



# Behavior management techniques among pediatric dentists practicing in the southeastern United States

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## Abstract

**Purpose:** This study identifies those techniques most often utilized by pediatric dentists practicing in the Southeastern United States. It also assesses how the utilization pattern may have changed within the last five years, and identifies those factors that may have influenced the changes as perceived by the practicing dentists.

**Methods:** A questionnaire was mailed to 528 pediatric dentists who were members of the American Academy of Pediatric Dentistry, or The Southeastern Society of Pediatric Dentistry, or both.

**Results:** The response rate after one mailing and one reminder was 64%. The majority of dentists utilized less aversive behavior management techniques (e.g., parents in the operatory and nitrous oxide oxygen) and had decreased or discontinued use of such controversial techniques as Hand-Over-Mouth-Exercise (HOME) and Hand-Over-Mouth-With-Airway Restriction (HOMAR). The majority of dentists reported that their reasons for changes in the utilization pattern for most techniques were parental influences and legal and ethical concerns.

**Conclusions:** Chi square analysis indicated significant differences ( $P < 0.05$ ) in the frequency of use of behavior management techniques and age of practitioner, American Board of Pediatric Dentistry status, type of specialty training, and type of practice. (*Pediatr Dent* 21:347-353, 1999)

Behavior management for the pediatric dental patient is an integral component of the pediatric dental practice. The goal of behavior management techniques practiced by the pediatric dentist is to establish communication and an element of trust with the child patient. A small percentage of children will not cooperate in the dental chair and the behavior of such patients can be a hindrance to the delivery of quality dental care.<sup>1</sup> For the child patient who is unwilling or unable to cooperate, the dentist must rely on other behavior management techniques as alternatives or adjuncts to communicative management to deliver safe and effective dental treatment.

Pediatric dentists have several behavior management techniques at their disposal. The techniques include, but are not limited to, the following: parents in the operatory, voice control, Tell-Show-Do (TSD), hand-over-mouth exercise (HOME), hand-over-mouth with airway restriction

(HOMAR), physical restraint (both active and passive), conscious sedation, and general anesthesia.<sup>2</sup>

Studies have suggested that the utilization pattern of behavior management techniques has changed over the past ten years. These changes are predicted to continue as several factors impact on the pediatric dentist's selection and usage of techniques such as those mentioned above.<sup>3,4,5</sup> Several reasons for changes in the pattern of utilization of behavior management techniques among pediatric dentists have been given in the literature. Parental acceptability, legal/ethical concerns, and accessibility and feasibility for utilization of certain techniques are among the reasons most often cited for changes in behavior management technique utilization.<sup>6,7,8</sup>

Laws concerning informed consent have changed in recent years. The changes are a reflection of the national trend toward the increase in patient's rights. The expansion of laws related to patient's rights has resulted in an increase in the requirements for informed consent.<sup>9</sup> Initially, the sufficiency of the information provided was held to the professional community standard. The information disclosed was sufficient if the dentist provided all the information that a reasonable practitioner would provide under similar circumstances. In more recent years, the standard has changed to that of the reasonable patient standard. This standard requires that the patient (or parent) should be given all information that is material or consequential to their decision to accept or reject proposed treatment.<sup>10</sup> The laws concerning informed consent vary among different states and are constantly changing. Seventy percent of the members of the American Academy of Pediatric Dentistry (AAPD) surveyed in 1990 did not know which law was enacted in their state.<sup>10</sup> In addition to the concerns regarding obtaining informed consent, the charge of battery, child abuse, or both is a legal/ethical concern for the pediatric dentist.

The purpose of the present study is to identify those behavior management techniques most often utilized by pediatric dentists practicing in the Southeastern United States. In addition, the study assesses how the utilization pattern may have changed over a period of five years and identifies those factors that influenced the changes as perceived by the practicing dentists.

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**Table 1. Age Group of Providers Related to Frequency of Use of Parents in Operatory**

Age	Increased(%)	Decreased(%)	Discontinued(%)	Same(%)	No Response(%)
< 30 yrs	1 (12.5)	2 (25)	1 (12.5)	2 (25)	2 (25)
30-39 yrs	29 (37.7)	15 (4.5)	0	27 (35)	6 (7.8)
40-50 yrs	52 (38)	7 (5.1)	0	57 (41.6)	21 (15.3)
>50 yrs	59 (54.6)	4 (3.7)	0	28 (25.9)	17 (15.7)

$\chi^2=72.7, P<0.001$

## Methods and Materials

A questionnaire was developed which contained 20 multiple choice questions. The general categories included the following items:

- biographical information (e.g., age, type of specialty training received, practice location, and years in practice),
- behavior management technique utilization, and
- changes in the utilization pattern of the behavior management techniques over the last five years.

