

# Preventative Dental Care Utilization After OR in Children with ASD

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## Introduction

Children with special health care needs such as autism spectrum disorders (ASD), are at a greater risk of experiencing healthcare disparities. Specifically, there are many barriers surrounding the ability of families to provide regular dental care for their children with autism.<sup>3</sup> With the rise of children being diagnosed with ASD, dentists are more likely to treat patients with ASD.<sup>7</sup> Due to behavioral challenges, sensory processing difficulties, the inability of patients with ASD to engage in daily oral hygiene practices, and extensive decay, ASD is a frequent reason for utilizing advanced behavior strategies, such as general anesthesia to safely deliver effective dental treatment.<sup>1,4,5</sup>

Research in the medical field claims youth with ASD utilize primary care, specialty care, and acute care more frequently than youth without ASD. Children with ASD are frequently in contact with the health care system, thus more likely to receive preventative services compared to children without ASD. In particular, younger youth with ASD are more likely to use medical preventative services compared to older youth.<sup>1,2</sup> Frequently children with ASD who have been referred to the operating room for completion of dental treatment do not return for recommended 3-month fluoride varnish visits, 6-month recalls, or may only return for emergency visits.

The purpose of this retrospective pilot study (chart review) is to explore the preventative service utilization of children with ASD compared to children without ASD following completion of dental treatment under general anesthesia and whether or not there is a difference in services utilized between age 0-6 years, 6-12 years, and 12-18 years of age. We hypothesize that children with ASD are less likely to return after general anesthesia for preventative services.

## Methods

**Study Design:** 2165 charts were identified and the first 1000 charts that met the inclusion criteria were included for analysis. 500 autism patients were matched with 500 non-autism patients based on date of OR service and age at OR visit, and were followed-up for 10 years to determine when the first visit following general anesthesia. Subsequently all data obtained was de-identified.

- | Inclusion Criteria   | Exclusion Criteria  |
|--|---|
| 1. Patients presenting to the EIOH Division of Pediatric Dentistry Operating Room from January 1, 2012 through January 1, 2020 and those presenting for subsequent periodic and emergency visits at EIOH Division of Pediatric Dentistry Clinic (PDD). | 1. Patients considered ASA 4, without any developmental condition         |
| 2. Patients diagnosed with ASD and considered ASA 1,2,3, at PDD.   | 2. Patients considered ASA 4 with any developmental condition             |
| 3. Patients without ASD and considered ASA 1,2,3 at PDD.   | 3. Children whose dental home is not EIOH Division of Pediatric Dentistry |
| 4. Patients with state & private insurance   |   |

**Statistical Analyses:** Kaplan-Meier survival curves were plotted with the survival time to amount of time for autism and non-autism patients to return for first visit and return time as the outcome for each age group. Autism, age group, ASA status, sex, ethnicity, were controlled for in the analysis. Odds ratios and 95% confidence interval were estimated. Additional analyses were performed to evaluate the association between autism and the probability of returning to dental home following general anesthesia.

