

# Morbidity & Mortality Outcomes Between Children with Early Childhood Caries Treated Under SED or GA



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## INTRODUCTION

Dental treatment completed under general anesthesia and sedation have become more common among pediatric dentists. Placing a pediatric patient under anesthesia may result in various adverse reactions including: hypoxemia, respiratory reaction, pain, prolonged recovery time, and possible aborted treatments. It is critical for the pediatric clinician to be aware of such reactions and implement the knowledge and skills necessary to minimize these risks.

Certain conditions such as developmental disabilities can pose a greater risk of desaturation compared with children without developmental disabilities <sup>[1,4]</sup>.

A positive respiratory history such as wheezing can be associated with a greater risk of airway obstruction <sup>[2]</sup>. Appropriate drug selection and understanding of the pharmacokinetics and pharmacodynamics can play a factor in recovery time of patient <sup>[3,5]</sup>.

## PURPOSE

The purpose of this study is to compare morbidity events, such as oxygen desaturation, respiratory reaction, rate of aborted treatment, recovery time, and pain in relation to ASA Status among children under 7 years of age with early childhood caries treated under sedation (SED) or general anesthesia (GA).

## METHOD

- Pediatric subjects (908) under 7 years of age selected from a pool who met the inclusion/exclusion criteria at NYU Langone Hospitals' affiliated health centers in Brooklyn, NY; Nashville, TN; Pleasant View, TN and Tampa, FL.
- This was a retrospective chart review study from 01/01/2010 to 12/31/2020. Study design used a stratified, convenience sampling method to determine rate of aborted treatment using one or more sedative agents, hypoxemia during sedation or general anesthesia, pain correlation to ASA status, recovery time for lidocaine and respiratory reaction for children with respiratory disease.
- Statistical analyses of the primary variables were completed with Fisher Exact Test, and Two Sample T-Test. The data was input into a secure database REDcap and analyzed by NYU Langone Personnel.

## FIGURES & TABLE

	Total Sample	Moderate Sedation	General Anesthesia
<b>Age in years (n, %)</b>			
0	0 (0.0)	0 (0.0)	0 (0.0)
1 to less than 2	6 (0.7)	0 (0.0)	6 (1.3)
2 to less than 3	36 (4.0)	3 (1.0)	25 (5.5)
3 to less than 4	134 (14.8)	30 (9.8)	78 (17.1)
4 to less than 5	261 (28.7)	91 (29.6)	128 (28.1)
5 to less than 6	259 (28.5)	88 (28.7)	130 (28.6)
6 to less than 7	212 (23.3)	95 (30.9)	88 (19.3 )
<b>Sex (n, %)</b>			
Male	467 (51.4)	165 (53.7)	229 (50.3)
Female	440 (48.5)	141 (45.9)	226 (49.7)
No response	0 (0.0)	1 (0.3)	0 (0.0)
<b>Ethnicity (n, %)</b>			
Hispanic	274 (30.2)	77 (25.1)	125 (27.5)
Non-Hispanic	477 (52.5)	163 (53.1)	259 (56.9)
No response	157 (17.3)	67 (21.8)	71 (15.6)

