

The use of behavior management techniques by dentists in Saudi Arabia: A Survey

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كان الهدف من هذه الدراسة هو معرفة مدى استخدام أطباء الأسنان في السعودية لطرق معالجة السلوك أثناء علاج أسنان الأطفال ، وذلك حسب التخصص وعمر الأطفال المعالجين . تم إرسال ثلاثمائة نسخة من استبيان مغطى بخطاب تعريفي الى اثنين من كليات طب الأسنان ، مستشفيات ، مراكز الرعاية الأولية وعيادات خاصة في مختلف مناطق المملكة . تم استلام ٢٥٠ نسخة ، تم اشراك ٢٣٢ نسخة وذلك لاحتواءها على معلومات كافية تم الحصول على معلومات تخص المشتركين وهي العمر ، نوع التخصص ، مكان العمل ، المنطقة ، عمر الأطفال ذوي السلوك غير المتعاون أثناء العلاج ، وطرق معالجة السلوك المستخدمة بطريقة يومية في علاج الأطفال . أوضحت النتائج أن المتخصصين في طب أسنان الأطفال كانوا أكثر استعمالاً لهذه الطرق من أطباء الأسنان غير المتخصصين ، وقد كان هذا الاختلاف ذا قيمة إحصائية في كل من : التهيئة الواعية ، طريقة تحديد حركة الطفل ، طريقة استخدام النموذج ثم طريقة التفاهم الصامت .

كما تدل النتائج أن أكثر ثلاث طرق مستعملة هي الشرح ثم التطبيق ، التشجيع ثم التحكم بالصوت ، في حين كانت أقل الطرق استخداماً هي التهدئة عبر الوريد ، التفاهم الصامت ، ثم تحديد حركة الطفل خارجياً . أوضحت النتائج أن طرق معالجة السلوك يتم استعمالها بكثرة مع الأطفال البالغة أعمارهم ٣ الى ٥ سنوات . يستنتج مما سبق أن كلا من طريقة الشرح ثم التطبيق ، طريقة التشجيع ثم التحكم بالصوت هي أكثر الطرق استعمالاً من قبل كل من أطباء الأسنان المتخصصين في طب أسنان الأطفال وغير المتخصصين ، في حين يستخدم أطباء الأسنان المتخصصين الطرق الأكثر تخصصاً بصورة أكثر من غير المتخصصين .

The objective of this study was to determine the behavior management techniques (BMT) used among dentists in Saudi Arabia for child dental patients according to type of practice, and the age group of the children receiving treatment. Three hundred copies of questionnaires accompanied by a covering letter were sent to two dental schools, hospitals, primary care centers and private clinics in the different provinces of Saudi Arabia. Nearly 250 questionnaires were returned with 232 suitable for tabulation. The information obtained from the respondents included their age, type of practice, institution, province, age of the children with the most disrupted behavior and the behavior management techniques utilized in the everyday treatment of their pediatric patients. Results showed that the responding pediatric dentist (PD) utilized a wider variety of management techniques than the general dental practitioner (GD). The most frequently used techniques were: tell, show & do, positive reinforcement and voice control, while the three least used were intravenous sedation, non-verbal communication and extra-oral physical restraint. There were significant differences between the GD and the PD in the use of sedation, physical restraint, modeling and non-verbal communication (χ^2 test, $p < 0.05$) but surprisingly, not in general anesthesia (χ^2 test, $p = 0.2348$). These behavior management techniques were used predominantly on the 3-5 year old children. It was concluded that the techniques of tell, show* do, positive reinforcement and voice control were highly utilized by both the GD and PD while the more specialized BMT were more often used by the PD.

Introduction

Since children exhibit a wide range of development and a diversity of attitudes toward dental treatment, it is imperative that dentists have at their disposal a wide range of behavior management methods and communication techniques to meet the needs of the individual child.¹ Roche² listed the objectives of child management as follows:

- To make the child comfortable
- To provide freedom from pain
- To perform the procedures safely
- To carry out the treatment efficiently and
- To have the child and the parent accept the procedures

To achieve the objectives of child management, the general dental practitioner or the pediatric dentist therefore needs to employ different behavior management techniques for different children.