Figure 1. Preventative and Emergency Visit Return Rate

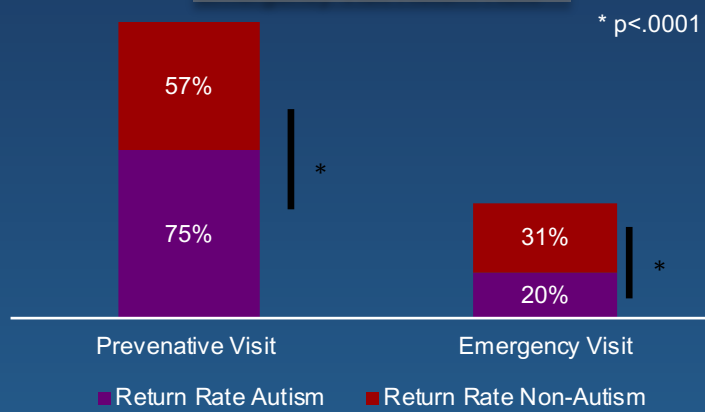


Figure 2. Preventative and Emergency Visit No-Return Rate

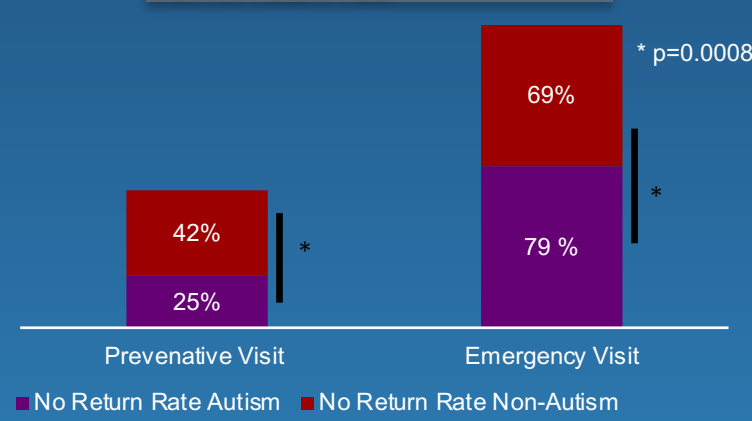
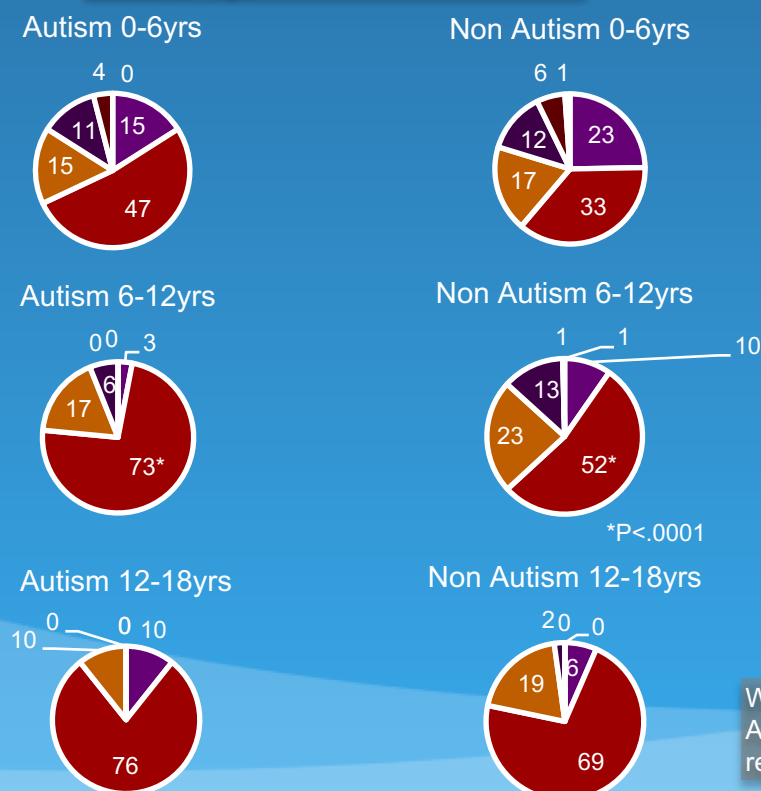


Figure 3. Frequency of Appointment Type Based on Age



When compared to their Non-Autism counterparts, children with Autism, in the 6-12 year group showed statistical significance in returning for recall appointments.

## Results

Table 1. Regression Analysis of Returned and Non-Returned Patients Evaluating Association Between Autism and the Probability of Returning

Whole Sample	Chi-Square	Pr > ChiSq	Odds Ratio Point Estimate	95% CI
<b>Autism vs Non-Autism Return</b>				
Autism	30.2858	<.0001	0.351	0.242:0.51
<b>Sex</b>				
Female	9.746	0.0018	1.78	1.239:2.556
<b>ASA Status</b>				
ASA 1	51.362	<.0001	3.778	2.627:5.435

Table 2. Regression Analysis of Preventative Visits Between Autism and the Probability of Returning

Preventative Visit	Chi-Square	Pr > ChiSq	Odds Ratio Point Estimate	95% CI
<b>Autism vs Non-Autism Return</b>				
Autism	6.0732	0.0137	1.532	1.091 :2.15
<b>Ethnicity</b>				
Hispanic	12.6769	0.0002	1.658	1.268 :2.168
<b>Age at First Visit</b>				
12-18 years vs 0-6yrs	9.4565	0.0021	2.656	1.563:4.515
6-12 years vs 0-6yrs	1.1933	0.2747	1.375	1.118:1.692

Table 3. Regression Analysis of Emergency Visits Between Autism and the Probability of Returning

Emergency Visit	Chi-Square	Pr > ChiSq	Odds Ratio Point Estimate	95% CI
<b>ASA Status</b>				
ASA 1	9.1366	0.0025	0.73	0.595:0.895
<b>Ethnicity</b>				
Hispanic	11.3843	0.0007	0.6	0.446:0.807
<b>Age at First Visit</b>				
12-18 years	7.7162	0.0055	0.499	0.28:0.887
6-12 years	11.3953	0.0007	1.236	0.997:1.532

Figure 3. Kaplan-Meier Survival Analysis of Time of Return from OR Visit to First Preventative Visit for Autism and Non-Autism Patients