Questions regarding the current use of behavior management techniques had response categories of “always”, “sometimes”, and “never”. Questions regarding the changes in the use of behavior management techniques over the last five years had response categories of “increased use”, “decreased use”, “discontinued use”, “no change”, or “never used”.

The design of the questionnaire was tested using pediatric dental residents at The Children’s Hospital of Alabama. Approval for use was obtained prior to mailing of the questionnaire from the Institutional Review Board for Human Use. A list of the names and addresses of all regular members of the AAPD and pediatric dentists of the Southeastern Society of Pediatric Dentistry was obtained.

A total of 528 questionnaires was mailed. A letter explaining the purpose of the study accompanied each questionnaire. The survey was mailed to each participant along with a preaddressed, stamped envelope. Each return envelope was coded for the sole purpose of identifying those participants who responded. Strict confidentiality was maintained throughout the study. A phone call was made to participants who had not responded within two weeks.

Frequency distributions for each response and cross-tabulations were done. Chi-square analysis was performed to determine significant associations between individual variables. Associations were considered significant if *P* value < 0.05.

## Results

### Descriptive Statistics

Of the 528 questionnaires mailed, 338 were suitable for evaluation and are the basis for this report. The response rate was 64%. The majority of the dentists surveyed were in the age group of 40-50 years (42%). Those dentists not in the 40-50 year age group could be characterized according to the following age groups: over 50 years of age, 32.5%; 30-39 years of age, 22.8%; and under 30 years of age, 2.7%. Most of the respondents identified themselves as diplomates of the American Board of Pediatric Dentistry (64.8%). Approximately half of the respondents (56.8%) received both hospital-based and institution-based training in pediatric dentistry. Other respondents received either only institution-based training

(22.2%) or only hospital-based training (17.8%). A small percentage of the survey participants (2.4%) reported being grandfathered into pediatric dentistry. The majority of dentists participating in this survey were practicing in mostly suburban areas, 59.6% and many had been in practice for more than 20 years.

### Use of TSD

The majority of practitioners (61.8%) responded that they used TSD with all children. No significant association was found between the use of TSD and age, American Board of Pediatric Dentistry status, type of specialty training, years in practice, or type of practice.

### Allowing Parents in the Operatory

Most practitioners (84%) reported that they allowed parents in the operatory. Table 1 indicates that the respondents tended to increase their utilization of parents in the operatory over the past five years. The most frequently cited reasons for the change included parents requesting to be present (21%) and legal/ethical concerns (18.6%). A significant association was seen between age and the increased utilization of parents in the operatory with those dentists 40 years and older reporting that they had increased their use of this technique more often than did younger dentists.

**Table 2. Age of Provider Related to Use of Hand Over Mouth**

Age	Yes (%)	No (%)
< 30 yrs	4 (44.4)	5 (55.6)
30-39 yrs	24 (32)	51 (68)
40-59 yrs	64 (45.1)	78 (54.9)
>50 yrs	58 (53.2)	51 (46.8)

$\chi^2=8.1, P<0.04$

**Table 3. Age of Provider Related to Use of Hand Over Mouth With Airway Restriction**

Age	Sometimes (%)	Never (%)
<30 yrs	0	9 (100)
30-39 yrs	1 (1.3)	75 (98.7)
40-59 yrs	11 (7.7)	131 (92.3)
>50 yrs	18 (16.5)	91 (83.5)

$\chi^2=8.1, P<0.04$

**Table 4. Location of Practice Related to Use of Papoose Board or Pedi-wrap**

Type of practice	Always use (%)	Sometimes use (%)	Never use (%)
Mostly rural	1 (2.9)	31 (91.1)	2 (5.9)
Mostly urban	3 (3.2)	78 (83.8)	12 (12.9)
Mostly suburban	0	162 (81)	38 (19)

