant. BMI was not a reliable measure due to patients fluctuating in BMI as they age and because BMI is not calculated for patients under the age of two years old.
- **Limitations:**
  - The study was subject to limitations inherent to retrospective chart reviews such as sampling bias because of the exclusion of children with medical conditions and a high caries risk population, which may not yield generalizable results.
  - One of the possible reasons for inconsistent visits may be due to the COVID-19 pandemic, which contributed to clinic closures and increased patient cancellations<sup>18</sup>.
  - Provider competency and preferences can affect success of treatment because most of the patient care was completed by pediatric dental residents.
- Future studies should attempt to control confounding factors by calibrating providers to diagnose, treatment plan, and discuss anticipatory guidance similarly.

## CONCLUSIONS

1. Most children did not return for regular preventive dental visits.
2. Establishing dental care before 36 months of age resulted in more SDF application.
3. More frequent recalls resulted in more SDF application.
4. Number of recalls did not have a significant effect on restorative treatment regardless of modality, but higher frequency of recalls resulted in fewer emergency and NO visits.

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