Comparison of basic and advanced behaviour management techniques between Colombian and Spanish parents during regular treatment and in emergency situations



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Abstract

Aim To evaluate the acceptance of behaviour management techniques by Spanish and Colombian parents used in paediatric dentistry and the influence of factors that determine their consent during regular treatment and in emergency situations.

Study design Cross-sectional observational descriptive epidemiological study.

Materials and methods An anonymous questionnaire was carried out in which 9 behaviour management techniques (BMTs) used in paediatric dentistry by Spanish and Colombian parents were evaluated in cases of regular dental treatment and in emergency situations (pain and/or dental trauma). The techniques evaluated were: tell-show-do (TSD), voice control, positive reinforcement, distraction, parental presence-absence, nitrous oxide, passive and active restraint, and general anaesthesia. The questionnaire also included information on the sociodemographic information about parents and their children, previous dental experience, and dental anxiety of the parents. The data were analysed using SPSS™ software, r. 26 of IBM™. A value of $p \leq 0.05$ was considered as statically significant.

Results A total sample of 124 questionnaire (62 from each country) was obtained. The basic BMT were the most accepted in both countries, especially by Spanish parents. In emergency situations, statistically significant differences were obtained in the acceptance of nitrous oxide and general anesthesia compared to their use in routine treatments ($p<0.001$). There were no significant differences in the preference of the techniques in relation to the age of the children or parental dental anxiety ($p>0.05$). An association was found between the socioeconomic status and the acceptance of nitrous oxide ($p=0.005$) and general anesthesia ($p=0.004$).

Conclusions The basic techniques were the most accepted by Spanish and Colombian parents. However, the Spanish parents had a better perception of both types of techniques compared to the Colombians. Their preference was influenced by factors such as annual income and need for urgent treatment of their children.

KEYWORDS culture, behaviour management, acceptance, parents.

Introduction

Children in the dental office often present fear and anxiety [Chang et al., 2018; Al Zoubi et al., 2019]. Dental fear is defined as an unpleasant emotional reaction to threatening stimuli associated with dental treatment, while dental anxiety is a non-specific feeling of apprehension towards a specific situation that does not necessarily imply previous experience [Guinot et al., 2011; Cianetti et al., 2017]. Both situations occur daily in the dental office in children and adolescents with a prevalence that varies between 10% and 20% worldwide [Cianetti et al., 2017].

A study carried out in Brazil found that, among a group of 118 children between 48 and 68 months of age without previous dental experience, 43.3% showed high levels of anxiety before carrying out the clinical examination and dental prophylaxis [Ramos-Jorge et al., 2006]. These reactions can interfere with routine dental treatment, making the management of children with anxiety one of the most challenging aspects of paediatric dentistry [Al Zoubi et al., 2019; Guinot et al., 2021].

To obtain children's cooperation during dental treatment, it is necessary to modify or influence their behaviour. Therefore, behaviour management techniques (BMT) have been developed to facilitate communication with patients, while aiming to eliminate inappropriate behaviours [Long, 2004]. The American Academy of Pediatric Dentistry (AAPD) divided BMT into two categories: basic behavioural techniques and advanced behavioural techniques. The basic BMTs include: communication techniques (tell-show-do, positive reinforcement, distraction, non-verbal communication and voice control); parental presence/absence, additional techniques for anxious or special needs patients, and nitrous oxide/oxygen inhalation; on the other hand, advanced techniques include protective stabilisation (passive or active restraint) and pharmacological techniques (sedation and general anaesthesia) [American Academy of Pediatric Dentistry, 2020]. The advanced

techniques are used when the basic techniques do not work, to avoid possible traumatic experiences. It is important to inform the parents about the details of the BMT that the dentist intends to use, since for its use the informed consent of the parents or guardians is necessary and they are ethically and legally responsible [Boka et al., 2014; Theriot et al., 2019; Al Zoubi et al., 2021].