$\chi^2=8.1, P<0.04$

**Table 5. Years in Practice Related to Use of Physical Restraint**

Years in practice	Always use (%)	Sometimes use (%)	Never use (%)
<10	0	51 (62.2)	31 (37.8)
10-15	0	44 (68.8)	20 (31.3)
16-20	0	97 (76.4)	30 (23.6)
>20	1 (1.7)	52 (89.7)	5 (8.6)

$\chi^2=20.6, P<0.002$

**Table 6. Age of Provider Related to Use of N<sub>2</sub>O/O<sub>2</sub>**

Age	Always use (%)	Sometimes use (%)	Never use (%)
<30 yrs	1 (11.1)	8 (88.9)	0
30-39 yrs	10 (13.3)	61 (81.3)	4 (5.3)
40-50 yrs	17 (12.2)	104 (74.8)	18 (12.9)
>50 yrs	20 (41.7)	65 (59.6)	24 (22)

$\chi^2=16, P<0.014$

**Table 7. Type of Provider Training Related to Use of N<sub>2</sub>O/O<sub>2</sub>**

Type of training	Always use (%)	Sometimes use (%)	Never use (%)
Hospital based	13 (22.8)	38 (66.7)	6 (10.5)
Institution based	3 (4)	58 (77.3)	14 (18.7)
Combined	30 (15.9)	137 (72.5)	22 (11.6)
Grandfathered	2 (25)	3 (37.5)	3 (37.5)

$\chi^2=20.6, P<0.002$

### Utilization of Selected Behavior Management Techniques

The majority of dentists responded that they “sometimes use” the following behavior management techniques: papoose board or Pedi-wrap® (82%), physical restraint by the dentist (72.8%), physical restraint by the dental personnel (87.9%), physical restraint by the parent (85.5%), N<sub>2</sub>O/O<sub>2</sub> (70.4%), conscious sedation (70.4%), and general anesthesia (61.5%). The majority of practitioners surveyed (69.5%) use the oral route of administration for conscious sedation. About half of the respondents reported that they never use HOME (57.4%), and an overwhelming majority (90.5%) of participants responded that they never used HOMAR. A summary of this information is seen in Tables 2-10.

A significant association was noted between age and use of HOME and use of HOMAR. The older dentists responded that they “sometimes use” HOME, whereas the younger den-

tists were least likely to report they used HOME. The younger dentists (under the age of 30 years) were more likely to respond that they “never use” HOMAR than did older dentists, especially the over 50 years age group. The older dentists were the most likely to respond that they “sometimes use” HOMAR.

Significant associations were observed for use of physical restraint with type of practice and age of practitioner. More of the older dentists responded that they used physical restraint sometimes, while the younger dentists under the age of 30 years most often responded that they never used physical restraint. More dentists in suburban areas responded that they never used the papoose board than did dentists in rural or urban areas.

Age of the dentist and type of specialty training were associated with the use of N<sub>2</sub>O/O<sub>2</sub>. The younger dentists were more likely to respond that they sometimes used N<sub>2</sub>O/O<sub>2</sub>, while the older dentists, especially those over the age of 50, reported most often that they never used N<sub>2</sub>O/O<sub>2</sub>. Also, those dentists with more years in practice reported more often than dentists with fewer years in practice that they never used N<sub>2</sub>O/O<sub>2</sub>. The majority of dentists with hospital-based, institution-based, or both hospital-based and institution-based specialty training responded most often that they always or sometimes used N<sub>2</sub>O/O<sub>2</sub>.

The use of conscious sedation was significantly associated with age. The older dentists responded more often to sometimes using conscious sedation. General anesthesia utilization was associated with years in practice and type of practice. The dentists with more than 15 years in practice used general anesthesia less than did dentists with fewer years in practice. Those dentists with greater than 20 years in practice more often reported that they did not use general anesthesia. Fewer dentists in suburban areas responded that they sometimes used general anesthesia than did dentists in rural or urban areas.

### Changes in the Utilization Pattern

The majority of survey participants reported no change in the utilization pattern for the use of papoose board or Pedi-wrap®, physical restraint by the dentists, physical restraint by the dental personnel, physical restraint by the parent, or N<sub>2</sub>O/O<sub>2</sub>. However, 34% of the dentists surveyed reported that they had decreased their use of HOME, and 16% of those surveyed reported an increase in the use of N<sub>2</sub>O/O<sub>2</sub>.

