The use of behavior management techniques by dentists across practitioner type, age, and geographic region

Carole McKnight-Hanes, DMD David R. Myers, DDS, MS Jennifer C. Dushku, BA Harry C. Davis, MS

Abstract

The purpose of this project was to describe the behavior management procedures employed for child dental patients based on practitioner type (general dentist vs. pediatric dentist), age, and geographic location. A survey of practice characteristics, which included questions relating to child behavior management, was mailed once to a national random sample of 3000 dentists — 2000 general dentists and 1000 pediatric dentists. The pediatric dentists who responded employed a broader spectrum of management techniques than did the general dentists. Significant regional and practitioner age differences were reported in the use of behavior management techniques. The use of sedation and general anesthesia was reported more frequently in the western regions. Of the five age groups, the 40- to 49-year-old age group reported using the broadest spectrum of behavior management techniques. The survey revealed practitioner type, age, and regional differences in the child behavior management procedures employed by dentists. (Pediatr Dent 15:267–71, 1993)

Introduction

Although most children are relatively cooperative, managing disruptive behavior remains an essential aspect of children's dental care. Dentists employ a wide variety of psychological, physical restraining, sedation, and general anesthetic procedures to manage children's behavior. Procedures such as tell-show-do and voice control can be employed readily in minimally disruptive clinical situations and are accepted by parents.[1–3] Hand-over-mouth is an effective method to gain a disruptive child's attention but is associated with professional controversy and poor parental acceptance.[1–5] Sedation, general anesthesia, and physical restraint are employed in selective situations, but they require special training and also have limited parental acceptance.[1–3, 6–8]

All dentists receive training in the fundamentals of child behavior management, but pediatric dentists receive additional extensive training and experience. Factors such as sedation guidelines,[9] informed consent requirements,[10–11] variation in state dental practice acts and professional liability insurance also may influence the employment of behavior management procedures.

There is little information describing the use of these procedures in practice. The purpose of this project was to report the behavior management procedures employed for child dental patients based on practitioner type (general dentist vs. pediatric dentist), age, and geographic location.

Method

A survey that contained questions pertaining to the characteristics of their practice was mailed once to 2000 general dentists and 1000 pediatric dentists. The names and addresses were obtained through the American Dental Association's data processing service to provide a national random sample of both ADA member and nonmember general dentists and pediatric dentists. This rationale was employed for previous surveys seeking information pertaining to children's dental services.[12–14]

The data reported in this manuscript will be limited to behavior management procedures. The data analysis based on type of practice compared the responses of general dentists with pediatric dentists. For evaluating the age-related differences, the practitioners' ages were grouped into the following categories; less than 30, 30–39, 40–49, 50–59, and 60+. The regional evaluation of the data was based on the seven geographical regions used for the NIDR National Caries Prevalence Survey.[15] Chi-square analysis was employed to analyze the percentage distribution of respondents for each variable. Additionally, a stepwise logistic regression was done to evaluate differences by practice type and region.

Results

The overall response rate for this once-mailed survey with no attempt at followup was 39% (1154), with usable responses from 663 of the general dentists and 475 of the pediatric dentists. This response rate is similar to previous response rates for once-mailed surveys.[12–14] The distribution of respondents by practice type and region is shown in Table 1.

Practitioner type

The results revealed significant practitioner type differences in the behavior management procedures used for child dental patients. The practice type results are reported in Table 2. Most of the responding practitioners, regardless of practice type, reported frequent use of tell-show-do (TSD) and voice control (VC) as behavior man-

Table 1. Per cent of respondents by practice type and region

Region	*General Dentists*	*Pediatric Dentists*
I (Northeast)	65%	35%
II (East)	66	34
III (North Central)	66	34
IV (Southeast)	54	46
V (Southwest)	54	46
VI (Northwest)	45	55
VII (West)	54	46
Total	58%	42%

Table 2. Per cent of respondents reporting use of management method by practice type

Method	*General Dentists*	*Pediatric Dentists*	x^2	*P-value*
TSD	96%	100%	18	< 0.0100
VC	88	98	34	< 0.0001
HOM	21	52	130	< 0.0001
Phys res	3	71	589	< 0.0001
Inh sed	48	74	82	< 0.0001
Oral sed	23	68	223	< 0.0001
IM sed	< 1	8	56	< 0.0001
IV sed	< 1	2	7	< 0.0500
GA in office	< 1	1	9	< 0.0100
GA in OR	3	60	465	< 0.0001
GA in ASU	1	22	152	< 0.0001
Hypnosis	2%	6%	16	< 0.0001

agement methods. One hundred per cent of the pediatric dentists and 96% of the general dentists reported using TSD, while 98% of the pediatric dentists and 88% of the general dentists reported using VC.