Despite the advantages they present, such as the possibility of offering the best possible treatment and avoiding traumatic situations for the patient [Boka et al., 2014], not all are approved by the parents. Parental preference of techniques has been widely studied since the 1980s, when Murphy et al. [1984] observed that parents had a different perception of each BMT. Acceptability depends, among other factors, on the urgent need for dental treatment, the level of cooperation of the child, the culture, and the socioeconomic status of the parents [Peretz et al., 2013; Theriot et al., 2019].

Children tend to cry more now than in the past. As a result, the use of pharmacological techniques has increased considerably over the years [Casamassimo et al., 2002]. In addition, a growing approval of pharmacological techniques by parents has been observed, which may be caused by changes in the oral medication used for sedation, with a higher safety and efficacy profile, some even perceive oral sedation and anaesthesia generally as more cost-effective and comfortable for their children [Patel et al., 2016]. Another factor such as the urgent need for treatment seems to increase the approval of pharmacological techniques, as obtained by Al Zoubi et al. [2019] who observed that the acceptance of advanced BMT increased significantly in dental emergency situations.

It is important to constantly re-evaluate the techniques, since if they remain the same and the preference of the parents is not considered, they can make treatment and communication with the patient difficult. In fact, some techniques that were widely used in the past are currently out of use or have even been banned, such as the hand over mouth technique (HOM), which was removed in 2006 from the AAPD behaviour management guidelines. In fact, some devices used for passive restraint, such as the Papoose Board®, are prohibited in the Nordic European countries, but are frequently used in other countries such as Thailand, where half of the parents deem it an acceptable technique [Al Zoubi et al., 2019].

Several studies have evaluated parental perception of behaviour management techniques in paediatric dentistry; however, few have compared the preference of the techniques between countries on different continents, and none of them has involved the Colombian population, a country with a culture similar to the Mediterranean, with the same language but with important differences such as access to education and distribution of economic status. In addition, few studies have been conducted to date that link parental acceptance to factors such as the age of the children, the family's socioeconomic status, parental dental anxiety, and urgent need for treatment. For this reason, the purpose of this study was to determine the attitude of Spanish and Colombian families towards behaviours management techniques used in paediatric dentistry and the influence of various factors that determine their consent during regular treatment and in emergency situations.

Material and methods

This cross-sectional observational study was approved by the Research Ethics Committee (CER) of the Universitat Internacional de Catalunya, Barcelona, Spain (project reference ODP-INVI-2022-02; June 1, 2022). For the study to provide valid results, with an alpha risk of 5% and to have a power of 80%, in case of a change of 25% and without follow-up losses, a sample of 124 parents and/or guardians of children between 3 and 14 years of Spanish or Colombian origin was necessary (62 participants per group). Parents of medically compromised children and/or with functional diversity were excluded. To consider Colombian or Spanish parents, not only their nationality was taken into account, but also the place where they had lived for more than two years, since, despite their nationality, if they had not resided in either of the two countries could lead to erroneous results.

Procedure

Questionnaire

Data were collected through an anonymous questionnaire, similar to the one used by Eaton et al. [2005], Luis de León et al. [2010], Boka et al. [2014] and Guinot et al. [2021], sent electronically between November 2022 and January 2023. Parents in both groups received the same written information about the nature and purpose of the study, and all the participants knew that the collaboration was voluntary. As it was an anonymous questionnaire, their personal data were kept confidential.

The survey was written in Spanish and consisted of 18 questions divided into 3 parts. In the first part, the questions were related to the demographic information of the parents and children. The second part focused on the dental status of the children and parents, their behaviour, previous dental experiences and parental dental anxiety. Finally, they were asked to rate the different behavioural techniques during normal dental treatment and in emergencies situations. The techniques evaluated were: tell-show-do (TSD), voice control, parental presence/absence, positive reinforcement, distraction, passive restraint, passive restraint, nitrous oxide/oxygen inhalation, and general anaesthesia.