Many dentists showed preference for the traditional management practices such as **tell-show-do, sedation, hand-over mouth and restraints** over newer techniques such as: **live modeling, filmed modeling, contingent distraction or contingent rewards.**³ Procedures such as tell, show and do and voice control can be employed readily in minimally disruptive clinical situations and are accepted by parents^{4, 8} but regardless of the degree of cooperation of the child, the most popular management techniques are tell, show and do and physical restraint.^{3,7,8} Parents are allowed in the clinics for infants but parent separation is practiced when the child is above 5 years of age.^{2,7,9,10} Hand over mouth is a

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commonly used and effective behavior management technique 2,3,7-9,11,12 b. if k not w. accepted by parents.⁴⁵ Other behavior management techniques of choice which are not readily accepted by parents are voice control, physical restraint, conscious sedation (oral or inhalation) and general anesthesia.^{3,5,8,10,14,16} There are reports^{4,5} that the papoose board was rated the behavior management least acceptable to parents while Frankel's study¹⁵ showed that mothers approved the use of the papoose board after experiencing its use with their children. There is also the unusual and exceptional technique of intravenous sedation which is used very sparingly by some dentists.⁸ The American Academy of Pediatric Dentistry¹ encourages general dental practitioners and pediatric dentists to perform behavior management techniques that are consistent with their educational training and clinical experience. Several surveys have been conducted to evaluate and report the behavior management techniques utilized by general dental practitioners and pediatric dentists in different populations.^{3,7,10}

It would be of interest to find out the trends of behavior management techniques utilized by both the general dental practitioners and pediatric dentists in the Kingdom of Saudi Arabia.

The purpose of this survey was to determine the behavior management procedures utilized by dentists in their management of child dental patients according to the type of practice, and the age group of the children receiving treatment in Saudi Arabia.

Materials and Methods

During the year 1997-98G (1417-1418H), a questionnaire was designed to obtain information from general dental practitioners (GD) and pediatric dentists (PD) practicing in the Kingdom of Saudi Arabia. The information obtained included the following:

1. Age, sex, language
2. Working location, type of practice and province
3. Number of years in practice as a GD and /or asPD
4. Percentage of children treated in the practice
5. Percentage of the pediatric patients who need extra behavior management techniques (BMT) and those who need referral to the pediatric dentist when the dentist is a GD.
6. Age of the patients who show the most disruptive behavior

7. Each GD or PD was also asked to indicate the various behavior management techniques (BMT) utilized by him or her in the daily treatment of the pediatric patient from a list of 14 BMT and to record the parent's preference of the techniques from the participant's point of view.

The behavior management techniques were: Tell, show and do (TSD), positive reinforcement (PR), hand over mouth (HOM), oral conscious sedation (CS-0), conscious sedation by nitrous oxide (N₂O), intra-oral physical restraint (Ph.R-I.O), extraoral physical restraint (Ph.R - E.O), distraction (Dis), voice control (VC), parent's separation (PS), non-verbal communication (Non V Comm), modeling (MO), general anesthesia (GA), and intravenous sedation (IV). The 14 behavior management techniques were listed in a table which was designed to allow the dentist to mark each technique relative to the age ranges -1 to 2 years, 3-5 years, 6-8 years, 9-12 years and more than 12 years. The last question investigated the parents' preference of the techniques from the participants' point of view.

Sixty copies of the questionnaires were distributed to dentists and 50 were returned during a dental conference held in Riyadh in 1998. Aside from these, 240 copies were either mailed to hospitals and dental centers in the different provinces of Saudi Arabia or handed to dentists who further distributed them to the GD and PD in their institutions. Thus a total of 300 questionnaires were sent out to GDs and PDs in 8 government hospitals, 3 dental centers, 20 polyclinics, 15 private clinics and the two dental schools in different parts of Saudi Arabia. Each questionnaire was accompanied by a covering letter from the investigators indicating the objectives of the study and a request for a diligent response.

The Chi-square test was employed to analyze the frequency distribution of BMT used by the type of practice.

