

### Introduction

- According to the American Psychiatric Association, autism spectrum disorder (ASD) is a “developmental disability that includes deficits in social communication and social interaction and the presence of restricted, repetitive patterns of behavior, interests, or activities that can persist throughout life”.<sup>1</sup> The prevalence is estimated to be 1 in 44 children, with larger frequency of occurrence in boys than in girls.<sup>2</sup>
- Children with ASD have multiple medical and behavioral difficulties that may make dental treatment challenging.
- There are several treatment modalities that exist to manage children with ASD who need comprehensive restorative and surgical dental treatment. General anesthesia might be the best option as dental treatment can be done under optimal conditions, theoretically ensuring ideal outcomes.<sup>3</sup>
- The outcomes for these children are of a great interest because of the high prevalence of dental treatment being performed under general anaesthesia.<sup>4</sup> Moreover, it was confirmed that there is an increased risk of incremental decay with children who had high initial caries rate.<sup>5</sup>
- Very few studies have investigated the outcomes of treatment performed during oral dental rehabilitation for persons with Autism Spectrum Disorder.

### Objectives

- The primary objective of this study is to evaluate whether Autism Spectrum Disorder (ASD) is related to the outcomes of restorative procedures performed under general anesthesia.
- To provide better information to caregivers regarding the potential for caries recurrence and to formulate an individualized restorative and maintenance plan.

### Methods

The research was approved by Institutional Review Board of Franciscan Children’s Hospital.

#### Study population:

- A cross-sectional retrospective chart review, information was obtained from patients’ electronic dental records at Franciscan Children’s Hospital.
- Dental records were reviewed from October 2014 to December 2020 for patients between ages 2 to 7 receiving dental care under GA.
- Subjects with Autism (ASD) who received restorative treatment under GA were age-matched with health controls (HC) who also received restorative treatment under GA.
- A total of 186 eligible subjects included (93 ASD, 93 HC), who have had at least one restorative dental procedure and at least one follow-up visit (6 Months to 24 months post-oral rehabilitation).

#### Data collection and analysis:

- De-identified data was imported from Dentrix Enterprise and all statistical analyses were performed using R software (version 3.6.3).
- The chi-square test of independence or Fisher-Exact test was used to assess the unadjusted association between categorical variables (health condition and risk of caries recurrence (Fig1).
- Unadjusted Odds Ratio was calculated to determine the odds of caries recurrence in subjects with ASD vs health controls. (Table1).
- Teeth treated with extraction were not included in the analysis
- The failure rate was calculated to assess the distribution of caries recurrence by the type of treatment (Fig 2).
- The failure rate was calculated to assess the distribution of caries recurrence by the type of each treatment method compared between cases (ASD) and healthy controls (Fig 3).