For greater understanding, a brief explanation was offered about the BMTs analysed following their definition according to the American Academy of Pediatric Dentistry [2020], and demonstrative photos of each technique were used, a resource also used by Peretz et al. [2013] and Al Zoubi et al. [2021]. The techniques were evaluated according to a scale of 0-10, a scale used in investigations similar to the present study [Luis de León et al., 2010, Guinot et al., 2021], in order to make a better comparison of the results, with 0 meaning that they were completely opposed to the technique, and 10 that they totally accepted the technique. Emergency situations were considered those in which the child presented pain and/or dental trauma.

Parental dental anxiety was assessed with the Modified Corah Dental Anxiety Scale (MDAS), validated by Humprhis et al. [2009], and validated in Spanish by Coolidge et al. [2008]. On the other hand, the behaviour of the children during the dental visit analysed by their parents was assessed by the Frankl Scale [Frankl et al., 1962].

Annual income

To assess the socioeconomic status of the Spanish parents, three intervals were established, similar to the parameters used by Boka et al. [2014]. Parents with an annual income of less than €12,000 were considered to have low family income, average income between €12,000 and €30,000, and high annual income over €30,000. For the comparison of the socioeconomic status of both groups to be comparable, the Colombian parents were evaluated according to their Current Legal Minimum Monthly Wage (CLMMW), data with which they are most familiar. Parents with monthly incomes of less than 1 CLMMW, average income between 1 and 3 CLMMW, and high monthly income above 3 CLMMW were considered low family income. The CLMMW can be consulted on the website of the Ministry of Labour of Colombia.

Statistical analysis

The statistical analysis of the data was performed with the SPSS™ software, r. 26 from IBM™. The normality of the quantitative variables was studied using the Kolmogorov-Smirnov test. To study the association between the country of residence and the qualitative characteristics of the participants and their children, the chi-square test for contingency tables was used. The association of residence with quantitative characteristics was carried out using the Mann-Whitney parametric test for two independent samples. The association of age with the approval of the techniques was made with the non-parametric correlation coefficient Spearman's Rho. The association between the acceptance of the techniques and the level of income was carried out using the non-parametric Kruskal-Wallis test. The comparison of the acceptance of the techniques in normal and in emergency situations were carried out using the non-parametric Wilcoxon signed rank test for two related samples. A value of $p \leq 0.05$ was considered statistically significant.

Results

Demographics

A total sample of 124 completed questionnaires was obtained, 62 from Spain and 62 from Colombia. In relation to parents, 88.71% of those surveyed were women, 80.65% had higher education and 59.68% had medium income; however, the percentage of parents with low income was significantly lower in Spain (p=0.018). The age range of the majority of parents was between 36 and 45 years, Colombian parents being significantly younger than Spanish ones (p=0.002) and the prevalence of parents with 3 or more children was significantly higher in Colombia (p=0.018). Regarding children, the average age was 8.57 years, the 45.16% were boys and the 54.84% girls. The demographic data of the study are shown in Table 1.

Spanish sample

Parents residing in Spain preferred the tell-show-do technique, followed by voice control, positive reinforcement, distraction, parental presence/absence, active restraint, nitrous oxide/oxygen inhalation, passive restraint and, in last place, general anaesthesia (Figure 1). The TSD technique (p=0.031) and voice control (p=0.043) were significantly more accepted when used in regular treatment. On the other hand, passive restraint (p=0.029), nitrous oxide (p<0.001) and general anaesthesia (p<0.001) were significantly more accepted when used in emergency situations than during routine consultations. There were no significant differences in the acceptance of each BMT in relation to the age of the children (Table 2).

Colombian sample

Positive reinforcement was the technique preferred by the Colombian parents, followed by tell-show-do, parental presence/absence, voice control, distraction, active restraint, passive restraint, nitrous oxide/oxygen inhalation, and, like the parents in Spain, general anaesthesia was the last (Figure 1). Positive reinforcement (p=0.003) was significantly more accepted when used in routine consultations. On the other hand, general anaesthesia (p=0.003) was significantly more accepted when used in emergency situations than during regular treatment. There were no significant differences in the acceptance of each BMT in relation to the age of the children. There were also no significant differences in the acceptance of each technique in relation to parental dental anxiety. Low income was related to acceptance of nitrous oxide and general anaesthesia. Colombian parents with low incomes accepted the use of nitrous oxide significantly more than parents with average (p=0.047) and high (p=0.017) incomes; the same

