

A Survey of Members of the American Academy of Pediatric Dentistry on Their Use of Behavior Management Techniques

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Abstract

Purpose: The objective of this study was to survey members of the American Academy of Pediatric Dentistry (AAPD) regarding their use of behavior management techniques.

Methods: Surveys were mailed to 4,180 members, with a follow-up mailing to nonrespondents 2 months later. The survey contained items on demographic variables and use (current, past, and future) of communicative and pharmacologic techniques. Information was also obtained on informed consent, parental presence in the operatory, and parenting styles.

Results: Survey response was 66%. Communicative techniques are widely used, with the exception of the hand-over-mouth exercise (HOME). Immobilization for sedated and nonsedated children and pharmacologic techniques are used by a majority or near majority of respondents. Little change was reported in technique use over time, except that 50% of respondents indicated they use HOME less now than 5 years ago, and 24% plan to use it less over the next 2 to 3 years. Parental presence in the operatory appeared to be a common practice for some procedures and for children with special health care needs. The majority of respondents believed that parenting styles had changed in ways that adversely impacted children's behavior in the dental setting.

Conclusions: Most practitioners have not changed their use of behavior management techniques in recent years, nor do they plan to change their use of them in the near future. HOME was the exception to these trends. (*Pediatr Dent.* 2004;26:159-166)

KEYWORDS: BEHAVIOR MANAGEMENT, SURVEY, PEDIATRIC DENTISTRY

Behavior management is defined by the American Academy of Pediatric Dentistry (AAPD) as “a continuum of interaction with a child/parent directed toward communication and education.”¹ This continuum begins with nonverbal and verbal techniques that form the bases for communicative management of cooperative and uncooperative patients. Techniques such as nonverbal communication, tell-show-do, positive reinforcement, distraction, and voice control are widely used with children who have developed some degree of communicative ability. Pediatric dentists have also developed more advanced techniques, such as the hand-over mouth exercise (HOME) and immobilization, to manage less cooperative children. At the other end of the continuum are pharmacologic techniques, including nitrous oxide/oxygen inhalation sedation, conscious sedation, and general anesthesia.

These techniques are typically used with children with special health care needs, very young children, and uncooperative patients. The degree to which these techniques, or variations of them, have been emphasized in pediatric dental practice has been evaluated in several surveys over the past 30 years.²⁻⁶ The application of these techniques has also been modified by legal concerns^{7,8}—chiefly informed consent and changing parent attitudes regarding the management of their children in the dental setting.^{9,10}

Pediatric dentists have noted changes in parenting styles they believe are detrimental to child behavior in the dental setting.¹¹ The AAPD Clinical Guideline on Behavior Management defines the techniques currently deemed useful and acceptable in the management of children in the dental setting.¹ It also presents the objectives, indications, and

Table 1. Demographic and Practice Information of Survey Respondents

	% of respondents
Age	
<35 years	20
36-45 years	28
46-55 years	31
56-65 years	20
>65 years	1
Gender	
Male	66
Female	34
Location of current practice	
District I	14
District II	12
District III	20
District IV	18
District V	15
District VI	21
Total years in practice	
<5 years	13
6-10 years	15
11-15 years	14
16-20 years	12
21-25 years	16
26-30 years	15
>30 years	14
Nature of primary practice	
Private	89
Hospital-based	3
Military service	1
Public health service	1
Academic intramural	4
Community / public health clinic	1
Other	1
Specialty status	
General practitioner	7
Other specialty, not including pediatric dentistry	1
Pediatric dentistry	90
Pediatric dentistry + other specialty	3
Pediatric dentistry board certification status	
Not board certified	66
Board certified	33
Board certified + other specialty board	1
Type of certificate program attended	
University based	56
Hospital based	44

contraindications for the techniques, as documented in the dental literature and reflective of professional standards.

The AAPD conducted its first workshop on behavior management in 1988.¹² In the subsequent 15 years, the art and science of behavior management continued to evolve, and the guideline has reflected this evolution.

The purpose of this study was to provide data through a survey of active AAPD members regarding their use of behavior management techniques defined and described in the guidelines.

