

# Incidence of Autism Spectrum Disorder in Patients Requiring Dental Treatment Under General Anesthesia: A Retrospective Study



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## INTRODUCTION

Autism is a neurological and developmental disorder involving persistent challenges with social communication, restrictive interests, learning, and repetitive behaviors. Patients with autism may have difficulty with understanding the importance of oral hygiene care and express difficulty physically managing oral hygiene leading to oral manifestations to develop such as dental caries. This study investigates the hypothesis that children diagnosed with autism spectrum disorder (ASD) are more likely to require comprehensive oral rehabilitation (COR) under general anesthesia compared to their neurotypical peers due to limitations associated with disorder.

## OBJECTIVES

The primary objective of this study was to evaluate whether children with autism spectrum disorder (ASD) are more likely to require complete oral rehabilitation (COR) under general anesthesia for dental treatment. Therefore, the association between ASD and the use of general anesthesia (GA) by categorizing the population according to two age groups: 2-6 years (pre-operational stage) and 7-17 years (concrete/formal operational stages) were explored by the authors with the hypothesis that children with ASD are more likely to be treated in the O.R., especially the younger population group.

## METHODS

### Inclusion criteria:

- Patients aged 2-17 years.
- Patients with/without autism
- Patients who need dental treatment (“Caries” = Yes or “Extractions” = Yes)

### Exclusion criteria:

Patients who do not need treatment (“Caries” = No and “Extractions” = No)

### Analytic Methods

A random chart review audit was performed where a total of 600 charts were reviewed retrospectively. 300 charts from each age group were analyzed by age and if the patient has ASD. Descriptive statistics for each variable were presented with frequencies (percentage) for the overall sample and by age groups. All group comparisons were assessed using Chi-square tests (categorical variables). Multi-variable logistic regression was performed to assess the association of the status of autism with the use of GA for dental treatment (going to the operating room (the event of interest) vs going to the clinic), adjusting for gender and age, according to each of age groups. All statistical tests were two-sided at a significant level of 0.05. All analyses were conducted using SASV9.4 (SAS Institute, Cary, NC).

## RESULTS

There were 321 subjects in total, with 209 subjects who were less than 7 years old and, and 112 subjects who were equal to or greater than 7 years old.

Table 1 provides the descriptive statistics for each variable for the overall population and according to age groups. There were significant differences in the status of autism, extractions and caries between the 2-6 years old group and 7-17 years old.

Table 1. Descriptive statistics

Variables	Overall (N = 321)	2-6 years old (N = 209, 65.1%)	7-17 years old (N = 112, 34.9%)	P-value
Gender				0.5871
Male	151 (47.0%)	96 (45.9%)	55 (49.1%)	
Female	170 (53.0%)	113 (54.1%)	57 (50.9%)	
Autism				0.0093
YES	37 (11.5%)	17 (8.1%)	20 (17.9%)	
NO	284 (88.5%)	192 (91.9%)	92 (82.1%)	
Caries				<.0001
YES	288 (89.7%)	201 (96.2%)	87 (77.7%)	
NO	33 (10.3%)	8 (3.8%)	25 (22.3%)	
Extractions				0.0202
YES	116 (36.1%)	66 (31.6%)	50 (44.6%)	
NO	205 (63.9%)	143 (68.4%)	62 (55.4%)	
Dental Treatment with/without GA				0.1065
OR	75 (23.4%)	43 (20.6%)	32 (28.6%)	
Clinic	246 (76.6%)	166 (79.4%)	80 (71.4%)	

Table 2 shows the frequency and percentage of autism by dental treatment in the 2-6 years old group. There were 6 (3.6%) autistic children out of 166 subjects who went to the clinic and 11 (25.6%) autistic children out of 43 children who went to the OR.

Table 2: Frequency of Autism by dental treatment (2-6 years old)

Autism	Dental Treatment with/without GA		
	OR	Clinic	Total
Yes	11 (25.6%)	6 (3.6%)	17
No	32 (74.4%)	160 (96.4%)	293
Total	43	166	209

In the 2-6 age group, there were significant differences in the status of autism with dental treatment. The odds of going to the OR were 9.0 times higher in children with autism than in children without autism. (OR: 9.0, 95% CI: 3.1-26.7, P-value: <.0001) However, there was no significant association between age and dental treatment after adjusting for gender and autism. (p =0.9367) In addition, there as no significant association between gender and dental treatment after adjusting for age and autism. (p = 0.8126)

Table 3 shows the frequency and percent of autism by dental treatment in 7-17 years old group. There were 8 (10.0%) autistic children out of 80 subjects who went to the clinic and 12 (37.5%) autistic children out of 32 children who went to the OR.

Table 3: Frequency of Autism by dental treatment (7-17 years old)

Autism	Dental Treatment with/without GA		
	OR	Clinic	Total
Yes	12 (37.5%)	8 (10.0%)	20
No	20 (62.5%)	72 (90.0%)	92
Total	32	80	112

In the 7-17 age group, there were significant differences in the status of autism with dental treatment. The odds of going to the OR were 5.3 times higher in children with autism than in children without autism. (OR: 5.3, 95% CI: 1.9-14.9, P-value: 0.0015) However, there was no significant association between age and dental treatment after adjusting gender and autism (p = 0.7644). In addition, there was no significant association between gender and dental treatment after adjusting for age and autism (p= 0.9800).

### Overall Findings:

- ASD status significantly determined the odds of going to the OR (p<0.0001) in ages 2-6 (p<0.0016)
- There was no significant association between gender and dental treatment
- There was no significant association between age and dental treatment.

## CONCLUSION

From this study, it can be concluded that children with ASD are more likely to be treated in the OR than in the clinic, especially in the younger age group. This finding underscores the unique challenges faced by children with ASD regarding oral care, emphasizing the critical importance of tailored preventive health practices and effective home care strategies. Therefore, special consideration for children with ASD is needed to improve their oral health and enhance overall treatment outcomes. It is to be noted in this study, however, a larger percentage of patients in the age group of 2-7 were present.

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