### Results

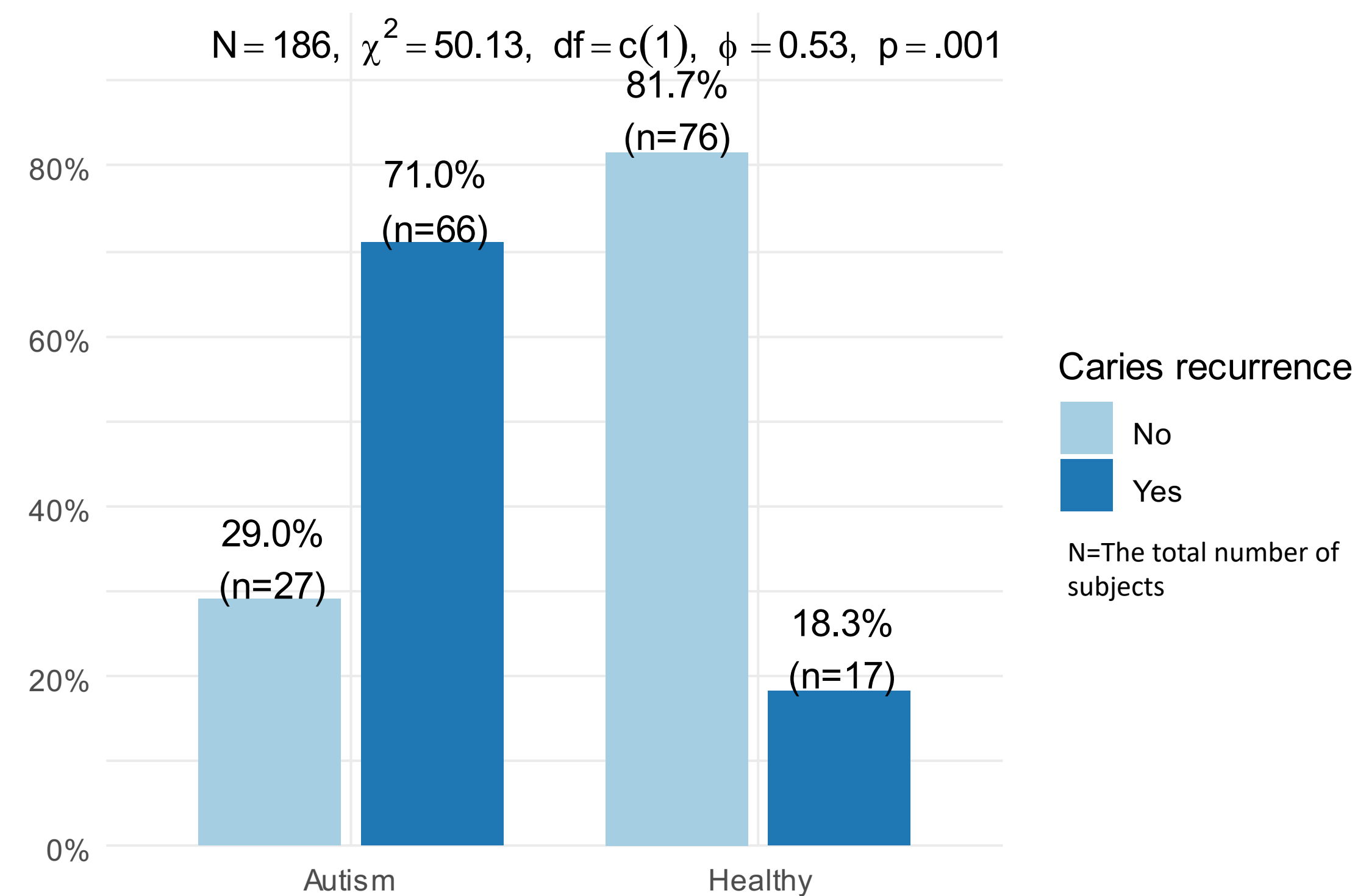


Figure 1. Association between health condition and caries recurrence

	Caries Recurrence +	Caries Recurrence-	Total	Odds
ASD	66	27	93	2.44(1.58 to 1.07)
TD	17	76	93	0.22 (0.12 to 0.37)
Total	83	103	186	0.81 (0.60 to 1.07)
Odds Ratio (95% CI)			10.93 (5.48, 21.80)	