No change was seen in utilization of conscious sedation or general anesthesia as reported by most respondents. However, a percentage of respondents had decreased their use of conscious sedation (21.9%) and increased their use of general anesthesia (23.1%) over the past five years.

Changes were seen in the utilization of N<sub>2</sub>O/O<sub>2</sub> associated with age and type of specialty training. The younger dentists, especially those under the age of 30 years, reported that they increased their use of N<sub>2</sub>O/O<sub>2</sub> over the past five years. The older

**Table 8. Age Group of Providers Related to Frequency of Use of N<sub>2</sub>O/O<sub>2</sub>**

Age	Increased (%)	Decreased (%)	Discontinued (%)	Same (%)	Never Use (%)
<30 yrs	4(44.4)	1 (11.1)	0	4 (44.4)	0
30-39 yrs	14 (18.4)	14 (18.4)	2 (2.6)	43 (56.6)	3 (3.9)
40-50 yrs	23 (16.2)	11 (7.5)	3 (2.1)	94 (66.2)	11 (7.8)
>50 yrs	13 (12)	4 (3.7)	2 (1.9)	69 (63.9)	20 (18.5)

$\chi^2=30.6, P<0.002$

dentists over the age of 30 years were more likely to have not changed their utilization pattern for N<sub>2</sub>O/O<sub>2</sub> use. Changes in use of conscious sedation were associated with age only. The younger dentists responded that they had increased their use of conscious sedation significantly more than the older dentists. Age and type of specialty training correlated significantly with general anesthesia use. The younger dentists were twice as likely to respond to increased general anesthesia use than were the older dentists. The older dentists responded more often than did the younger dentists that they had discontinued their use of general anesthesia. More dentists who had been grandfathered into pediatric dentistry discontinued their use of general anesthesia than did those dentists with hospital-based, institution-based, or both hospital-based and institution-based training.

**Reasons for Changes Seen in Utilization Frequency**

The legal/ethical concerns of the practitioners were the reasons given most often for changes in the utilization frequency for papoose board, HOME, HOMAR, physical restraint by the dentist, and physical restraint by dental personnel. Reasons other than those listed on the questionnaire were cited for changes in the utilization of N<sub>2</sub>O/O<sub>2</sub>, conscious sedation, and general anesthesia. Reasons for the changes associated with use of these techniques varied greatly among respondents and included the following:

- the lack of third-party reimbursement, especially lack of coverage for conscious sedation procedures by Medicaid;
- the difficulty in meeting the recommended AAPD guide lines for conscious sedation;
- an anesthesiologist being brought into the office for conscious sedation using the intravenous route of administration; and
- the practitioner feeling better able to manage a medical emergency in a hospital or outpatient facility as opposed to handling such a problem in the dental office.

An association was found between reason for change in the use of papoose board and age. The younger dentists responded more often than older dentists that their reason for change was based on the parent's request for use of the papoose board. The type of practice and reason for change in the use of physical restraint were associated. Practitioners in urban areas reported more often that parents requested use of physical restraint than did parents in practices located in rural areas.

**Obtaining Consent**

Most dentists reported that they always obtained specific verbal consent for the following techniques: papoose board or Pedi-wrap® (72.8%), physical restraint by the dentist (35.8%), N<sub>2</sub>O/O<sub>2</sub> (67.2%), conscious sedation (72.8%), and general anesthesia (64.2%). Most practitioners (47.6%) did not obtain specific verbal consent for use of a mouth prop. The majority of those surveyed did obtain specific written consent for the following techniques: papoose board or Pedi-wrap® (49.4%), conscious sedation (61.8%), and general anesthesia (62.4%). The dentists surveyed did not obtain specific written consent for HOME (45.6%), HOMAR (35.8%), physical restraint by the dentist (55.3%), physical restraint by dental personnel (60.9%), or N<sub>2</sub>O/O<sub>2</sub> (50.0%). The majority of dentists were aware of the standard for obtaining consent in their state with 58.9% reporting the standard to be either professional community standard (31.7%) or reasonable patient standard (27.2%).

Associations were found between obtaining consent and the type of specialty training and AAPD status. Those dentists grandfathered into pediatric dentistry responded more often to never obtaining specific verbal consent for HOMAR than did dentists who received hospital-based, institution-based, or both hospital-based and institution-based training. Diplomates more often responded that they always obtained written consent for the use of the papoose board or Pedi-wrap® than did non-diplomates.