Methods

The survey was developed in the fall of 2002 and spring of 2003. It was pretested by faculty at the Medical College of Georgia, Baylor College of Dentistry, and The Ohio State University, none of which was involved in the original development of the instrument. Based on comments from the pretesters and the study statistician, the survey was modified to improve clarity and validity. The study was approved by the Human Assurance Committee of the Medical College of Georgia.

Practitioners were given 8 nonpharmacologic behavior management technique definitions from the AAPD Clinical Guideline on Behavior Management.¹ The defined techniques were: (1) tell-show-do; (2) nonverbal communication; (3) voice control; (4) positive reinforcement; (5) distraction; (6) HOME; and (7) medical immobilization, subdivided as active and passive. Active immobilization was defined as restraint by another person. Passive immobilization was defined as the use of restraining devices. Practitioners were asked about the current use of those techniques plus 3 pharmacologic techniques with various age groups in their practices. The pharmacologic techniques (nitrous oxide/oxygen inhalation sedation, conscious sedation, and general anesthesia) were not defined. Respondents were asked to consider the definitions of the communicative techniques in their responses. Practitioners were also asked about their informed consent practices, use of parental presence in the operatory, and opinions on parenting style changes.

Surveys were mailed to 4,180 active and affiliate AAPD members residing in the United States and Canada. Mailings, survey collection, survey coding, and data entry were done by a professional survey management company. Initial mailings were sent in June 2003, with a follow-up mailing in August. Descriptive statistics were calculated for all variables.

Results

Surveys were returned by 2,768 respondents. Ten declined to participate, and 7 indicated they were retired or no longer in practice. Two thousand seven hundred fifty one usable surveys were returned for an adjusted response rate of 66% were. One hundred eighty respondents (7%) categorized themselves as general dentists, and 15 (1%) categorized themselves as specialists other than pediatric dentists. Male respondents outnumbered females 2:1. Most respondents

Table 2. Use of Behavior Management Techniques by Respondents

Technique	% of respondents
Tell-show-do	99
Nonverbal communication	91
Voice control	92
Positive reinforcement	99
Distraction	96
Hand-over-mouth exercise	21
Active immobilization for nonsedated child	73
Passive immobilization for nonsedated child	68
Active immobilization for sedated child	47
Passive immobilization for sedated child	56
Nitrous oxide/oxygen inhalation sedation	86
Conscious sedation	62
General anesthesia	71

were between the ages of 26 and 66. The geographic distribution, reported by AAPD districts†, was roughly equal, as were the years in practice. Eighty-nine percent of the respondents considered themselves private practitioners. Further details on demographics and practice information are presented in Table 1.

All nonpharmacologic techniques except HOME and active immobilization of a sedated child were used for selected patients by a majority of respondents (Table 2). The majority of practitioners indicated that, with all age groups (from <3 years to >12 years) they use: (1) tell-show-do; (2) nonverbal communication; (3) voice control; (4) positive reinforcement; (5) distraction; (6) nitrous oxide/oxygen inhalation sedation; and (7) general anesthesia. Active and passive immobilization for nonsedated children are used by a major-

†District I: Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, Vermont, and the Canadian provinces of Newfoundland, Nova Scotia, Prince Edward Island, New Brunswick, and Quebec.

District II: Delaware, District of Columbia, Maryland, New Jersey, Pennsylvania, members in the Federal Services, and foreign countries not specifically cited.

District III: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia, and the Commonwealth of Puerto Rico.

District IV: Illinois, Indiana, Iowa, Ohio, Michigan, Minnesota, Nebraska, North Dakota, South Dakota, Wisconsin, and the Canadian provinces of Ontario and Manitoba.

District V: Arkansas, Colorado, Kansas, Louisiana, Missouri, New Mexico, Oklahoma, Texas, and Mexico.

District VI: Alaska, Arizona, California, Hawaii, Idaho, Montana, Nevada, Oregon, Utah, Washington, Wyoming, and the Canadian provinces of Saskatchewan, Alberta, British Columbia, Northwest Territories, Nunavut, and Yukon Territory.

ity of respondents with children ages <3 to 5 years. Active or passive immobilization for sedated children is used by fewer practitioners and predominantly in children <6 years old. In fact, a slight majority of respondents (53%) do not employ active immobilization for sedated children. HOME is not used by 79% of practitioners. Those who do use the technique use it most frequently with children ages 3 to 5 years.