Results

Out of 300 questionnaires sent out, 248 were returned for a response rate of 82.6% and 232 of these responses were complete enough for tabulation (77.3%). Table 1 shows the distribution of the general practitioners (GD) and pediatric dentists (PD) who participated in the study by sex. The breakdown of the responding dentists by age was: 68 (29.3 %) were 20-29 years old, 111 (47.7 %) were 30-39 years old; 38 (16.4 %) were 40-49 years old and 11 (4.8%) were 50 years and above while 4

Table 1. Distribution of General Dental Practitioners (GD) and Pediatric Dentists (PD) who participated in the study by sex.

Type of Practice	Male	Female	Total
GD	73	104	177
PD	20	35	55
Total	93	139	232

(1.72%) did not state their age.

The number and percentage of respondents reporting the use of behavior management techniques (BMT) by type of practice, province and institution are shown in Table 2. There was only one respondent from the Southern Province while as many as 137 or 59.1% were from the Central Province. Table 2 also shows that most of the general practitioners worked in the hospitals and primary care centers while the pediatric dentists worked mostly in the hospitals and in the two universities in the country.

Table 2. Number and percentage of respondents reporting use of Behavior Management Techniques (BMT) by type of practice, province and institution.

	GD(%)	PD(%)	Total (%)
Province			
Central	103 (75.2)	34 (24.8)	137 (59.1)
Western	40 (71.4)	16 (28.6)	56 (24.1)
Northern	17 (81.0)	4 (19.0)	21 (9.1)
Eastern	15 (93.8)	1 (6.3)	16 (6.9)
Southern	1 (100)	0 (0)	1 (0.4)
Not stated	1 (100)	0 (0)	1 (0.4)
Total	177(76.3)	55 (23.7)	232 (100)
institution			
Hospital	108 (76.1)	34 (23.9)	142 (61.2)
Primary Care Center	46 (100)	0 (0)	46 (19.8)
Universities	9 (34.6)	17 (65.4)	26 (11.2)
Private Clinic	10 (71.4)	4 (28.6)	14 (6.0)
School Health Units	2 (100)	0 (0)	0 (0.9)
Not stated	4 (100)	0 (0)	2 (0.9)
Total	177 (76.3)	55 (23.7)	232 (100)

Table 3. Frequency distribution of BMT used by type of practice.

Technique	General Dental Practitioners GD(N=177)	Pediatric Dentists PD(N=55)	P Value (χ^2 test)
TSD	162 (91.5 %)	54 (98.2 %)	0.0888 NS
Positive Reinforcement	147 (83.1 %)	53 (96.4 %)	0.0726 NS
HOM	114 (64.4 %)	33 (60.0 %)	0.5535 NS
Cons. Sedation (Oral)	82 (46.3 %)	40 (72.3 %)	0.0006*
Cons. Sedation (N.O)	69 (39.0 %)	37 (67.3 %)	0.0002*
Ph. Res. (I.O)	95 (54.7 %)	42 (76.4 %)	0.0028*
Ph. Res. (E.O)	76 (42.9 %)	33 (60.0 %)	0.028*
Distraction	89 (45.2 %)	31 (56.4 %)	0.4305 NS
Voice Control	146 (82.5 %)	51 (92.7 %)	0.0638 NS
Parent's Separation	125 (70.6 %)	39 (70.9 %)	0.9673 NS
Non-verbal Comm.	70 (39.5 %)	34(61.8%)	0.0037*
GA	90 (50.8 %)	33 (60.0 %)	0.2348 NS
Modeling	74(41.8%)	34(61.8%)	0.0093*
I.V. Sedation	54 (30.5 %)	17 (30.9 %)	0.9551 NS

• Significant
NS Not Significant

Table 3 illustrates the frequency distribution of the various behavior management techniques as used by the type of practice. Both the general practitioners and the pediatric dentists utilized TSD, positive reinforcement and voice control on regular bases. Most of the other more specialized, sophisticated behavior management techniques such as conscious sedation, restraints, modeling and non-verbal communications were significantly more frequently used by the pediatric dentists and less so by the general practitioner ($p < 0.05$). There was no significant difference in the use of general anesthesia. Intravenous sedation was not much used by either group. The behavior management techniques were used mostly with the children aged 3 to 5 years, followed by children aged 6 to 8 years. The BMT were least required in children more than 12 years old (Table 4).