**Table 9. Age Group of Providers Related to Frequency of Use of Conscious Sedation**

Age	Increased (%)	Decreased (%)	Discontinued (%)	Same (%)	Never Use (%)
<30 yrs	6 (66.7)	1 (11.1)	1	0	1 (11.1)
30-39 yrs	14 (18.7)	24 (32)	4 (5.3)	30 (40)	3 (4)
40-50 yrs	24 (17.4)	39 (27.9)	4 (2.7)	48 (34.3)	25 (17.9)
>50 yrs	17 (15.6)	10 (9.2)	6 (5.5)	34 (39.5)	33 (30.3)

$\chi^2=49.9, P<0.001$

**Table 10. Age Group of Providers Related to Frequency of Use of General Anesthesia**

Age	Increased (%)	Decreased (%)	Discontinued (%)	Same (%)	Never Use (%)
<30 yrs	5 (55.6)	1 (11.1)	0	2 (22.2)	1 (11.1)
30-39 yrs	25 (32.9)	12 (15.8)	2 (2.6)	23 (30.3)	14 (18.4)
40-50 yrs	33 (23.4)	25 (17.7)	3 (2.1)	50 (35.5)	30 (21.3)
>50 yrs	15 (13.9)	15 (13.9)	5 (4.6)	26 (24.1)	47 (43.5)

$\chi^2=32.4, P<0.002$

## Discussion

The results of this survey show clearly that pediatric dentists practicing in the Southeastern United States are utilizing less aversive behavior management techniques than they did five years ago. The current trend is toward increased use of such techniques as allowing parents into the operatory, use of N<sub>2</sub>O/O<sub>2</sub>, and decreased or discontinued use of more controversial and adversarial techniques such as HOME and HOMAR. The consensus among those surveyed was that parental and legal/ethical concerns were the major influences on changes seen in the utilization pattern of most behavior management techniques.

The majority of practitioners were allowing parents into the operatory and nearly half of those surveyed reported that the use of this method had increased over the past five years. One study showed that 66% of parents wanted to be present and actively involved with their children's care for the dental visit.<sup>11</sup> The majority of dentists in this study reporting an increase frequency of parental presence explained the change was due to parents requesting to be present. In addition to this explanation, a significant number responded that this change was due to legal/ethical concerns.

Traditionally, parents have been excluded from the dental operatory.<sup>12</sup> It is believed by many dentists that parental exclusion allows for the establishment of a rapport between the dentist and the patient without the interference of the parent. This belief is still held by many dentists today and warrants contemporary research of the issue, but societal demands are influencing the way dentists view the parent's role in the child's dental experience. A significant association was seen between frequency change for the use of allowing parents in the operatory and age of the dentists. The older dentists responded that they had increased their use of allowing parents into the operatory over the past five years more often than did the younger dentists. Parental and societal influences may have encouraged this change because the older dentists would be more likely to have learned the traditional technique of excluding the parent as a part of their dental education.

While the use of certain behavior management techniques that are more patient friendly is increasing among pediatric dentists, the use of techniques considered to be more controversial is decreasing. Half of the dentists in this survey reported that they never used HOME and 90% of these dentists reported that they never used HOMAR. It is interesting to note that a small percentage (8.9%) of pediatric dentists continued to use HOMAR despite the fact that it is no longer recommended by the AAPD as an appropriate behavior management technique.<sup>13</sup> The most frequently cited reason for changes reported

in the utilization pattern for HOME and HOMAR was due to legal/ethical concerns.

The current trends seen in the changes in use of other behavior management techniques may be due to multiple influences affecting the dentists' selections for a particular technique. This is evident in the responses given to questions concerning the use of conscious sedation and general anesthesia. A large percentage of respondents had decreased their use of conscious sedation over the past five years. Reasons for changes in their utilization pattern for conscious sedation were not being able to comply with the AAPD guidelines on conscious sedation,<sup>14</sup> lack of third party reimbursement, and expensive malpractice insurance.