Practitioners were next asked to compare their current use of the behavior management techniques to their use 5 years ago. Responses included “use more,” “no change,” “use less,” “don’t use now,” and “never used” (Table 3). The majority of respondents who use the techniques indicated no change in their use of most communication techniques. HOME is being used less now compared to 5 years ago by 50% of practitioners who use the technique. Most practitioners who employ immobilization indicated no change in their use of the technique. Few practitioners indicated they are using immobilization more frequently. Among those who use nitrous oxide/oxygen inhalation sedation, one quarter indicated they are using it more frequently now than 5 years ago. Responses regarding changes in conscious sedation use were nearly equally distributed, with about half of respondents who employ the technique indicating they have not changed their frequency of use. With regard to general anesthesia, the majority of practitioners report using the technique more frequently or not changing their frequency of use.

Next, practitioners were asked to indicate whether, over the next 2 to 3 years, they anticipate using the techniques less or more than they do now, or whether they expect no change in the frequency of use (Table 4). The majority of practitioners who use the techniques foresaw no changes in their use of any of them. With regard to general anesthesia, a substantial minority (31% of users) indicated they would likely increase their use of that modality.

The next series of questions dealt with consent for the use of behavior management techniques. A sizeable minority of practitioners (42%) indicated they give parents a single printed form that describes at least some of the behavior management techniques they use. Forty-five percent of respondents indicated they use a single form to obtain consent from caregivers for all nonpharmacologic techniques (often described as “blanket consent”).

Table 5 illustrates the responses to questions about whether and what type of consent (oral or written) is obtained for the various techniques. The majority of practitioners do not obtain consent for the use of most communicative techniques. About two thirds of practitioners using HOME obtain consent, with oral consent being more commonly employed. Of the practitioners using active and passive immobilization for nonsedated children, the majority obtain oral consent. Of those who use active immobilization for sedated children, oral or written consent is obtained with approximately equal frequency. The majority of practitioners who use passive immobilization for sedated children obtain written consent. Those who use nitrous oxide/oxygen inhalation sedation,

Table 3. Use of Behavior Management Techniques Compared to 5 Years Ago

Technique	% of respondents using technique
Tell-show-do	
Use less	2
Use more	14
No change	84
Nonverbal communication	
Use less	4
Use more	11
No change	84
Voice control	
Use less	23
Use more	11
No change	66
Positive reinforcement	
Use less	1
Use more	21
No change	79
Distraction	
Use less	3
Use more	19
No change	78
Hand-over-mouth exercise	
Use less	50
Use more	4
No change	47
Active immobilization for nonsedated child	
Use less	26
Use more	12
No change	62

a small majority obtains oral consent, while somewhat fewer obtain written consent. For the practitioners who use conscious sedation and general anesthesia, the great majority obtains written consent.

Table 6 details responses by practitioners to questions about parents in the operatory. Practitioners were asked to indicate the percentage of appointments at which parents are present in the operatory for 7 different procedures. Allowable responses were: (1) 0% (eg, never); (2) 1% to 25% (infrequently); (3) >25% to 75% (frequently); and (4) >75% (routinely). The majority of respondents indicated that parents are present in the operatory routinely for emergency examinations (61%) and procedures involving special needs children (66%). Somewhat less than a majority (43%) indicated routine parental presence for examination/prophylaxis.

Practitioners were divided as to the frequency of parental presence for restorative and surgical procedures and to

Table 3 Continued

Passive immobilization for nonsedated child	
Use less	28
Use more	11
No change	62
Active immobilization for sedated child	
Use less	20
Use more	8
No change	72
Passive immobilization for sedated child	
Use less	18
Use more	9
No change	73
Nitrous oxide/oxygen inhalation sedation	
Use less	9
Use more	26
No change	65
Conscious sedation	
Use less	27
Use more	22
No change	51
General anesthesia	
Use less	12
Use more	38
No change	50

assist with restraint. A sizable minority never invites parents into the operatory for sedation visits, but interestingly, almost 25% of practitioners routinely do so. Practitioners were also asked for which age groups they prefer to have parents present for at least some procedures. More than 1 response was allowed. Over 87% of practitioners indicated that this was true for children <3 years of age. The percentage of positive responses declined to 61% for 3- to 5-year-olds, 37% for 6- to 12-year-olds, and 25% for those over age 12.