	Spain		Colombia		Total		
	No.	%	No.	%	No.	%	p-Value
Respondent's gender							
Male	8	12.90	6	9.68	14	11.29	0.777 NS
Female	54	87.10	56	90.32	110	88.71	
Respondent Studies							
Without studies/ Others	4	6.45	1	1.61	5	4.03	0.174 NS
Primary	2	3.23	0	0.00	2	1.61	
Secondary	10	16.13	7	11.29	17	13.71	
Faculty	46	74.19	54	87.10	100	80.65	
Respondent income							
Low	7	11.29	17	27.42	24	19.35	0.018*
Media	37	59.68	37	59.68	74	59.68	
High	18	29.03	8	12.90	26	20.97	
Respondent's age							
18-25	0	0.00	4	6.45	4	3.23	0.002*
26-35	10	16.13	23	37.10	33	26.61	
36-45	41	66.13	3.4	54.84	75	60.48	
46-55	5	8.06	1	1.61	6	4.84	
56-65	2	3.23	0	0.00	2	1.61	
>65	4	6.45	0	0.00	4	3.23	
Child sex							
Male	16	25.81	40	64.52	56	45.16	<0.001*
Female	46	74.19	22	35.48	68	54.84	
Child age							
3 to 6 years	27	43.55	18	29.03	Four Five	36.29	0.042*
7 to 10 years	twenty-one	33.87	17	27.42	38	30.64	
11 to 14 years	14	22.58	27	43.55	41	33.06	
Number of siblings							
	twenty	32.26	19	30.65	39	31.45	
	36	58.06	25	40.32	61	49.19	
	6	9.68	18	29.03	24	19.35	
Respondent's previous dental experience							
Positive	58	93.55	56	90.32	114	91.94	0.361 NS
Negative	1	1.61	4	6.45	5	4.03	
has not been to the dentist	3	4.84	2	3.23	5	4.03	
Child's previous dental experience							
Positive	52	83.87	59	95.16	111	89.52	0.076 NS
Negative	3	4.84	2	3.23	5	4.03	
has not been to the dentist	7	11.29	1	1.61	8	6.45	

N: frequency; %: percentage; NS: not statistically significant (p>0.05); *: statistically significant (p<0.05)