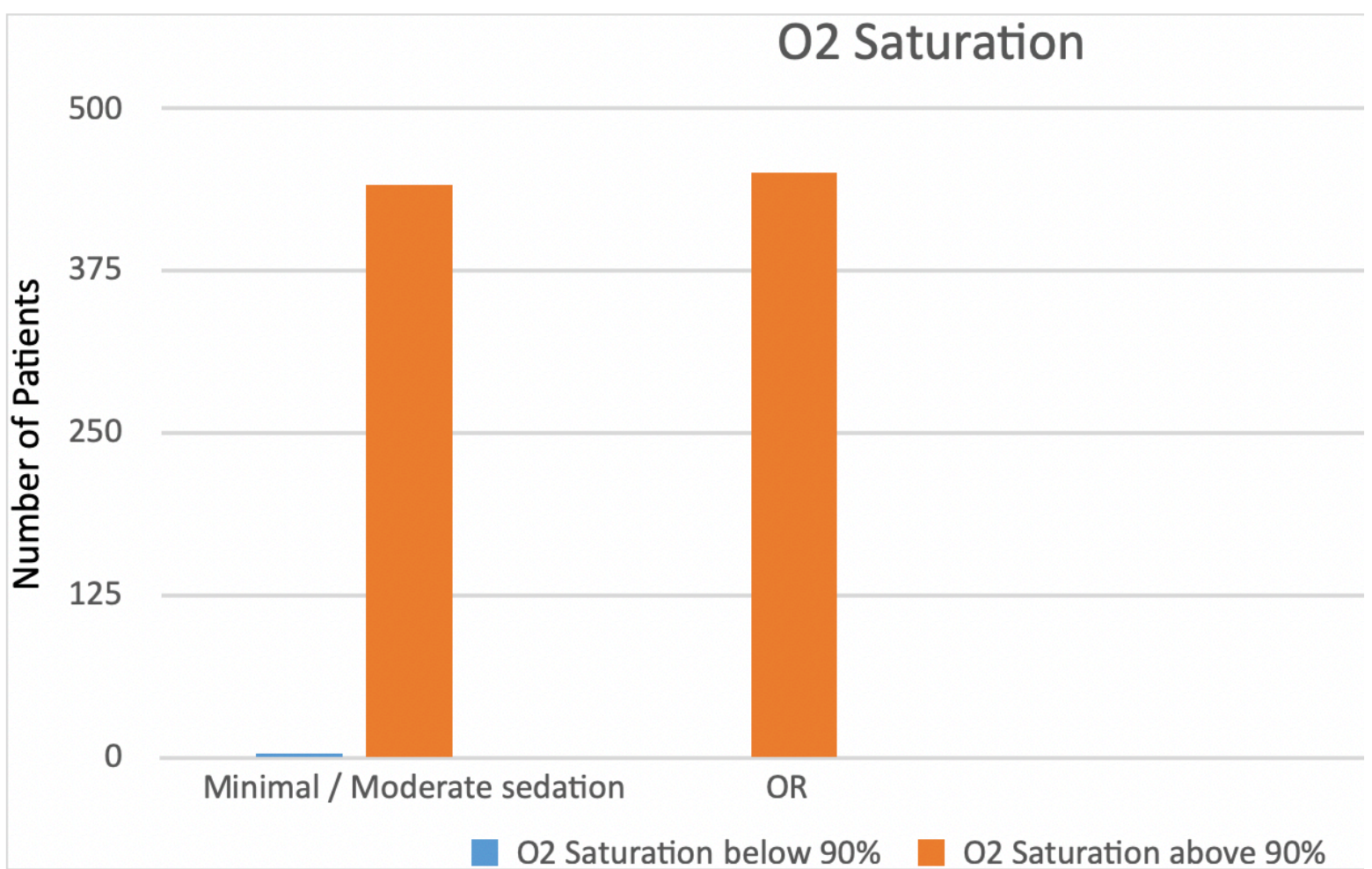


Figure 1 O<sub>2</sub> Saturation

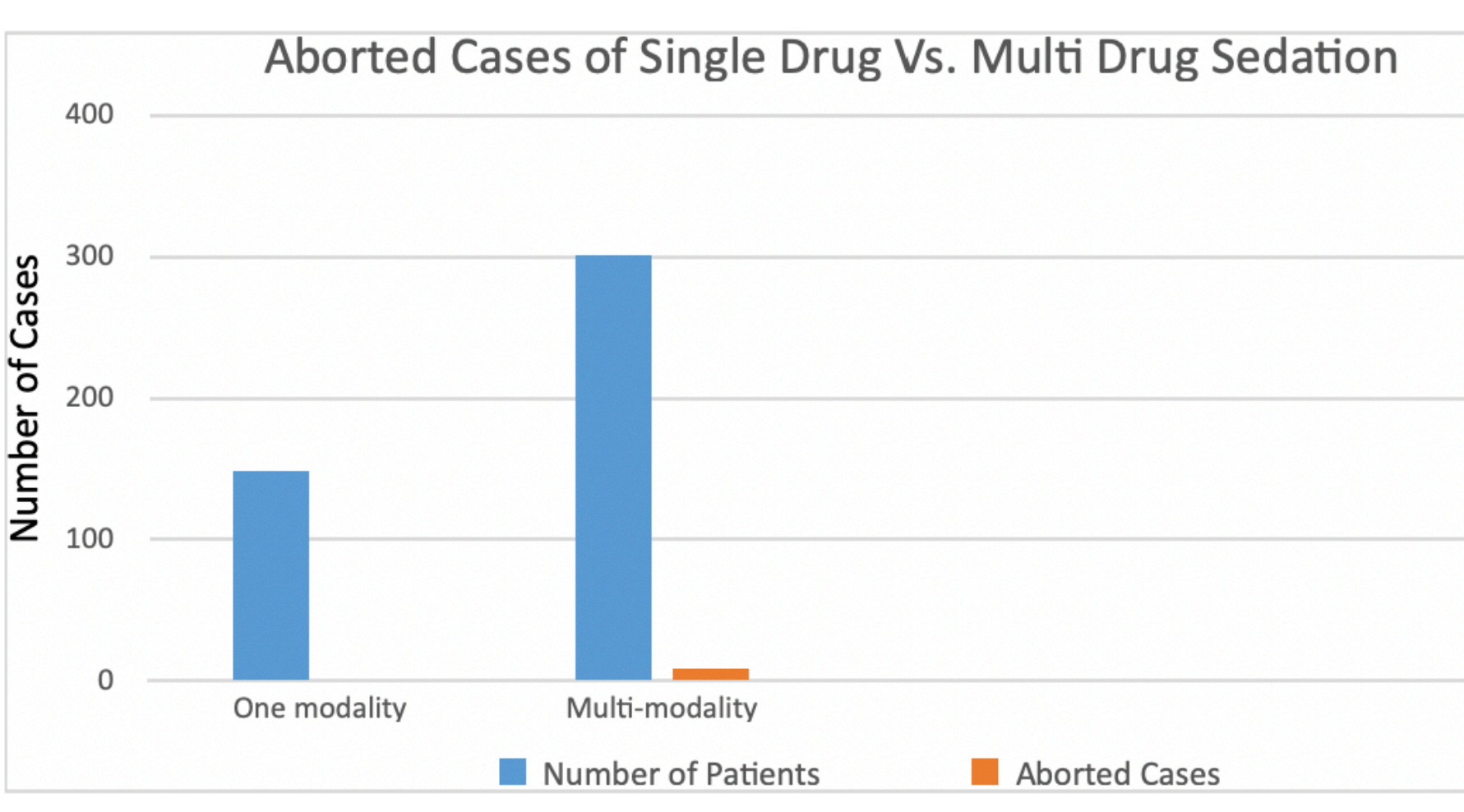


Figure 2 Aborted Cases

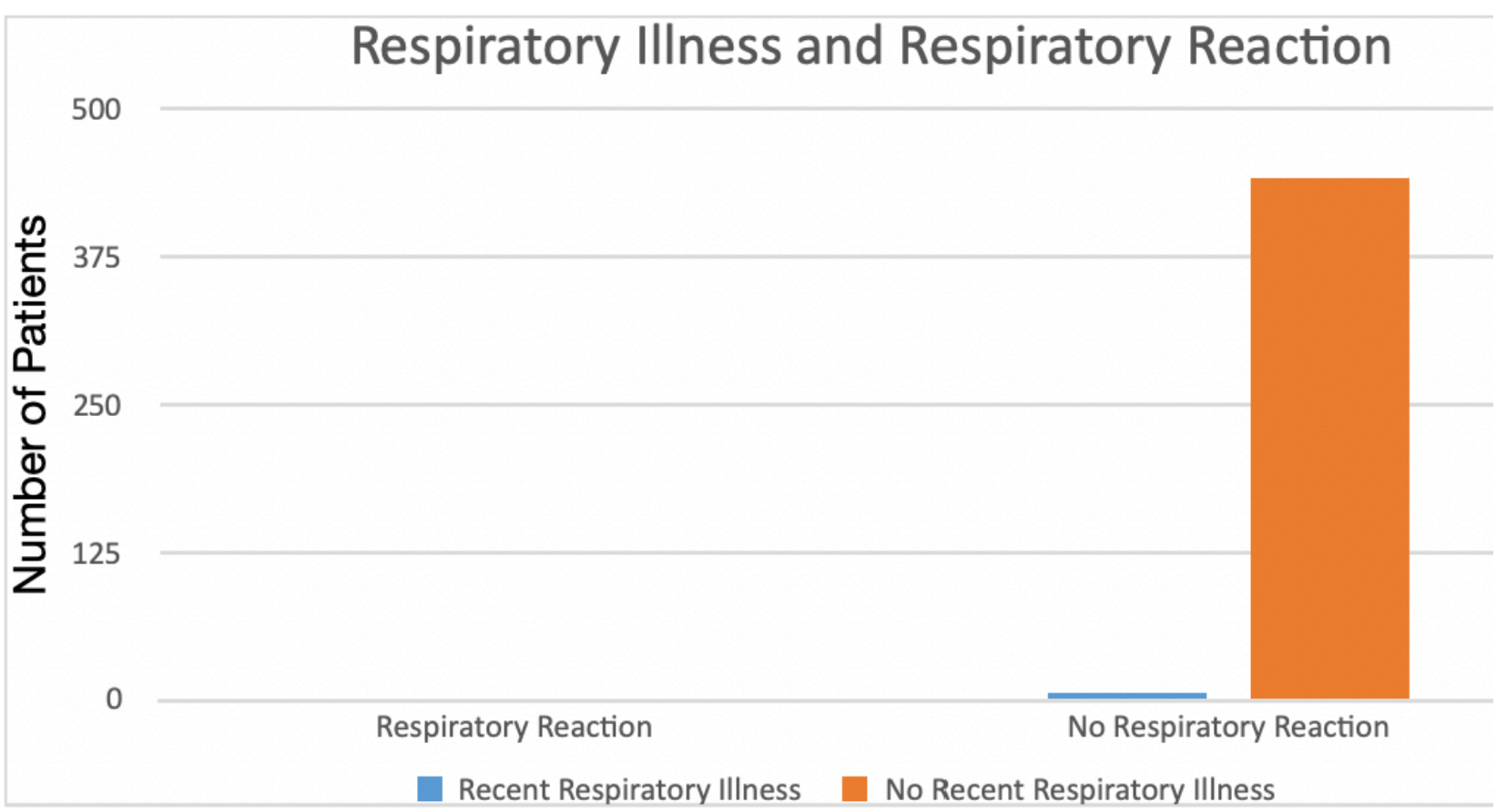


Figure 3 Recent Respiratory Illness and Respiratory Reaction

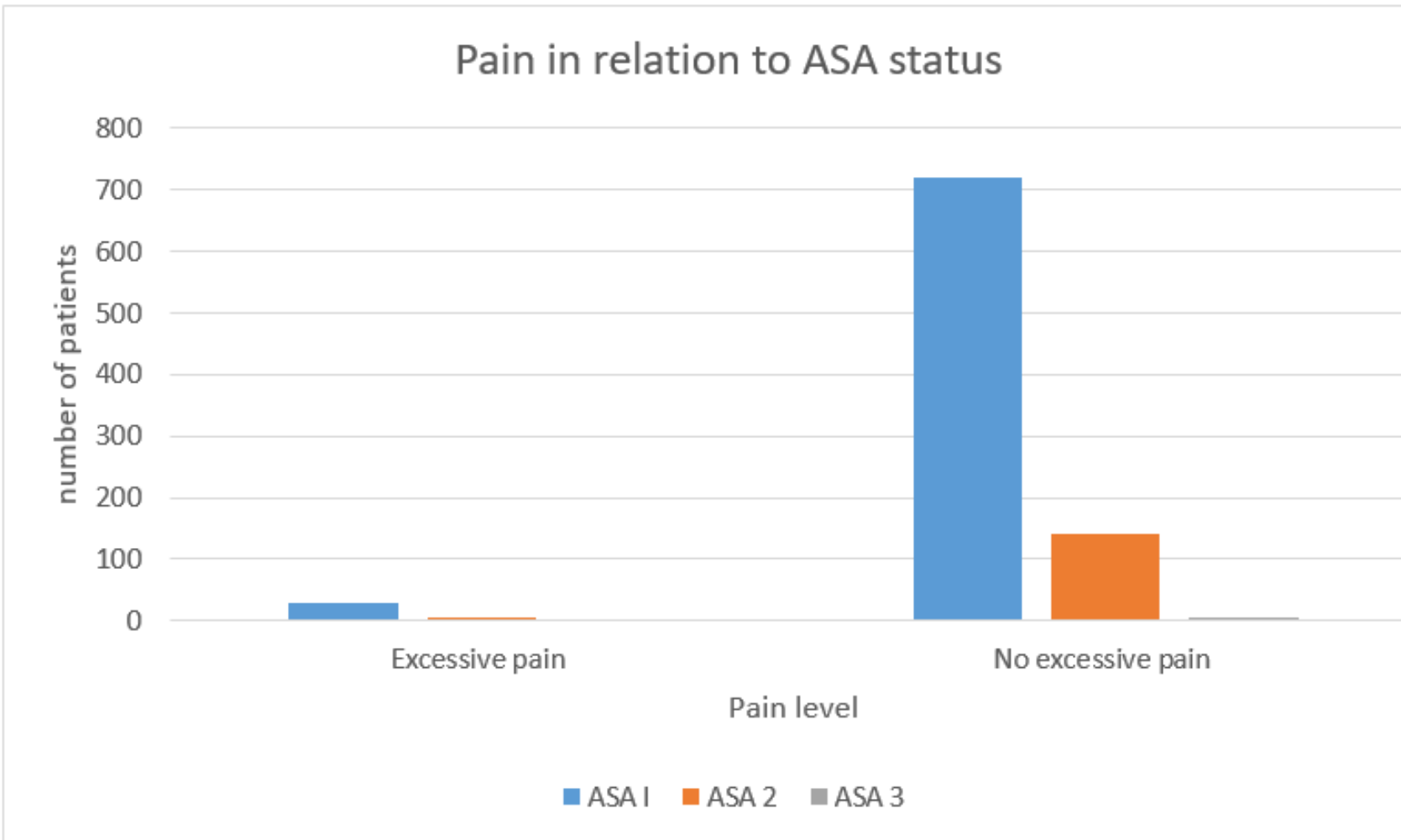


Figure 4 Pain in relation to ASA status

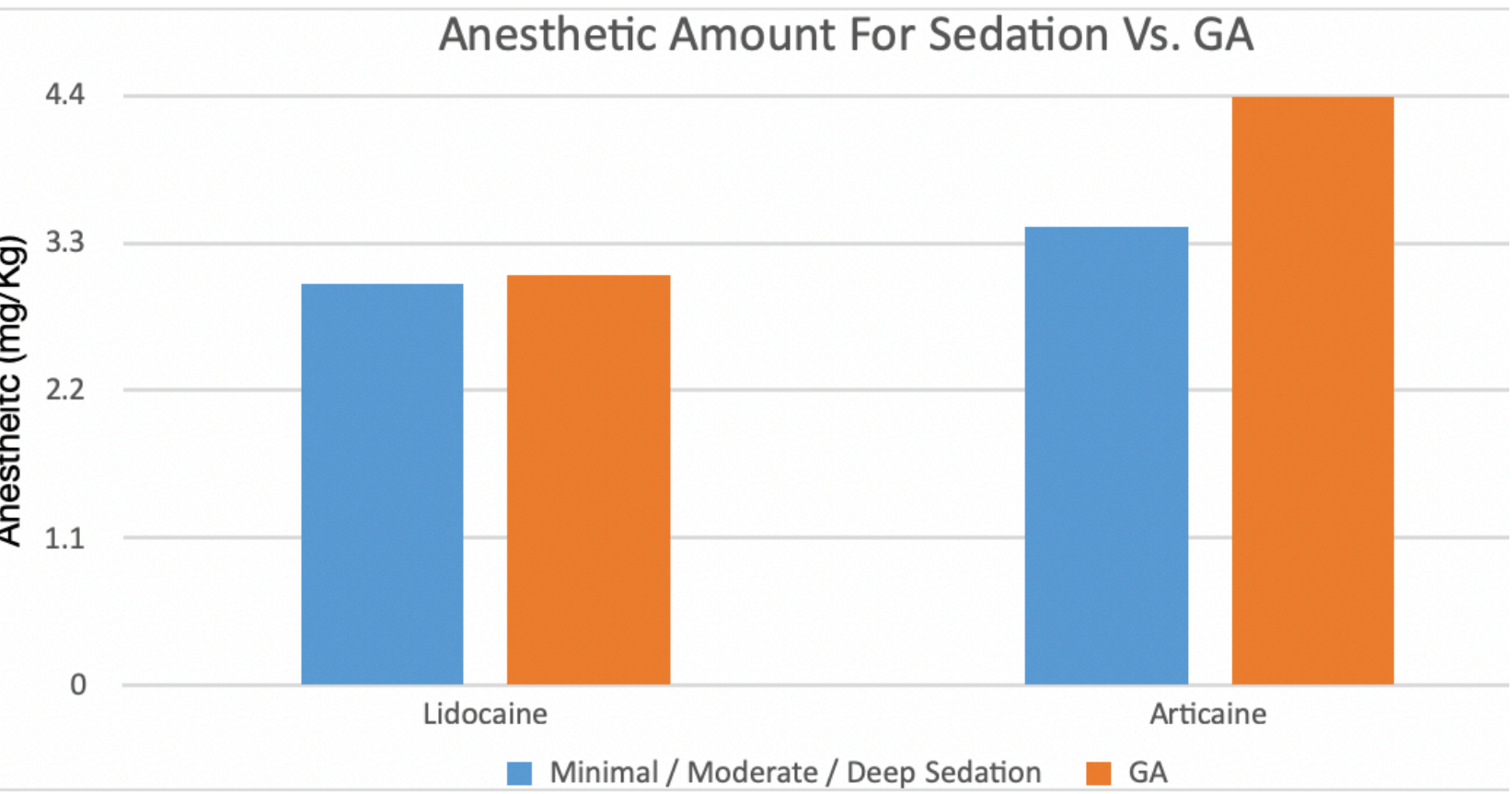


Figure 5 Amount of Anesthetic Given During Sedation Vs. GA

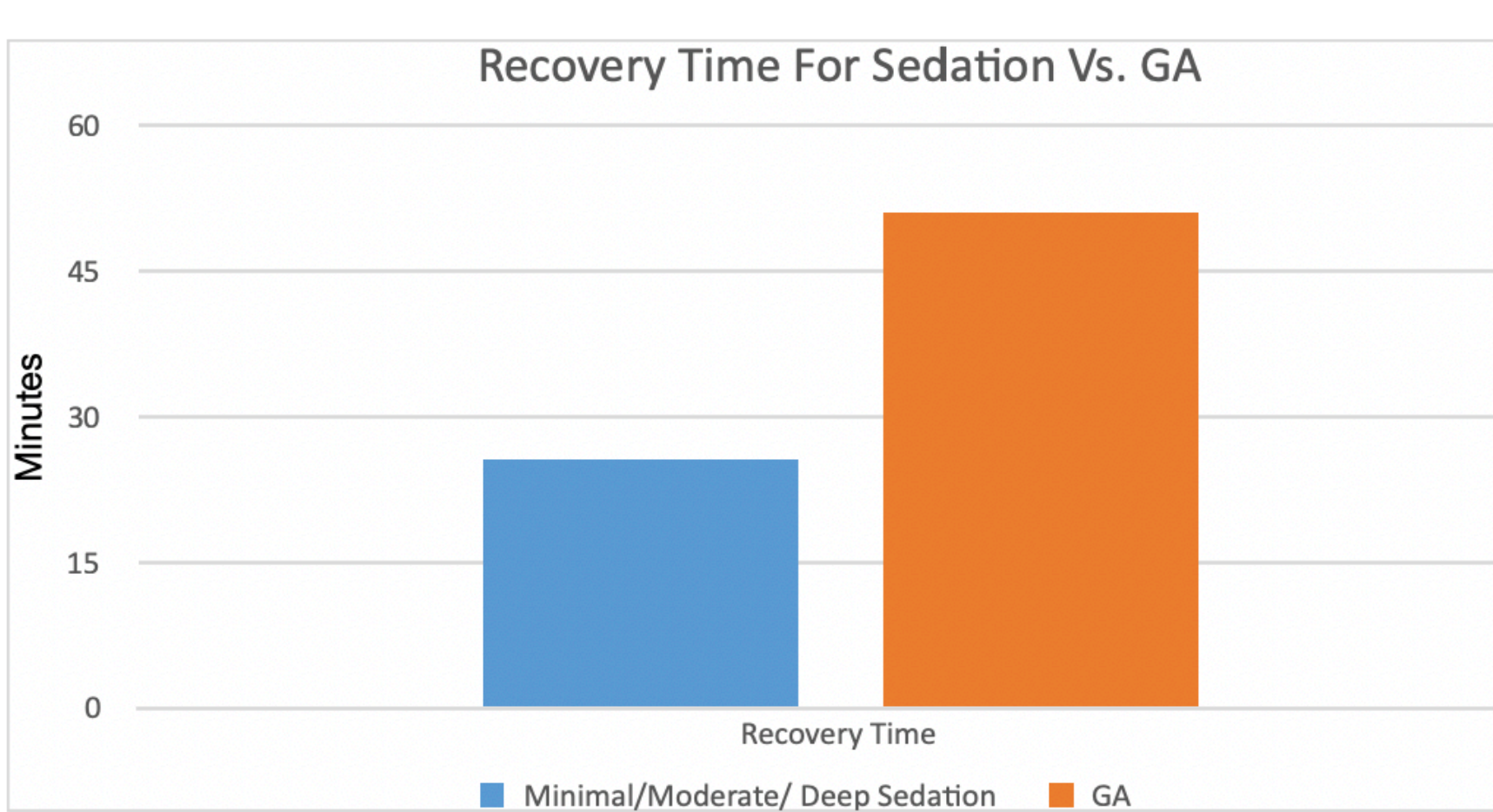