Of the less frequently employed child management methods, there were greater differences in the frequencies reported by the two types of practitioners. The use of hand-over-mouth (HOM) was reported by 52% of the pediatric dentists and 21% of the general dentists ($P < 0.0001$). Physical restraint was reportedly employed by 71% of the pediatric dentists but only by 3% of the general dentists ($P < 0.0001$).

Pediatric dentists reported a higher frequency of use of all types of sedation ($P < 0.0001$). Seventy-four per cent of the pediatric dentists and 48% of the general dentists reported using inhalation sedation. Oral sedation use was reported by 68% of the pediatric dentists compared with 23% of the general dentists. Only 8% of the pediatric dentists and less than 1% of the general dentists reported the use of intramuscular sedation.

The use of general anesthesia in the operating room was reported by 60% of the pediatric dentists compared with only 3% of the general dentists ($P < 0.0001$). General anesthesia in an ambulatory surgical unit was employed by 22% of the pediatric dentists compared with only 1% of the general dentists ($P < 0.0001$).

The frequency of use of intravenous sedation was very low for both pediatric dentists (2%) and general dentists (< 1%). Both types of practitioners reported very infrequent use of general anesthesia in the office.

The use of hypnosis was reported by 6% of the pediatric dentists and 2% of the general dentists.

Table 3. Per cent of respondents reporting use of management method by region

Method	*Regions**							x^2	*P-value*
	I	*II*	*III*	*IV*	*V*	*VI*	*VII*		
TSD	96	97	98	96	98	100	99	6	NS
VC	91	82	96	93	93	98	92	33	< 0.0001
HOM	23	29	36	40	36	37	24	18	< 0.0500
Phys res	16	25	27	39	32	32	35	22	< 0.0010
Inh sed	40	47	62	59	76	72	55	41	< 0.0001
Oral sed	39	30	34	45	59	58	42	39	< 0.0001
IM sed	0	2	2	3	7	8	6	16	NS
IV sed	0	1	< 1	1	1	2	1	3	NS
GA in office	0	1	0	1	1	2	1	4	NS
GA in OR	27	15	25	29	36	50	20	37	< 0.0001
GA in ASU	7	4	9	11	16	22	9	22	< 0.0010
Hypnosis	1	3	4	3	6	2	5	5	NS

* Regions: I (Northeast); II (East); III (North Central; IV (Southeast); V (Southwest): VI (Northwest): VII (West).

Table 4. Per cent of respondents reporting use of management method by age

Method	*Age Groups*					x^2	*P-value*
	< 30	*30–39*	*40–49*	*50–59*	*60+*		
TSD	98	98	99	96	88	30	< 0.0001
VC	87	93	94	93	77	27	< 0.0001
HOM	29	36	39	26	17	21	< 0.0001
Phys res	15	27	42	24	20	39	< 0.0001
Inh sed	56	63	63	51	32	33	< 0.0001
Oral sed	29	46	45	37	26	17	< 0.0500
IM sed	0	2	6	3	4	16	< 0.0500
IV sed	2	< 1	1	1	1	3	NS
GA in office	2	< 1	1	0	1	5	NS
GA in OR	5	24	35	25	17	32	< 0.0001
GA in ASU	0	10	14	6	12	19	< 0.0100
Hypnosis	0	3	5	3	9	9	NS

Region

The regional data are shown in Table 3. Due to the small number of responses in some of the categories across the regions, these results are based upon the combined total of both pediatric dentists and general dentists in each region. There were statistically significant regional differences in the frequency of use of the various behavior management modalities. The reported use of voice control, hand-over-mouth, physical restraint, inhalation sedation, oral sedation, and general anesthesia in the operating room and ambulatory surgery unit all resulted in significant regional variation ($P < 0.0001$). The most frequent use of inhalation sedation was reported in region V, the Southwest (76%) and region VI, the Northwest (72%). The lowest use of inhalation sedation was reported in region I, the Northeast (40%). Oral sedation was most frequently employed in region V, the Southwest (59%) and region VI, the Northwest (58%) and least often in region II, the East (30%). The most frequent use of general anesthesia in the operating room was reported in region VI, the Northwest (50%), while only 15% of the respondents in region II, the East, reported using general anesthesia in the operating room.

In order to determine the implications of the differences between the general dentists and pediatric dentists, a stepwise logistic regression was performed entering practice type and then region. The interaction of practice type by region was stepped in if there was statistical significance. There were no statistically significant interactions based on region and practice type.