As shown in Table 7, 50% of practitioners indicated that the frequency of parental presence in their operatories has not changed over the past 5 years. The second highest percentage, 38%, believes that the phenomenon has increased. Those practitioners who indicated an increase were asked to choose from a list of possible reasons; more than one response was allowed. Seventy-eight percent of respondents indicated that "parents prefer to be present," while 58% indicated "parents insist on being present." Fifty-one percent choose to have parents present so they could consult with them while treating the patient. More than three quarters of respondents indicated that their preference for parents in the operatory was likely to remain the same over the next 2 to 3 years. Of the remainder, most indicated a likely decrease in parental presence in their practices in the near future.

Table 4. Anticipated Changes in Use of Behavior Management Techniques Over the Next 2 to 3 Years

Variable	% of respondents using technique
Tell-show-do	
Will use less	<1
Will use more	7
No change	93
Nonverbal communication	
Will use less	2
Will use more	6
No change	92
Voice control	
Will use less	10
Will use more	5
No change	85
Positive reinforcement	
Will use less	<1
Will use more	10
No change	89
Distraction	
Will use less	1
Will use more	10
No change	89
Hand-over-mouth exercise	
Will use less	24
Will use more	1
No change	75
Active immobilization for nonsedated child	
Will use less	15
Will use more	4
No change	80
Passive immobilization for nonsedated child	
Will use less	14
Will use more	4
No change	81
Active immobilization for sedated child	
Will use less	11
Will use more	4
No change	85
Passive immobilization for sedated child	
Will use less	8
Will use more	6
No change	86
Nitrous oxide/oxygen inhalation sedation	
Will use less	4
Will use more	13
No change	83

Table 4 Continued

Conscious sedation	
Will use less	17
Will use more	14
No change	69
General anesthesia	
Will use less	4
Will use more	31
No change	65

Eight-five percent of practitioners indicated they believed that parenting styles have changed during their years in practice. The most frequently chosen responses indicated that parents are “less willing to set limits for their children” and are “less willing to use physical discipline.” Of the list of reasons offered (more than one choice possible), all were chosen by a majority of respondents—with the exception of parents being “too self absorbed” and parents who “have more negative attitudes toward dentistry. Table 8 details the responses.

Discussion

The great majority of respondents employs communicative behavior management techniques, particularly with children under 12 years of age. Use of these specific techniques was not assessed in the 1972 or 1981 national surveys of pediatric dentists.^{2,4} Levy and Domoto³ found that positive reinforcement, distraction, and tell-show-do were used by a high percentage of pediatric dental practices in the state of Washington. They also found that nonverbal communication in the form of touching and stroking a child’s hand or arm was employed by 83% of pediatric dental practices in that state. A survey of pediatric dentists in the southeastern United States⁶ found that 62% of practitioners used tell-show-do with all children.

HOME has been an accepted behavior management technique in pediatric dentistry for many years. Only 20% of 1972 survey respondents indicated they never used the technique.² The remaining 80% used the technique with children ages 2 to 9, primarily when resistant or hysterical behaviors were demonstrated. Levy and Domoto found HOME was used by 88% of pediatric dentists in Washington state in 1979.³ In the 1981 survey,⁴ 90% of respondents indicated they used HOME with an open airway. Fifty-four percent said they used hand-over-mouth with airway restriction (HOMAR) in selected cases. Of respondents to Nathan’s⁵ 1989 survey, 66% indicated they used HOME, but 80% indicated they did not use HOMAR. Choate et al⁸ in 1990 found that only 13% of their respondents never used HOME. The number of non-users increased in the 1999 survey⁶ to 57% for HOME and