Table 1: Unadjusted odds ratio

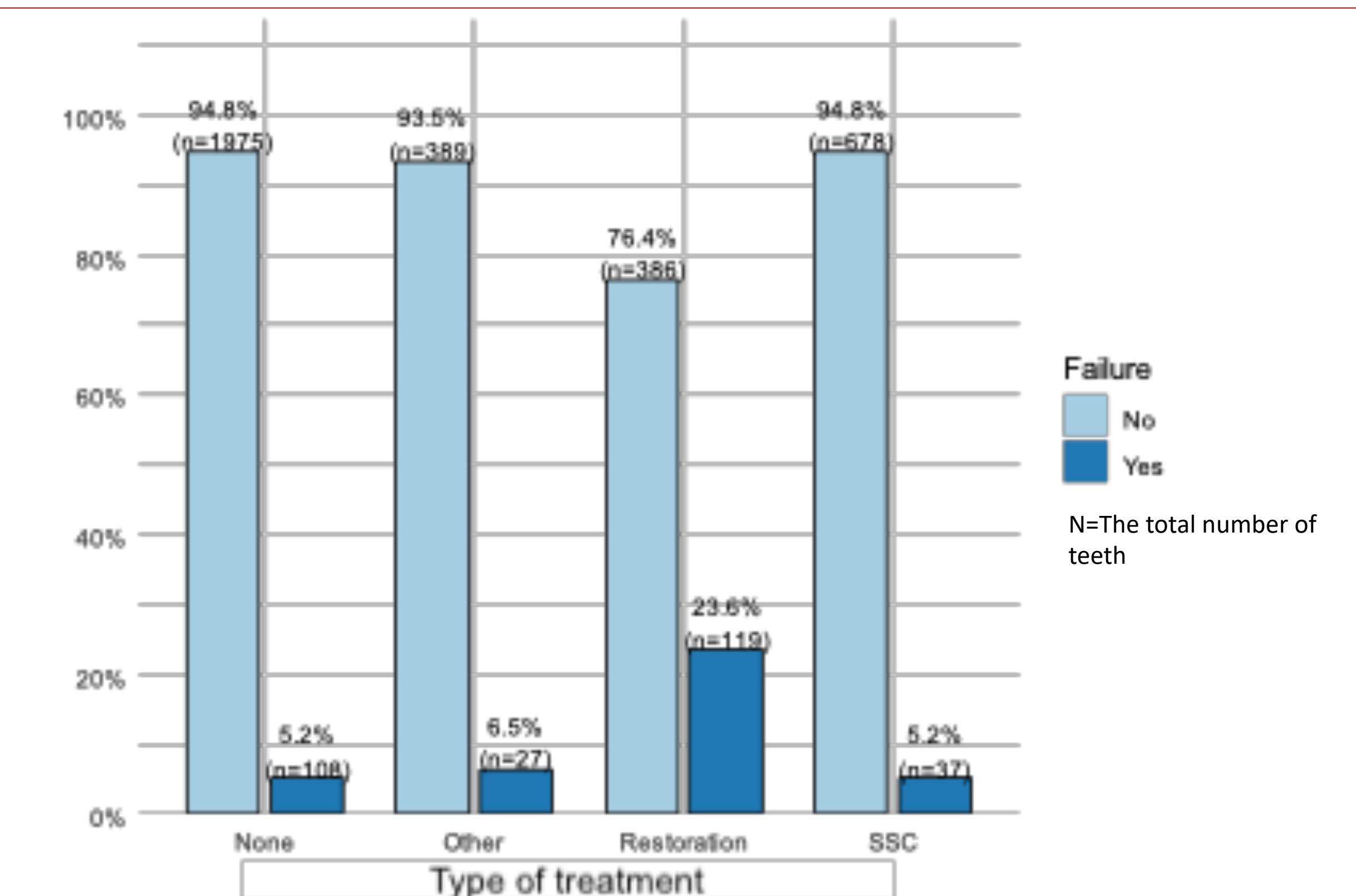


Figure2. Distribution of caries recurrence by type of restoration

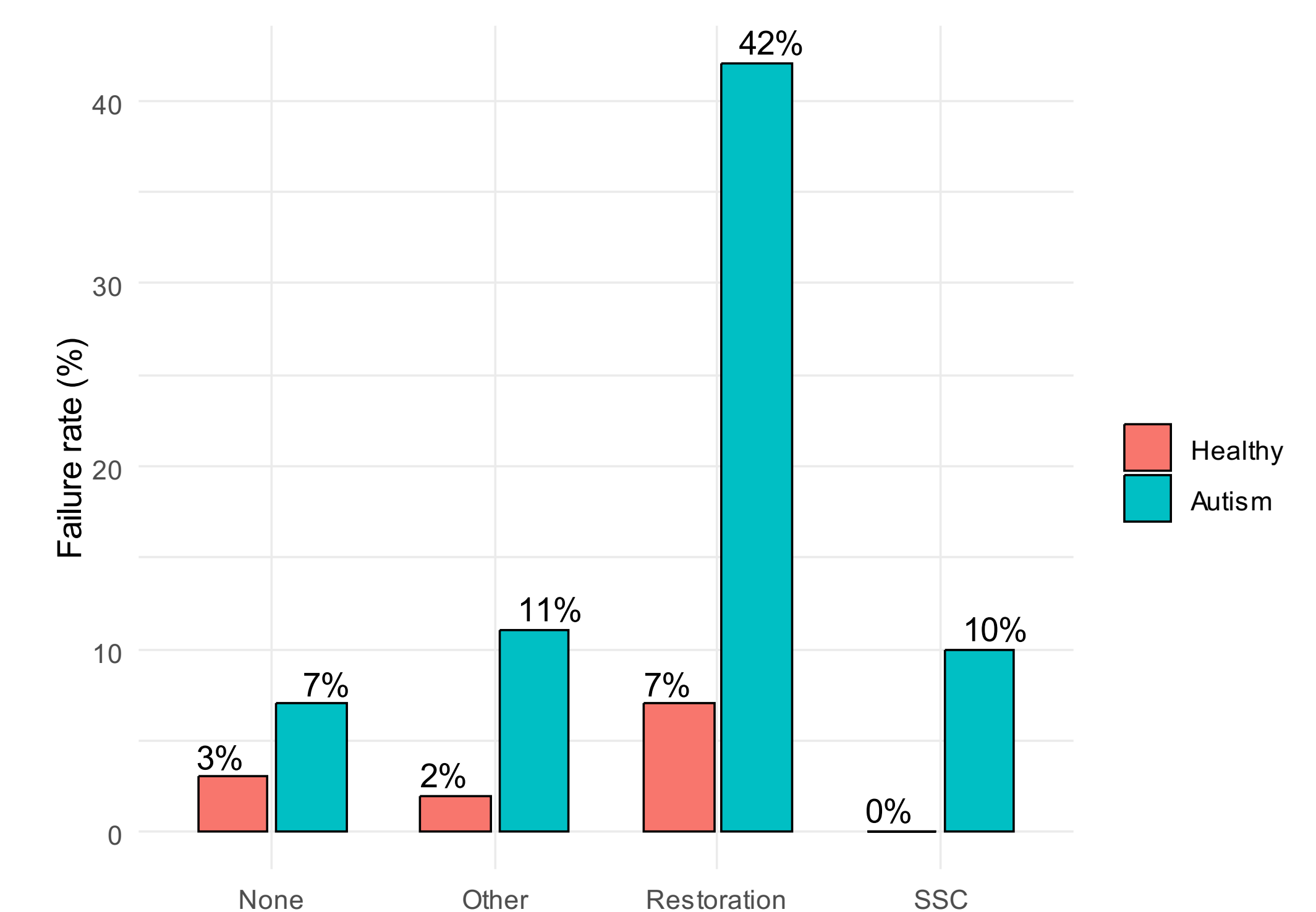


Figure 3. Distribution of caries recurrence by the type of treatment and group

### Discussion

- A statistically significant association was observed between medical history (ASD) and Caries Recurrence, with higher rates of caries recurrence being (71%) in patients with ASD compared to healthy controls (18.3%).
- The odds of caries recurrence were higher in patients with ASD (unadjusted OR = 10.93, P < 0.001), indicating that the exposure odds among ASD are 10.93 times greater than exposure odds among controls.
- Stainless steel crowns had the lowest failure (5.2%) for primary teeth in young patients treated under general anesthesia, while restorations (composites and composite strip crowns) had the highest failure rate (23.6%).
- Restorative Failure rates were higher in subjects with ASD than in health controls. Results also suggest that the failure experienced in patients with ASD who had restorations (42%) was much higher than the failure experienced in patients with ASD with SSC (10%).

### Conclusion

- This is the first study examining the association between ASD and restorative failure rates.
- A statistically significant association was observed between medical history (ASD) and Caries Recurrence/Restorative Failure, with higher rates of caries recurrence being in patients with ASD compared to healthy controls.
- Stainless steel crowns are the most reliable restorations for primary teeth in young patients treated under general anesthesia, while composites and composite strip crowns are the least reliable.
- SSC failures are more likely to be observed among patients with Autism Spectrum Disorder compared to healthy controls.
- The dental professional should work with the caregiver of any child requiring oral rehabilitation to formulate an individualized maintenance protocol.