Figure 6 Recovery Time For Sedation and GA

## RESULTS

- The demographics for this study included age, sex and Ethnicity.
- For children under 7 years of age, there was no difference in frequency and prevalence of O<sub>2</sub> desaturation below 90% treated under GA or SED (p value 0.37, Fisher Exact Test) (Figure 1).
- 149 patients who went under sedation and were administered one sedative agent, no cases were aborted (0%), as compared to the 301 sedation patients who received more than one sedative agent, in which nine cases were aborted (3%) (p value 0.076, Fisher Exact Test) (Figure 2).
- There was no statistically significant difference in the number and prevalence between children with respiratory disease and children with no respiratory disease (p > .999, using Fisher Exact Test) (Figure 3).
- Data illustrates that there is no statistical difference in the frequency and prevalence of reported pain in children with ASA Class I (n=750, %=83.0), ASA Class II (n=147, %=16.2) and ASA Class III (n=6, %=.66) (p > 999, Fisher Exact Test) (Figure 4).
- When 3.0 mg/Kg lidocaine was administered for sedation mean value was 1.19 and 3.06 mg/Kg lidocaine for GA had a mean value of 1.16 p value 0.567. 3.42 mg/Kg articaine administered for Sedation with mean value of 1.35 and 3.72 mg/Kg articaine administered for GA mean value of 1.39 has p value 0.599. This is not statistically significant. (Two Sample T-Test) (Figure 5).
- There is a statistically significant difference in the recovery time for sedation in comparison to GA. The recovery time for sedation was 25.56 and GA was 51.03 (p value < .001, Fisher Exact Test) (Figure 6).

## CONCLUSIONS

- The findings from this research can help to alleviate parent/guardians' stress for dental treatments using general anesthesia (GA) or sedation (SED).
- In the case of hypoxemia, both general anesthesia (GA) and sedation (SED) have minimal risk, which is helpful knowledge for any dental practitioner.
- For practitioners, the chance of aborting a sedation procedure is not based on the number of sedative agents, and should be based on practitioners' preference, level of expertise and comfort.
- Dentists may choose lidocaine or articaine based on their professional experience as well as the patients' prior drug use.

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