Table 5. Consent Obtained for Behavior Management Techniques

Technique	% of respondents using technique
Parents given written description of behavior management techniques used?	
Yes	42
No	58
Single form used for all nonpharmacologic behavior management techniques	
Yes	45
No	55
Tell-show-do	
No consent obtained	87
Oral consent obtained	7
Written consent obtained	6
Nonverbal communication	
No consent obtained	89
Oral consent obtained	6
Written consent obtained	5
Voice control	
No consent obtained	71
Oral consent obtained	22
Written consent obtained	7
Positive reinforcement	
No consent obtained	89
Oral consent obtained	6
Written consent obtained	5
Distraction	
No consent obtained	89
Oral consent obtained	6
Written consent obtained	5
Hand-over-mouth exercise	
No consent obtained	33
Oral consent obtained	43
Written consent obtained	23

90% for HOMAR. HOME is not used by 79% of the present survey's respondents.

The use of immobilization with selected patients was reported by 84% of 1972 survey respondents.² The 1981 survey⁴ found that 86% of respondents used physical restraint. Nathan⁵ found a very low (4%) use of immobilization in his 1989 survey of pediatric dentists. Respondents to that survey preferred passive immobilization and used the technique primarily with sedated patients or children with special health care needs. Choate et al⁸ found that 85% of their respondents used active restraint and 75% used a passive restraint device. Carr et al⁶ in 1999 were more specific about the types of immobilization used by their respondents. Eighty-two percent used some type of passive body wrap,

Table 5 Continued

Active immobilization for nonsedated child	
No consent obtained	18
Oral consent obtained	61
Written consent obtained	21
Passive immobilization for nonsedated child	
No consent obtained	11
Oral consent obtained	52
Written consent obtained	37
Active immobilization for sedated child	
No consent obtained	13
Oral consent obtained	42
Written consent obtained	45
Passive immobilization for sedated child	
No consent obtained	6
Oral consent obtained	35
Written consent obtained	59
Nitrous oxide/oxygen inhalation sedation	
No consent obtained	8
Oral consent obtained	51
Written consent obtained	41
Conscious sedation	
No consent obtained	2
Oral consent obtained	15
Written consent obtained	83
General anesthesia	
No consent obtained	1
Oral consent obtained	4
Written consent obtained	96

and 73% used restraint by the dentist, 88% restraint by dental personnel, and 86% restraint by the parent. No distinction was made in any of these studies regarding the use of restraints for sedated vs nonsedated patients.

The use of nitrous oxide/oxygen inhalation sedation was reported by 35% of 1972 survey respondents.² Usage was substantially higher in the 1981 survey, with 73% of respondents employing the technique. Carr et al⁶ reported use by 70% of respondents in 1999, particularly among younger pediatric dentists with fewer years in practice. Nitrous oxide/oxygen inhalation sedation is used by almost 86% of respondents to the present survey, most frequently with patients in the range of 3 to >12 years of age. The use of conscious sedation may be declining. The 1972 survey² reported that 84% of respondents used "drugs" to manage hysterical, fearful, and resistant patients. By 1981,⁴ the percentage of respondents reported the use of "premedication" had dropped to 80%. In the 1999 survey⁶ 70% of respondents indicated they employed conscious sedation.

Table 6. Frequency of Parental Presence in Operatory for Selected Appointment Types as Reported by Practitioners

Procedure/frequency of parental presence	% of respondents
Routine examination/prophylaxis (%)	
0	6
1-25	26
25-75	25
>75	43
Emergency examination	
0	4
1-25	16
25-75	19
>75	61
Restorative procedure	
0	14
1-25	30
25-75	23
>75	33
Surgical procedure	
0	24
1-25	26
25-75	19
>75	30
Sedation procedure	
0	45
1-25	19
25-75	11
>75	25
Assist with restraint	
0	15
1-25	31
25-75	14
>75	40
Parent of special needs child	
0	3
1-25	12
25-75	20
>75	66

Older practitioners were more likely to report the use of the technique. Only 62% of pediatric dentists reported using conscious sedation in the present survey.

