

Conscious sedation in the 21st century

Hani Eid*

Most (99%) patients treated at this university clinic do not need any form of sedation as rapport and behavioral management skills are more than sufficient and are safe. Those aged 1 to 5 years, who needed the use of oral sedation (Midazolam), showed 70% success. Those who needed nitrous oxide / oxygen ranged in age from 8 to 18 years and were later treated without any sort of conscious sedation after one or two sessions of nitrous oxide / oxygen sedation.

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INTRODUCTION

A survey of the American Academy of Pediatric Dentistry membership on the use of nitrous oxide and sedation was done by Wilson,¹ who found that the majority of respondents (89%) used N₂O, with a central delivery system being most popular. If this department were included in the survey, it would have been with the 89% of the users. It is interesting to note, that 11% of the membership did not use any nitrous oxide/oxygen sedation.

In fact, when it comes to behavioral management, pediatric dentists have more techniques than general practitioners. There is greater usage of a broad spectrum of behavior management techniques by the age of the pediatric dentist (40 to 49 year olds) and it is geographically variable, (sedation and general anesthesia occur more in the western regions).²

A survey of all members of the American Academy of Pediatric Dentistry found that the heavier use of sedation by some practitioners or by some training programs, as compared with others, generally was not related to the percentage of handicapped patients, who received sedation, nor to the type of training. Frequent users of sedation (more than once each day) were located more in the south/southeastern and western parts of the country and they tended to have been in specialty practice for more than 10 years.³

Interestingly, changes in the predoctoral program behavior management techniques were driven by the presence of the parents in the operatory, rather than by improvements of the behavior techniques themselves.⁴

TUSDM allows parents in the clinic with their children, this may account for better behavior than in other

institutions, where parents are not present, and sedation techniques are performed. A survey of the use of nitrous oxide/oxygen therapy and other sedation techniques was done in the department that permits parents to be chairside with their child, was done. TUSDM Department of Pediatric Dentistry does not allow any form of Hand Over Mouth, physical restraint by Papoose board or other forms of physical restraint. The exception maybe a very young injured child whose hands are restrained by the informed and self-controlled parent.

Since we have a similar base of patients as most teaching institutions, which includes a high multicultural (85%) Medicaid population, and we seemingly use mostly non-pharmacological behavior techniques, it seem appropriate to determine, how many patients were being sedated for behavioral management reasons.

RESULTS

A review of the twelve thousands six hundred and forty one (12,641) visits to Tufts University School of Dental Medicine, Department of Pediatric Dentistry in the year 2000, revealed that post-graduate students attempted treatment under conscious sedation in 143 visits out of the 12,641 total visits, which is about 1%. Therefore, 99% of the visits were done without pharmacological intervention. This method gives opportunity to the dentist to establish rapport and a relationship with the patient, while being 100% safe.

Out of those visits 85% were by Medicaid patients, and the rest were a mixture of private insurances and self-pay patients.

The breakdown of the conscious sedation visits is shown in the following table:

* Hani Eid, DDS, Second year post-graduate student, Tufts University School of Dental Medicine, Department of Pediatric Dentistry, 1 Kneeland Street, Boston, MA 02111

Visits	Oral sedation with Midazolam		Inhalation sedation with Nitrous-Oxide / Oxygen	
	Success	Failure	Success	Failure
	99	30	14	0
% Out of sedation	69%	21%	10%	0%
% Out of total visits	0.7%	0.2%	0.1%	0%
Total	0.9%		0.1%	

The role of nitrous oxide / oxygen in calming the anxious patient is well identified, but the use of this modality to control behavior can be avoided in most cases.

The New Protocol to control the patient in the dental chair should be as follows:

- **Birth to 5 years of age (behavioral management, oral sedation, general anesthesia).**
- **Five years of age and older (behavioral management)**

DISCUSSION

Most children over the age of three start developing communication and imagination skills. Those skills benefit the dentist in trying to control the patient in the dental chair using all sorts of behavioral management techniques (ie. Tell Show Do, voice control, etc). These previous data showed that behavioral management techniques were satisfactory in 99% of the cases.

Children that are under the age of 3 most probably would refuse treatment with nitrous oxide / oxygen, due the fear of the unknown or the mask that is used to administer nitrous oxide.

Less than 0.001% of the patient population in Tufts University School of Dental Medicine, Department of Pediatric Dentistry were treated using nitrous oxide / oxygen. All those patients were over the age of 8 years and had developed the necessary communication skills to be treated in the dental chair with some anxiety due to previous unpleasant experiences.

According to the post-graduate students, who treated those patients, it was found that most of those patients can be treated without the use of nitrous oxide / oxygen, if the dentist were to spend some time on behavioral management techniques. In most cases the use of nitrous oxide / oxygen was done to fulfill the requirements of the American Academy of Pediatric Dentistry in conscious sedation protocol.

CONCLUSION

The use of oral sedation (Midazolam) is indicated in this department with the younger population 1 to 5 years of age. The use of Midazolam showed 70% success. In failure cases, patients were referred to the operating room to be treated under general anesthesia.

Inhalation sedation with nitrous oxide / oxygen was used 14 times only through the year on 8 patients with an age range of (8 to 18 years). Those patients were treated without any sort of conscious sedation after one or two sessions of nitrous oxide / oxygen sedation.

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