Recall Attendance After General Anesthesia vs Oral Conscious Sedation

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PURPOSE

The purpose of this retrospective chart review study was to investigate dental recall attendance of patients after dental treatment using oral conscious sedation and treatment under general anesthesia during a follow-up period of thirty-eight months in a wide age range. The researchers hypothesized that patients treated under GA commonly miss or cancel their recall appointments more often than OCS patients. Parents may leave general anesthesia appointments knowing that all their child's treatment needs were addressed. This may cause a misunderstanding that their child is safe from caries for an extended period. The topic is important because children who are placed in sedation and general anesthesia appointments are moderate to high caries risk and require interventions more often. Although a child may become "caries free" after a full mouth dental rehabilitation appointment, according to many caries risk assessments, children under six years old remain at high risk for caries.

INTRODUCTION

Children who lack psychological or emotional maturity and/or have mental, physical, or medical disabilities often require advanced behavior guidance methods. Advanced behavior management methods include protective stabilization, inhaled nitrous oxide, enteral or parenteral sedation, and general anesthesia. The use of general anesthesia or oral conscious sedation has allowed those who are less compliant to receive treatment. The use of oral conscious sedation is a method of relieving dental anxiety using sedative and/or anxiolytic medications. Sedative drugs are used to help ensure the safety, health, and comfort of children undergoing procedures. Oral conscious sedation aims to have a child in mild to moderate sedation. Mild sedation is a drug-induced state during which patients respond normally to verbal commands. Moderate sedation is a drug-induced depression of consciousness during which patients respond purposefully to verbal commands or after light tactile stimulation. General anesthesia is a drug-induced loss of consciousness during which patients are not arousable, even by painful stimulation. Dental general anesthesia is a very efficient treatment modality because it takes a single appointment to address all needed dental treatment with little cooperation from the patient. Ultimately, general anesthesia might be the treatment of choice, but it is wise to consider more conservative options when feasible. Hospital appointment waitlists are lengthening, the possibility of restriction of coverage from third-party payors, and general anesthesia has its own set of risks. Although general anesthesia should be considered the last alternative in dental care, it has become a daily practice; one in five hundred children are treated under general anesthesia for dental treatment. In any case, the goal is to optimize patient care and expedite the completion of treatment.

The recommended periodicity for pediatric clinical oral examinations varies on a child's caries risk assessment. Low, moderate, and high-risk children are recommended to have recall schedules every six to 12 months, six months, and three months, respectively. Periodic examinations are important for caries detection, reinforcing oral hygiene, applying fluoride, and more. While oral conscious sedation and general anesthesia have become common dental practices in pediatric dentistry, studies investigating dental attendance after these appointments are scarce.

METHODS

Records of 971 patients' charts were chosen for review who were between the ages of one and twenty years and underwent pediatric dental procedural sedation between January 2015 and February 2019 at LSU Health-New Orleans, School of Dentistry, and affiliated hospitals. Date ranges were carefully chosen to not include periodic exams that may have been affected by COVID-19. All treatment providers are pediatric dental residents in the LSU Department of Pediatric Dentistry and were supervised by pediatric dentistry faculty members. The researchers identified two groups of people based on the following criteria:

- Patients who have completed dental treatment under oral conscious sedation (OCS) and
- Patients who have completed dental treatment under general anesthesia (GA)

After separating the patients into their corresponding groups based on inclusion criteria, 202 patients were included in the OCS group, and 769 patients were included in the GA group. The following criteria were used as exclusions when determining if a patient qualifies for the study:

- Patients whose assessment appointment was an emergency visit
- Patients who did not have treatment rendered during OCS due to behavior or adverse reactions,
- Patients who were referred to the clinic for specialty care such as endodontics or periodontics,
- Patients who became twenty-one years old at least one year after their sedation or general anesthesia appointment, and
- Patients who were considered American Society of Anesthesiologists (ASA) three or above.

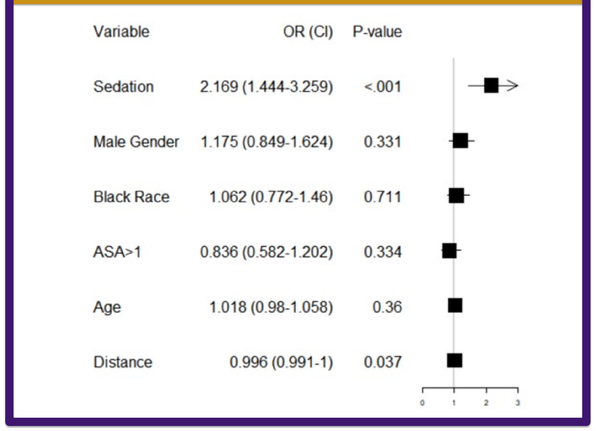
After removing excluded patients, 133 out of 202 patients remained in the OCS group, and 600 out of 769 patients remained in the GA group. Demographic data, procedural dates, recall attendance, insurance coverage, and behavior scores were recorded. Each patient was then checked to see if they attended a periodic exam within one year of their sedation or general anesthesia appointment.