The number of practitioners who use general anesthesia is apparently increasing after decades of declining. The percentages of respondents employing the technique was 80% in 1972,² 76% in 1981,⁴ and 61% in 1999⁶; however, 23% of respondents in the 1999 study reported

Table 7. Practitioner Responses Regarding Parental Presence in the Operatory

Variable	% of respondents
Parental presence in operatory in last 5 years has	
Increased	38
Decreased	12
Stayed the same	50
Reason for increase*	
Parents prefer to be present	78
Parents insist on being present	53
Able to consult with parent while treating the patient	51
Concern about legal action	35
More comfortable with parents present	31
Parents won't consent to treatment unless they can be present	21
Patients behave better with parent present	9
Other	12
Preference for parents in operatory over next 2-3 years is likely to	
Increase	7
Decrease	15
Stay the same	78

*More than 1 response allowed.

increasing their use of general anesthesia over the previous 5 years. Seventy-one percent of respondents to the present survey indicated using general anesthesia, with 38% indicating they use it more now than 5 years ago, and 31% indicating they will likely increase their use of the technique over the next 2 to 3 years.

Informed consent, whether oral or written, was not addressed in the 1972² or 1981⁴ surveys. Choate et al⁸ found that a majority of respondents obtained parental consent at least some of the time prior to using passive or active restraint and HOME. However, more than 85% did not obtain specific written consent for these techniques. Oral consent was obtained by 79% for passive immobilization, 67% for active restraint, and 61% for HOME. Carr et al⁶ found that many practitioners always obtained oral consent for passive immobilization, active immobilization, nitrous oxide/oxygen inhalation sedation, conscious sedation, and general anesthesia. Some practitioners always obtained written consent for passive immobilization, conscious sedation, and general anesthesia. The current AAPD guideline¹ specifically recommends that written consent be obtained for HOME, immobilization, and pharmacologic techniques.

Parental presence in the operatory was not addressed in the 1972 survey,² but the 1981 survey⁴ found that 90% of practitioners allowed parents into the operatory for at least some selected procedures, particularly with children <3 years of age, children with special health care needs, fearful or timid

Table 8. Responses to Items Regarding Changes in Parenting Styles During Years of Practice

Variable	% of respondents
Believe parenting styles have changed	
Yes	85
No	15
Ways parenting styles have changed*	
Less willing to set limits for their children	93
Less willing to use physical discipline	80
Less trusting of professionals	68
Have unrealistic expectations regarding dental treatment for their child	68
Unsure of their roles as parents	67
Less willing to let other adults set limits	67
Too busy to spend time with their children	54
Too self absorbed	40
Too materialistic/affluent	36
Have more negative attitudes toward dentistry	24
Other	9

*More than 1 response allowed.

children, or children whose parents requested to be present. Levy and Domoto³ found that parental presence was used in 88% of the pediatric dental practices in Washington state, primarily with children up to age 3 years. Nathan⁵ found that parental presence was a common practice for initial examinations, but not for sedation visits. Carr et al⁶ found that 84% of respondents in the southeast allowed parents into the operatory.

The limitations of this study include those common to surveys. While quantities of data can be generated by surveys, data quality is dependent on respondent conscientiousness. The nature and quality of the information obtained also are based on survey construction. For example, practitioners were asked to describe their use of the behavior management techniques as defined in the survey. Those definitions, in turn, were taken from the AAPD Reference Manual.¹ The definition of a given technique may not correspond precisely to the way in which some practitioners apply it. If that is the case, then their responses may pertain to the variations or may have indicated they do not use the technique as defined.

The response rate to this survey (66%) is an indication of the interest that AAPD members have in the topic of behavior management of child dental patients. This interest has been consistently documented in previous survey response rates: 75% in 1972;² 65% in 1981;⁴ and 64% in 1999.⁶

Conclusions

The responses of active and affiliate AAPD members in the United States and Canada indicate that:

1. Most practitioners have not changed the frequency with which they use most behavior management techniques. Exceptions include a decrease in HOME use and slight increase in general anesthesia use. The majority foresaw no changes in their frequency of use over the next 2 to 3 years.
2. The great majority of practitioners believe that parenting styles have changed during their years in practice. These changes may have contributed to an increase in behavior management problems in the dental setting.

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