Table 5 shows that TSD, positive reinforcement and general anesthesia were the techniques most acceptable to the parents while hand over mouth, extra-oral physical restraints and parents' separation were the least acceptable to parents. The parents had no objections to TSD and positive reinforcement.

Table 4. BMT utilized with different age groups.

BMT	1 - 2 yrs. No. (%)	3 - 5 yrs. No. (%)	6 - 8 yrs. No. (%)	9-12 yrs. No. (%)	> 12 years No. (%)	Total Scores
TSD	44(19%)	148(63.8%)	164(70.7%)	105 (45.3 %)	74(31.9%)	535
Positive Reinforcement	48(20.7%)	121 (52.2%)	130(56.0%)	93 (40.1 %)	58(25.0%)	450
HOM	32(13.8%)	97(41.8%)	51 (22.0%)	13(5.6%)	3(1.3%)	196
Cons. Sedation (Oral)	44(19.0%)	91 (39.2 %)	52(22.4%)	14(6.0%)	4(1.7%)	205
Cons. Sedation (N>0)	32(13.8%)	61 (26.3 %)	52(22.4%)	28(12.1 %)	18(7.8%)	191
Ph. Res. (1.0)	50(21.6%)	99 (42.7 %)	63 (27.2 %)	34(14.7%)	10(4.3%)	256
Ph. Res. (E.0)	47 (20.3 %)	76(32.8%)	42(18.1 %)	13(5.6%)	2 (0.9 %)	180
Distraction	26(11.2%)	85(36.6%)	58(25.0%)	27(11.6%)	10(4.3%)	206
Voice Control	26(11.2%)	79(55.6%)	130(56.0%)	61 (26.3 %)	31 (13.4%)	327
Parent's Separation	7(3.0%)	79(34.1%)	112(48.3%)	67 (28.9 %)	42(18.1 %)	307
Non-verbal Comm.	45(19.4%)	44(19.0%)	37(15.9%)	26(11.2%)	25(10.8%)	177
GA	83(35.8%)	101 (43.5%)	41 (17.7%)	21 (9.1 %)	14(6.0%)	260
Modeling	10(4.3%)	64(27.6%)	68 (29.3 %)	33(14.2%)	20(8.6%)	195
I.V. Sedation	18(7.8%)	36(15.5%)	28(12.1 %)	17(7.3%)	9(3.9%)	108

Table 5. Most acceptable and least acceptable BMT to parents.

Technique	Most Acceptable			Least Acceptable		
	1st	2nd	3rd	1st	2nd	3rd
TSD	150	12	4	-	-	-
Positive Reinforcement	14	101	6			
HOM		5	82	15	8	
Cons. Sedation (Oral)	2	21	19	2	42	
Cons. Sedation (N,0)	6	8	11	10	4	3
Physical Restraints (1.0)	1	3	5	5	7	4
Physical Restraints (E.0)		1	2	15	33	17
Distraction	2	6	16	-	-	-
Voice Control	1	10	19	11	29	19
Parent's Separation		4	3	25	31	33
Non-verbal Communication	1	2	2		2*	2
General Anesthesia	10	8	25	15	16	14
Modelling		5	16		2	1
I.V. Sedation		2	2	5	6	15

Discussion

The bulk of the respondents was in the age group 20-39 years with the 30-39 years age group constituting nearly half of the sample at 47.8%. This was the most active age group in the profession and augurs well for the future of the country. The over-all response appeared scanty for the Southern province which could be due to difficulty of access. However, the response from the Central, Western, Northern and Eastern provinces was a good indication of the trends of BMT among GD and PD in Saudi Arabia.

The results showed that, as in earlier reports, TSD was the most frequently and most popular BMT utilized by all dentists.^{37,8} The findings were also similar to those from other countries that both the GD and the PD utilize TSD, PR and VC on a regular bases.^{37,9} However, the more specialized behavior management techniques such as sedation, restraints, modeling and non-verbal communications were more frequently used by the pediatric dentists. This was in agreement with earlier studies that there were significant practitioner type differences in the BMT used for child dental patients.⁸ The more frequent use of the specialized behavior management techniques by the pediatric dentists is a reflection of their more specialized training in those techniques. In this study, distraction was used by 45% of GD and 56% of PD. This is almost twice the percentages

reported by Allen et al³ but still lower than those reported by Levy and Domoto.⁷ The use of distraction would appear more variable among both GDs and PDs.