Age

There were significant practitioner age-related differences in the behavior management methods employed (Table 4). The breakdown of respondents by age was: 55 were less than 30 years old; 379 were 30–39 years old; 421 were 40–49; 213 were 50–59; and 69 were 60 years of age or older. Hand-over-mouth was most frequently employed by the 40–49 age group (39%) and least frequently by the over-60 age group (17%). Physical restraint was most frequently employed by the 40–49 age group (42%) and least by the under-30 age group (15%). More than 60% of the respondents ages 30–39 and 40–49 years, but only 32% of the dentists age 60 or over reported using inhalation sedation.

Discussion

The results of this survey revealed significant practice type, regional, and practitioner age-related differences in the behavior management techniques employed for children's dental treatment.

Practitioner type

Behavior management procedures—except for tell-show-do, IV sedation, and general anesthesia in the office—demonstrated significant differences based on the type of practitioner. The pediatric dentists who responded indicated employing sedation more frequently than did the general dentists. Inhalation and oral sedation were reported by more than two-thirds of the responding pediatric dentists. Although the general dentists reported using these modalities, they reported significantly less frequent use than the pediatric dentists. The reported frequency of IV sedation use was extremely low for both types of practitioners. The more frequent use of sedation by pediatric dentists is not surprising, as pediatric dentists receive training in sedation and general anesthesia and are also likely to have a greater variety of patients presenting behavior management problems.

The reported use of injectable sedation was very limited. Only 8% of the responding pediatric dentists and 1% of the general dentists reported using intramuscular sedation. The infrequent use of injectable sedation suggests that most practitioners have limited training in the modal-

ity, or it has not proven to be especially effective with children, or possibly liability and state licensure requirements restrict its use. Serious adverse consequences have been associated with injectable sedation procedures in children, which may have discouraged its use.[16]

Physical restraint (Papoose Board®—Olympic Medical Group, Seattle, WA and Pedi-Wrap®—Clark Associates, Inc., Charlton City, MA) was employed significantly more frequently by pediatric dentists than general dentists. This difference again likely reflects the dentists' training and the unique characteristics of the individual dentists' patient population. The infrequent use of physical restraint reported by general dentists suggests that they may not be familiar with devices used for restraint.

Region

Regional differences in behavior management techniques were apparent. The most frequent use of hand-over-mouth and physical restraint was reported in region IV, the Southeast. Regions V, the Southwest, and VI, the Northwest, reported the greatest use of oral sedation, intramuscular sedation, and treatment under general anesthesia in the operating room. The distribution of general dentists and pediatric dentists was not equivalent across all regions (Table 1). Therefore, the explanation for much of the difference among the regions may relate to the percentages of pediatric dentists responding in each region. For example, in region VI, 50% of the respondents indicated that they treat patients under general anesthesia in the operating room. In region VI, 55% of the respondents were pediatric dentists.

However, the differences cannot be entirely explained by the distribution of dentists in each region. The lack of any significant interactions between regions and practice type suggests that if there is a significant difference for a particular modality based on practice type, that difference is consistent across the regions. The opposite is also true. Differences based on region seem to be consistent regardless of practice type. Other explanations for regional differences may include the educational background of the practitioners in the region. The reimbursement policy of third party or government agencies in the area, or liability or licensure considerations in the region also may influence the use of behavior management methods. To further understand the regional and practice type differences, future studies should include a larger sample of practitioners, approximating the percentage of each practice type in the region. The scope of the survey should be expanded to assess factors not considered in the present study.

Practitioner Age

Differences also were apparent in the management methods reported across the different practitioner age groups. The 40–49 age group reported the greatest use of hand-over-mouth, physical restraint, and all types of sedation and general anesthesia. This age group represents experienced practitioners at the busiest time in their professional careers. Apparently they have attained the necessary training and experience and are treating a wide variety of patients who require diverse patient management approaches. The lowest frequency of use of hand-over-mouth, restraint, sedation, and general anesthesia was reported by the over-60 age group. Possibly, this group of practitioners has fewer very young patients, or patients that otherwise require special management considerations. It is also probable that practitioners in this age group received little training in sedation or general anesthesia in their educational programs.

Conclusion

The results of this survey demonstrated significant regional, practice type, and practitioner age differences in the methods employed to manage child behavior during dental treatment. Educational background obviously influences the dentists' use of behavior management procedures. Other influential factors may include practice experience along with variation in state dental practice acts, informed consent, and professional liability requirements. These results indicate there is considerable variation in the reported use of behavior management techniques in practice. Further study is necessary to better understand the impact of these variables on the use of behavior management methods.

Carole McKnight-Hanes is associate professor, Department of Pediatric Dentistry; David R. Myers is dean, Merritt professor of pediatric dentistry; Jennifer C. Dushku is programmer, analyst II, Office of Biostatistics; and Harry C. Davis is research statistician, Office of Biostatistics, Medical College of Georgia, Augusta.

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