TAB. 1 Demographic data of the present study

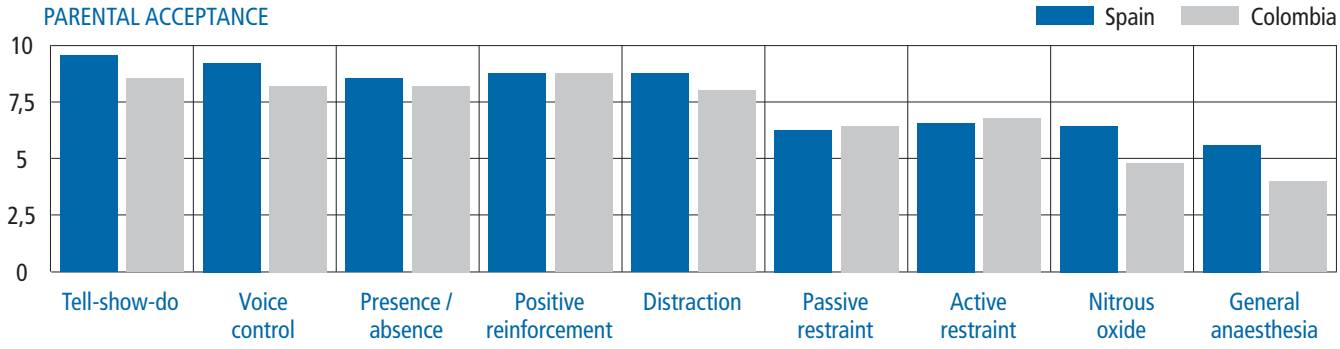


FIG. 1 Diagram of acceptance of CCTs in both countries

	Spain (n=62)				Parental dental anxiety			Economic income			
	Consultation	Emergencies	p-value	Children's age	Low/ moderate (n=47)	Severe (n=15)	p-value	Low (n=7)	Media (n=37)	High (n=18)	p-value
	Mean (SD)	Mean (SD)		p-value	Mean (SD)	Mean (SD)		Mean (SD)	Mean (SD)	Mean (SD)	
TSD	9.53 (0.92)	9.13 (1.48)	0.031*	0.13 NS	9.62 (0.77)	9.27 (1.28)	0.37 NS	9.86 (0.38)	9.46 (0.90)	9.56 (1.10)	0.413
Voice control	9.24 (1.26)	8.84 (1.76)	0.043*	0.33 NS	9.28 (1.19)	9.13 (1.51)	0.97 NS	9.14 (1.86)	9.35 (1.06)	9.06 (1.43)	0.826
Presence/absence	8.61 (2.18)	8.29 (2.36)	0.20 NS	0.11 NS	8.40 (2.35)	9.27 (1.44)	0.15 NS	8.86 (1.86)	8.73 (2.28)	8.28 (2.16)	0.597
Positive reinforcement	8.95 (1.68)	8.94 (1.75)	0.59 NS	0.35 NS	9.09 (1.63)	8.53 (1.85)	0.18 NS	8.57 (2.15)	9.14 (1.38)	8.72 (2.08)	0.860
Distraction	8.79 (1.87)	8.81 (1.68)	1,000 NS	0.15 NS	8.96 (1.77)	8.27 (2.15)	0.25 NS	8.43 (2.37)	8.81 (1.68)	8.89 (2.14)	0.858
Passive restraint	6.29 (3.47)	6.89 (2.99)	0.029*	0.37 NS	6.66 (3.52)	5.13 (3.14)	0.08 NS	6.57 (3.46)	6.16 (3.68)	6.44 (3.20)	0.943
Active restriction	6.55 (3.16)	6.79 (3.15)	0.23 NS	0.35 NS	6.72 (3.29)	6.00 (2.75)	0.29 NS	6.43 (3.21)	6.27 (3.46)	7.17 (2.50)	0.760
Nitrous oxide	6.39 (2.94)	7.35 (2.75)	<0.001*	0.70 NS	6.15 (3.14)	7.13 (2.13)	0.40 NS	7.14 (3.58)	6.65 (2.99)	5.56 (2.55)	0.146
General anaesthesia	5.63 (3.49)	6.79 (3.25)	<0.001*	0.68 NS	5.60 (3.64)	5.73 (3.08)	0.94 NS	6.57 (3.95)	6.24 (3.39)	4.00 (3.12)	0.065
NS: not statistically significant (p>0.05); *Statistically significant (p<0.05); SD (standard deviation)											

TAB. 2 Evaluation of BMTs in Spain

occurred with the approval of general anaesthesia, parents with low incomes accepted this technique significantly more than those with high incomes (p=0.011) (Table 3).

Comparison Between Groups

Table 4 shows the mean scores and the standard deviation (SD) for each BMT. Significant differences (p<0.05) were found in the parents' perception of the following BMTs during the regular treatment: TSD (p=0.001), voice control (p=0.005), nitrous oxide (p=0.025) and general anaesthesia (p=0.031), being significantly more accepted by parents in Spain. In emergency situations, significant differences were observed in the acceptance of nitrous oxide (p=0.006) and general anaesthesia (p=0.026), being significantly more accepted by Spanish parents.

Discussion

Parents in both countries preferred the basic techniques, agreeing with similar research [Luis de León et al., 2010; Boka et al., 2014; Theriot et al., 2019; Guinot et al., 2021]. This finding was to be expected because they are considered less invasive, and their acceptability seems stable over the years [Boka et al., 2014; Guinot et al., 2021]. The acceptance of the parents of our study was compared with that of the parents surveyed previously. The results of these investigations are reflected in Table 5, ordered according to their preference.