Levy and Domoto⁷ reported that 88% of dentists and auxiliary allow parents in the operatory. In the survey carried out by the Association of Pedodontic Diplomates,¹⁰ nearly 90% of the respondents allow parents in the operatory. Another report⁹ indicated that 35% of GDs and 87% of PDs allowed parents in the operatory. Of these, 57% were for the disruptive child while 64% were for the cooperative child. Our study showed more than 70% of both GDs and PDs did not allow parents in the operatory. This may suggest that the parents in Saudi Arabia allow the dentist more freedom in treating their children without interference. An earlier study however, reported that Saudi parents preferred to be with their child in the operatory.¹⁷

The controversial HOM technique was used in this study by 60% of GDs and 64% of PDs. These percentages are lower than 88% reported by Levy and Domoto.⁷ Olsen et al⁹ reported that 49% of the dentists who do not allow parents in the operatory utilized HOM while 32% of dentists who allowed parents in the operatory utilized HOM. This is a reflection of the HOM technique not being acceptable to parents, though the use of HOM was not related to parent separation (PS). The percentage of GDs in this study who reported the use of HOM was much higher than the percentage of GDs in the survey of McKnight-Hanes et al.⁸ This may well depend on the number and behavior pattern of the children seen by each group of GDs or on the reluctance of some GDs to use this method. The use of HOM and the more severe hand over mouth exercise with airway restriction (HOMAR) is now limited by AAPD.

The results in this study showed more than 50% of the GDs and 60% of the PDs reported the use of GA. In the survey by McKnight-Hanes et al,⁸ 60% of the PDs used GA in oral rehabilitation (OR). This is comparable to the findings in this study. However, only 3% of the GDs in the earlier study,⁸ reported the use of GA. This is far less than the 50% of the GDs in our Saudi Arabia study. It is likely that the differences are due to the fact that more than 60% of the respondents in our study were working in hospitals where facilities were usually provided for the utilization of GA. The use of IV sedation was very low. This is probably due to the phobia of the needle in young children or that the practitioners had a limited training in the procedure as reported by McKnight-Hanes et al.⁸

It may also be due to the fear of adverse effects associated with injectable sedation procedures in children.¹⁸ It is possible that the study would give different results from a private practice sample of respondents. The positive, non-aggressive communicating techniques of Tell, Show and Do and positive reinforcement appear to be the most readily acceptable to the Saudi parents. This is in agreement with earlier studies.^{3,4,17} General anesthesia probably has the appeal of a comprehensive treatment all in one visit. The physical, sometimes aggressive techniques of hand over mouth and extra-oral physical restraints appear to be less tolerated by Saudi parents. Similar findings were reported earlier.^{3,5,16} Although this report and others indicate a high percentage in the use of physical restraint^{3,7,10} and does get results, it remains unpopular with parents.

Limitation of the study: The major limitation of this study has been the selection of the participants. The "convenient sample" proved inadequate in size as well as in the spread throughout the country. It was discovered during data analysis that the bulk of the respondents were from the central and western regions of KSA. There may have been a problem of unequal access to all parts of the country. One therefore cannot draw a generalization on the whole Kingdom from this study. Perhaps, a much larger sample size, preferably by mail questionnaire would yield more representative findings for appropriate conclusions. This study could be the beginning of the compilation of such information.

Conclusions

- Tell, show and do, positive reinforcement and voice control techniques were highly utilized by both general dental practitioners and pediatric dentists.
- Pre-school children from 3 to 5 years were the largest age group who need extra behavior management.
- Most of the sophisticated behavior management techniques such as sedation, restraints, modeling and non-verbal communication were more often used by the pediatric dentists.
- The sampling scheme limited the degree to which the respondents can be representative

of the entire Kingdom of Saudi Arabia.

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