A small percentage of pediatric dentists reported that they increased their use of conscious sedation. The reason most often cited for this change was the use of an anesthesiologist in the dental office for intravenous administration of conscious sedation medications. The fact that only a small percentage of dentists responded in this fashion suggests this technique may not be practical for most pediatric dental practices. While this technique has the potential to be an alternative to the way most conscious sedation procedures are performed in the pediatric dentist's office, this method has its added expenses (e.g., anesthesiologist fees, additional equipment, additional malpractice insurance fees) which may eliminate its use as a viable option for most practitioners. Compliance with state regulations which are also changing in many states may also prohibit the practitioner's selection of this technique for certain children.

The difficulties associated with utilizing conscious sedation in the office may be one explanation for the pattern of increased utilization of general anesthesia. Some dentists surveyed reported that they increased their use of general anesthesia because they felt better able to handle a medical emergency in a hospital or outpatient facility as opposed to the dental office. All the appropriate monitoring equipment is provided by the medical facility. The necessary personnel are available. However, the hospital expense can be astronomical for the patient if no means of financial assistance exist. Most private insurance companies will not pay the cost for such a procedure or will only pay for a portion of the general anesthesia fee. If a patient is not Medicaid eligible, general anesthesia may not be a realistic treatment option.

Because Medicaid covers both the hospital and dental fees for general anesthesia procedures, this may play an important factor in the decision to select this technique for another reason. The younger dentists were more likely to report that they had increased their use of general anesthesia than did the older dentists. It can be speculated that newer dentists in practice for fewer years might accept more Medicaid eligible patients than

dentists in more well-established practices. Medicaid is a more assured source of income. Therefore, newer dentists might be more inclined to see more Medicaid patients than dentists with greater years in practice.

Medicaid reimbursement alone would not explain the increased use of general anesthesia among younger dentists. It is possible that younger dentists would have received more comprehensive training in the use of the general anesthesia technique. In response to the question inquiring about type of specialty training, 100% of the younger dentists reported that they received both hospital-based and institution-based training. Therefore, it would be reasonable to believe these dentists had some form of training in the technique of general anesthesia and would be more likely to utilize this treatment option than the older dentists who may have been grandfathered into pediatric dentistry and may not have received hospital-based training in general anesthesia.

Approximately 70% of the dentists surveyed reported using N<sub>2</sub>O/O<sub>2</sub> inhalation sedation. A slight increase occurred in the use of this method. This trend is consistent with predictions that the use of N<sub>2</sub>O/O<sub>2</sub> would increase with greater emphasis being placed on its use at the predoctoral level of the dental curriculum and with most postdoctoral programs requiring a comprehensive level of proficiency for use of the technique. There was an association with increased use of this technique and age of the dentists. The younger dentists responded more often that they had increased their use of N<sub>2</sub>O/O<sub>2</sub> over the past five years. However, this increase in the use of N<sub>2</sub>O/O<sub>2</sub> did not indicate a true change in frequency of use for this age group. A small number of respondents were in this category, and the dentists in this group may have been in practice for only a short period of time. This finding may reflect a lack of use for the technique among younger dentists during their predoctoral training. The younger dentists may have experienced a noticeable increase in use of N<sub>2</sub>O/O<sub>2</sub> in their specialty training. Therefore, the increase seen for this group with regards to change in frequency of use for N<sub>2</sub>O/O<sub>2</sub> may not be relevant.

Reasons for the changes seen in the utilization of N<sub>2</sub>O/O<sub>2</sub> varied. Of those dentists reporting an increase in the use of this technique, the majority of the dentists responded that many of the parents were unable to afford this treatment option. Third party reimbursement was available on a limited basis for conscious sedation and general anesthesia. However, the dentists felt N<sub>2</sub>O/O<sub>2</sub> was safer for in office use and easier to incorporate into a practice than using conscious sedation with other methods which required expensive and cumbersome monitoring equipment, as well as additional personnel.