In the Spanish sample, the preferred technique was TSD, coinciding with what was observed by Luis de León et al. [2010] and Guinot et al. [2021] in Spain in 2010 and 2021, respectively; while the parents in Colombia preferred positive reinforcement, however, both techniques obtained similar scores without significant differences between them.

In line with other studies, the least accepted BMT in both countries was general anaesthesia [Murphy et al., 1984; Boka et al., 2014; Al Zoubi et al., 2021], especially by Colombian parents. This could be due to parents' fear of their children's hospitalisation and lack of knowledge about the technique. However, there is currently an increase in parents requesting the use of general anaesthesia [Sheller, 2004], possibly due to the search for techniques that reduce the anxiety generated by dental treatment in children and parents, and the avoidance of negative dental experiences, because some parents consider that the appearance of crying

	Colombia (n=62)				Parental dental anxiety			Economic income			
	Consultation	Emergencies	p-value	Children's age	Low/ moderate (n=33)	Severe (n=29)	p-value	Low (n=17)	Media (n=37)	High (n=8)	p-value
	Mean (SD)	Mean (SD)		p-value	Mean (SD)	Mean (SD)		Mean (SD)	Mean (SD)	Mean (SD)	
TSD	8.58 (1.87)	8.50 (2.14)	0.87 NS	0.44 NS	8.73 (1.99)	8.41 (1.74)	0.22 NS	7.94 (2.38)	8.78 (1.65)	9.00 (1.41)	0.34 NS
Voice control	8.21 (2.32)	8.61 (1.90)	0.13 NS	0.80 NS	8.48 (2.53)	7.90 (2.06)	0.05 NS	7.24 (2.59)	8.41 (2.28)	9.38 (0.92)	0.055 NS
Presence/absence	8.31 (2.55)	8.11 (2.73)	0.52 NS	0.53 NS	8.18 (2.69)	8.45 (2.41)	0.78 NS	7.82 (2.65)	8.32 (2.70)	9.25 (1.16)	0.30 NS
Positive reinforcement	8.73 (1.72)	8.10 (2.51)	0.003*	0.58 NS	8.73 (1.94)	8.72 (1.46)	0.65 NS	8.12 (2.20)	8.92 (1.50)	9.13 (1.36)	0.31 NS
Distraction	7.98 (2.58)	8.08 (2.48)	0.92 NS	0.98 NS	8.42 (2.39)	7.48 (2.73)	0.07 NS	7.65 (2.12)	7.97 (2.94)	8.75 (1.49)	0.33 NS
Passive restraint	6.44 (3.33)	6.00 (3.36)	0.32 NS	0.45 NS	6.21 (3.73)	6.69 (2.86)	0.84 NS	7.12 (1.90)	6.35 (3.76)	5.38 (3.66)	0.64 NS
Active restriction	6.81 (2.91)	7.06 (3.00)	0.53 NS	0.73 NS	7.03 (3.05)	6.55 (2.79)	0.28 NS	6.76 (2.44)	7.05 (2.99)	5.75 (3.58)	0.48 NS
Nitrous oxide	4.87 (3.55)	5.40 (3.73)	0.11 NS	0.66 NS	4.79 (3.65)	4.97 (3.50)	0.96 NS	6.76 (2.19)	4.46 (3.86)	2.75 (2.71)	0.017*
General anaesthesia	4.18 (3.79)	5.21 (3.85)	0.003*	0.66 NS	3.97 (4.00)	4.41 (3.59)	0.63 NS	5.18 (3.19)	4.54 (3.99)	0.38 (0.74)	0.011*
NS: not statistically significant (p>0.05); *Statistically significant (p<0.05); SD (standard deviation)											

TAB. 3 Evaluation of BMTs in Colombia

during treatments in their children can generate phobias in the future. However, despite being the most rejected technique, its use is sometimes necessary due to systemic pathologies of the patient, low level of cooperation or special needs, therefore, in case of having to resort to it, the dentist must know how to communicate with parents and explain the pharmacological technique in detail to improve their acceptability [Scott, Garcia-Godoy, 1998].