Table 1. Descriptive Table by Recall

Variable	All (733)	Recall (261)	No Recall (472)	P-values	% Recall
General Anesthesia	600 (81.9)	191 (73.2)	409 (86.7)	<.001	31.8
Sedation	133 (18.1)	70 (26.8)	63 (13.3)		52.6
Black Race	379 (51.7,85)	139 (53.3, 31)	240 (50.8, 54)	0.823	36.7
White Race	179 (24.4,85)	61 (23.4, 31)	118 (25, 54)		34.1
Other Race	20 (3.1 , 85)	6 (2.6 , 31)	14 (3.3 , 54)		30
Hispanic Ethnicity	70 (10.8 , 85)	24 (10.4 , 31)	46 (11 , 54)		34.3
ASA>1	360 (49.1)	114 (43.7)	246 (52.1)	0.031	31.7
ASA=1	373 (50.9)	147 (56.3)	226 (47.9)		39.4
Male Gender	306 (41.7)	104 (39.8)	202 (42.8)	0.482	34
Female Gender	427 (58.3)	157 (60.2)	270 (57.2)		36.8
Distance	30.5 (42.76)	25.12 (35.15)	33.47 (46.2)	0.045	NA
Age	6.71 (4.53)	6.76 (4.33)	6.68 (4.64)	0.253	NA

Means (sd) are reported for continuous variables while count (%) are reported for categorical variables. When missing values are present, the number of missing values is listed in parentheses.

Figure 1. Multivariable logistic regression



RESULTS

The study population fitting the inclusion criteria comprised 733 total patients and was slightly dominated by females, (58.3%). The mean age of the participants was 6.71 years old (SD 4.53). The population used is considered a heterogeneous population consisting of 24.4% White, 51.7% Black or African American, #% Hispanic, #% Other (American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander), and #% Did Not Disclose. Of the 733 included patients in the study, 93.9% were covered by public insurance, 0.005% were covered by private insurance, 0.05% were paying out of pocket, and 0.02% were covered by grants at the time of treatment. Due to the unvarying insurances, insurance was not adjusted for in the statistical analysis. In the OCS group, 52.6% attended a periodic examination within one year of their OCS appointment. In the GA group, 31.8% attended a periodic examination within one year of their general anesthesia appointment. When compared to the OCS group, there were significantly higher rates of recall in the OCS group (52.6% versus 31.8%, p<.001).

Patients with an ASA of 2 or higher attended recall less often than patients who were ASA 1 (39.4% versus 31.7%, p-value 0.031). When comparing if a patient's residence distance from treatment location affected the dental attendance, increased mileage distance decreased the odds that patients would attend a periodic examination (adjusted odds ratio=.996, 95%CI .991-1.00, p=.038). The OCS group tended to have a decreased mileage distance than the GA group (23.13 miles versus 32.13 miles, p=.008). Oral conscious in-office sedation was more often given to ASA 1 patients, (29.8% versus 6.1%, p<.001).

Table 2. Descriptive Table by Anesthesia Group

	All (733)	OCS (133)	GA (600)	P-values	% Sedation
Recall	261 (35.6)	70 (52.6)	191 (31.8)	<.001	26.8
No recall	472 (64.4)	63 (47.4)	409 (68.2)		13.3
Black Race	379 (51.7, 85)	62 (46.6,20)	317 (52.8, 65)	0.025	16.4
White Race	179 (24.4, 85)	27 (20.3, 20)	152 (25.3, 65)		15.1
Other Race	20 (3.1 , 85)	4 (3.5 , 20)	16 (3 , 65)	0.764	20
Hispanic Ethnicity	70 (10.8 , 85)	20 (17.7 , 20)	50 (9.3 , 65)	0.012	28.6
ASA>1	360 (49.1)	22 (16.5)	338 (56.3)	<.001	6.1
ASA=1	373 (50.9)	111 (83.5)	262 (43.7)		29.8
Male Gender	306 (41.7)	57 (42.9)	249 (41.5)	0.772	18.6
Female Gender	427 (58.3)	76 (57.1)	351 (58.5)		17.8
Distance	30.5 (42.76)	23.13 (38.17)	32.13 (43.57)	0.008	NA
Age	6.71 (4.53)	6.62 (3.11)	6.73 (4.79)	0.004	NA

Means (sd) are reported for continuous variables while count (%) are reported for categorical variables. When missing values are present, the number of missing values is listed in parentheses.

CONCLUSIONS

1. Oral conscious sedation patients attended periodic examinations within one year more often than general anesthesia patients.

2. Patients with health histories that placed them in the ASA 2 classification attended recall less often than patients who were in the ASA 1 classification.

3. Increased mileage distance decreased the odds that patients would attend a periodic examination.