The changes in the utilization pattern for the behavior management techniques investigated in this study are similar to those predicted by others. The increased use of general anesthesia may signal a trend towards using general anesthesia as a first-line treatment option when a difficulty occurs in utilizing other treatment options, especially the use of conscious sedation, as predicted by Acs et al.<sup>3</sup> Parental influence and legal/ethical concerns predominate as the major reasons for changes reported in the utilization pattern for most behavior management techniques as many have concluded in previous studies.<sup>6,7,8</sup>

It is less clear from the results of this study how obtaining consent may affect a dentist's decision to use a certain behavior management technique. Klein<sup>15</sup> postulated that the more

information a dentist might have to disclose in order to obtain consent, the less likely it would be to obtain the parent's acceptance for the technique. Most dentists always obtained specific verbal consent for all techniques except HOME, HOMAR, and the use of the mouth prop appliance. It could be speculated that dentists did not obtain specific consent for the HOME and HOMAR techniques because the use of HOME and HOMAR was not anticipated. Situations that require the use of such techniques are often rare and extreme. The dentist often utilizes these techniques as a last resort effort to control a wildly belligerent patient and may not have the opportunity to obtain consent. Use of the mouth prop appliance, which helps to maintain the mouth in an open position, may be considered by many dentists as standard operating equipment. In this instance, obtaining consent for use of the mouth prop may be deemed unnecessary in the dentist's own perception. These rationalizations are not meant to give approval for lack of obtaining consent for the techniques but only point to possible explanations for the findings of this study. A future study would serve well to investigate the above postulates.

Similarly, the majority of those surveyed did not obtain specific written consents for the use of physical restraints by the dentists (55.3%) and physical restraints by dental personnel (60.9%). It could be presumed that the holding of hands by the assistant or the stabilization of the head by dentists are standard procedures. However, dentists must be mindful of the fact that such techniques are considered forms of physical restraint and therefore the practitioner should obtain consent for these techniques.

In addition to these findings concerning obtaining consent, a large percentage (approximately 24%) reported that they did not know their states' law for obtaining consent. The results of this study would suggest that some pediatric dentists practicing in the Southeastern United States may be vulnerable to litigation regarding abuse by not obtaining specific written consent for many of the behavior management techniques they utilize.

## Conclusions

It can be concluded from this study that for the population surveyed the current trends in behavior management techniques include the following:

1. The majority of pediatric dentists are allowing parents in the operatory and are utilizing N<sub>2</sub>O/O<sub>2</sub> inhalation sedation.
2. Most dentists surveyed did not use HOME and the use of conscious sedation has decreased while the use of general anesthesia has increased.
3. Overall, the most often cited reasons for changes in the utilization pattern for the majority of techniques were parental influences (either parents requesting use or parents refusing use) and the legal/ethical concerns of the practitioners. However, most do not obtain specific written consent for a number of behavior management techniques and are not aware of the state law as it applies to requirements for obtaining consent.

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## ABSTRACT OF THE SCIENTIFIC LITERATURE



### POSTOPERATIVE BEHAVIORAL OUTCOMES IN CHILDREN

Although a number of studies have documented the effect of premedication on preoperative anxiety in children, few studies have reported on its effect on postoperative behavioral outcomes. The hypothesis of the present study was that decreased preoperative anxiety may be associated with decreased incidence of postoperative negative behavioral changes. This study resulted from a previous study where the authors reported that 54% of all children undergoing general anesthesia and surgery exhibit negative behavior two weeks after operation. Patients between 2-7 years scheduled to undergo general anesthesia and elective surgery were included in the study. Data for 86 children was analyzed. This was a randomized, double-blind, controlled study, where patients either received 0.5 mg/kg midazolam mixed with 15 mg/kg acetaminophen, or only acetaminophen orally. These were given 20-30 minutes before separation to the operating room. All health care workers, patients, and parents were blind to group assignment. Validated measures of anxiety were used to evaluate the children before and after the intervention, and during induction. On postoperative days 1, 2, 3, 7, and 14 the behavioral recovery of the children was assessed using the Post Hospitalization Behavior Questionnaire.

The midazolam group exhibited significantly lower anxiety on separation from their parents, and during induction, than the placebo group. A multi-variate logistic regression model was used to analyze the postoperative data, and postoperative behavioral changes were found to be dependent on group assignment and number of days after surgery. During postoperative days 1-7, children who received midazolam showed significantly less negative behavioral changes than children who only received acetaminophen. At two weeks postoperatively there were no significant differences between the midazolam and placebo groups. The conclusion is therefore that during the first postoperative week, children who received midazolam preoperatively exhibited significantly less negative behavioral changes.

**Comments:** A similar study using pediatric dental patients and their postoperative behavior in the dental office would provide useful clinical information which we could provide to parents who sometimes express concern regarding this aspect of dental treatment under general anesthesia. FKH

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