Passive restraint was one of the most rejected techniques in both groups, similar to recent studies [Murphy et al., 1984; Luis de León et al., 2010; Peretz et al., 2013; Boka et al., 2014; Patel et al., 2016; Chang et al., 2018; Theriot et al., 2019; Al Zoubi et al., 2021; Guinot et al., 2021]. The AAPD [2020] determined that protective stabilisation can cause serious injury, including physical or psychological harm, which can have lasting detrimental effects. Therefore, the use of these techniques, although they have been used for decades, if not used properly and without good communication and prior consent, could be interpreted as an aggression against the patient. On the other hand, active restraint, which is a similar technique, but differs in that restraint is performed by parents or dental team personnel, has been seen to be more accepted by families, even in emergency situations [Al Zoubi et al., 2021]. This finding is probably due to the fact that parents perceive active restraint as a type of assistance to guide the child during dental treatment, in addition to being able to perform it themselves, they feel more in control of the situation, they can see first-hand that it is not a physical aggression against the child, but a method of protection towards him and the dental team.

Most comparative research between countries have observed statistically significant differences between the approval of basic and advanced techniques, however, in our research significant differences were also found within each BMTs group. Specifically, in the acceptance of TSD (p=0.001), voice control (p=0.005), use of nitrous oxide (p=0.025) and general anaesthesia (p=0.031), all of them were significantly more accepted by Spanish parents. These different results suggest that there are cultural differences between the countries, contrary to the results obtained in a

	Consultation			Emergencies		
	Spain (n=62)	Colombia (n=62)	p-value	Spain (n=62)	Colombia (n=62)	p-value
	Mean (SD)	Mean (SD)		Mean (SD)	Mean (SD)	
TSD	9.53 (0.92)	8.58 (1.87)	0.001*	9.13 (1.48)	8.50 (2.14)	0.12 NS
Voice control	9.24 (1.26)	8.21 (2.32)	0.005*	8.84 (1.76)	8.61 (1.90)	0.43 NS
Presence/absence	8.61 (2.18)	8.31 (2.55)	0.35 NS	8.29 (2.36)	8.11 (2.73)	0.82 NS
Positive reinforcement	8.95 (1.68)	8.73 (1.72)	0.28 NS	8.94 (1.75)	8.10 (2.51)	0.056 NS
Distraction	8.79 (1.87)	7.98 (2.58)	0.06 NS	8.81 (1.68)	8.08 (2.48)	0.18 NS
Passive restraint	6.29 (3.47)	6.44 (3.33)	0.89 NS	6.89 (2.99)	6.00 (3.36)	0.17 NS
Active restriction	6.55 (3.16)	6.81 (2.91)	0.78 NS	6.79 (3.15)	7.06 (3.00)	0.65 NS
Nitrous oxide	6.39 (2.94)	4.87 (3.55)	0.025*	7.35 (2.75)	5.40 (3.73)	0.006*
General anaesthesia	5.63 (3.49)	4.18 (3.79)	0.031*	6.79 (3.25)	5.21 (3.85)	0.026*
NS: not statistically significant (p>0.05); *Statistically significant (p<0.05)						

TAB. 4 Evaluation of the BMT between Spain and Colombia in routine consultations and emergencies

[de León et al., 2010]	[Boka et al., 2014]	[Theriot et al., 2019]	[Guinot et al., 2021]	[Al Zoubi et al., 2021]
1. TSD 2. voice control 3. active restriction 4. Nitrous oxide 5. General anaesthesia 6. Premedication 7. passive restraint 8. HOM	1. TSD 2. Parents presence/ absence 3. Nitrous oxide 4. voice control 5. active restriction 6. HOM 7. Sedation 8. passive restraint 9. General anaesthesia	1. Positive reinforcement 2. TSD 3. Distraction 4. Verbal communication 5. voice control 6. Parents presence/ absence 7. Sedation 8. Nitrous oxide 9. General anaesthesia 10. Stabilization	1. TSD 2. voice control 3. Nitrous oxide 4. premedication 5. General anaesthesia 6. HOM 7. active restriction 8. passive restraint	Germany 1. Nitrous oxide 2. active restriction 3. General anaesthesia 4. passive restraint Jordan 1. Nitrous oxide 2. active restriction 3. passive restraint 4. General anaesthesia

TAB. 5 Recent study results showing the acceptance ranking of different BMTs between 2010 and 2021

study carried out in 2021 at the same university in which they compared the acceptance of BMT by Spanish and Portuguese parents, obtaining similar results between the two Europeans counties [Guinot et al., 2021].