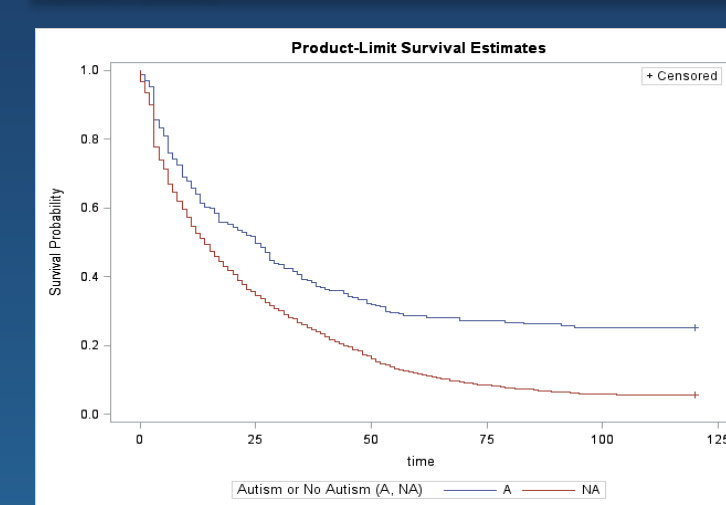


Figure 4. Kaplan-Meier Survival Analysis of Time of Return for First Preventative Visit Based on Age Group

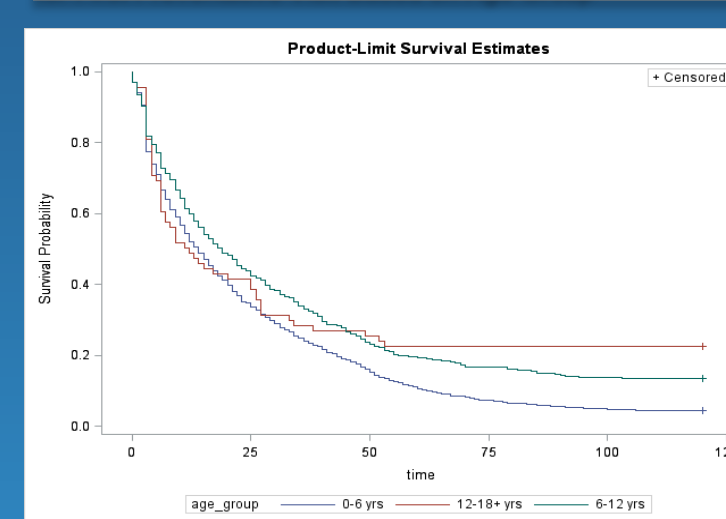
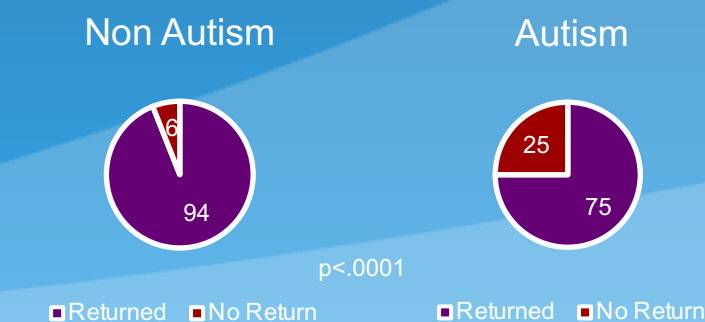


Figure 4. Return Rate of Autism and Non-Autism Patients



## Conclusions

- Patients with ASD have a statistically significant association of not returning to the Pediatric Clinic following general anesthesia compared to their Non-ASD counterparts.
- 94% of patients without ASD return for a visit versus 74% of patients with ASD return for a visit.
- When patients with ASD return to the clinic, they are more likely to return for a preventative visit (fluoride appointment or recall appointment). ASD patients have a statistically significant association of returning for a preventative visit compared to Non-ASD.
- The 6-12 year ASD cohort showed a statistically significant association of returning for a recall visit compared to their 6-12 year Non-ASD counterparts.
- Females have a statistically significant association of returning to the Pediatric Clinic following their general anesthesia appointment compared to males.
- ASA 1 patients have a statistically significant association of returning to the Pediatric Clinic following general anesthesia compared to ASA 2 and 3 patients.
- Hispanics are more likely to return for a preventative visit than Non-Hispanics
- 12-18 year old group of both ASD and Non-ASD patients is more likely to return for a preventative visit.
- 6-12 year old group of both ASD and Non-ASD patients is more likely to return for an emergency visit when compared to 0-6yr and 12-18yr old age group.
- 50% of patients with ASD return for their first visit within 2 years
- 50% of patients without ASD return for their first visit within 1 year
- The 0-6 year age group returns for their first visit at the 1 year
- The 6-12 year age group returns for their first visit at the 18 month mark.
- The 12-18 year age group returns for their first visit at the 6 month mark.
- Barriers still remain to care for children with ASD in the dental field, specifically for the 0-6 year age group. This may be a time when families are prioritizing medical needs over dental.<sup>1,2</sup> Thus, family education and establishing an interprofessional relationship with primary care providers and providing dental recommendations early on may combat this issue.

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