The main variation obtained after the re-evaluation of the techniques by Spanish parents compared to the last investigation carried out in Spain in 2021, was in relation to nitrous oxide and general anaesthesia, going from being the third and fifth, to the seventh and last chosen technique by parents, respectively; behind active restraint, which has gone from being the penultimate to being the most valued advanced technique by Spanish parents.

According to scientific evidence, the age of the children, the parental dental anxiety, the socioeconomic status and the urgent need for treatment can influence the consent and approval of the techniques. However, in our study we did not observe a statistically significant association between the approval of the techniques and the age of the children, which is consistent with the results of recent studies [Luis de León et al., 2010; Guinot et al., 2021]. There was also no association between the acceptance of the techniques and dental anxiety, even in Colombian parents, who presented significantly higher levels of severe anxiety (more than 15 points on the Modified Dental Anxiety Scale) than the Spanish parents (p=0.015). This may be due to the fact that, despite the fact that 46.77% of them presented high levels of anxiety, only 6.45% had had negative dental experiences. These factors are usually related, as analysed by Boka et al. [2014] who also found that parents with bad experiences preferred general anaesthesia over restrictive techniques and voice control in case the child had uncooperative behaviour, possibly caused by the belief that general anaesthesia is less stressful for children [Boka et al., 2014]. On the other hand, Peretz et al. [2013], who also did not obtain a statistically significant relationship, pointed out that it could be that the children's desire for dental treatment to be completed was greater than their own previous experiences.

Controversial findings were obtained regarding the approval of BMTs and the educational and socioeconomic status of the parents. In the Spanish sample, no association was seen between acceptance of the techniques and income, coinciding with similar studies [Peretz et al., 2013; Boka et al., 2014; Guinot et al., 2021]. While, in the Colombian sample, a statistically significant association was obtained, coinciding with Luis de León et al. [2010], who found that parents with a high socioeconomic status rejected significantly the protective stabilisation, premedication, and general anaesthesia. In our research, low income was associated with significantly higher acceptance of the use of nitrous oxide (p=0.002) and general anaesthesia (p=0.002). This may be due to the fact that people with a low socioeconomic status accept the professional's opinion to a greater extent and are less likely to express their dissatisfaction with a procedure [Lawrence et al., 1991]. However, other studies pointed out that the cost of pharmacological techniques affected the acceptance of the techniques, since on many occasions the cost of treatment increases significantly [Patel et al., 2016], and it may be that the parents in our study with a low socioeconomic status were unaware of this information. Regarding educational status, only 1.61% of Colombian parents did not have studies or had primary education, compared to 9.68% of Spanish parents; however, the percentage of parents with high incomes was significantly lower in Colombia, which indicates socioeconomic and educational differences between the two countries. Most of the parents in our study belonged to the middle level, however, the distribution of socioeconomic levels in Spain and Colombia are different; while in Spain there is a larger middle-level population, in Colombia this population is smaller and is distributed usually in the lower or upper levels. The association between parental acceptance and educational status has been investigated by different authors, such as Al Zoubi et al.[2021] who did not find a statistically significant relationship, in agreement with Eaton et al. [2005] and Peretz et al. [1999].

Some techniques, such as hand over mouth (HOM) have not been evaluated in this study, since it is a controversial technique and is no longer included in the AAPD clinical guidelines; however, techniques have been evaluated that had not previously been studied among Spanish or Colombian parents, such as distraction, parental presence/absence, and positive reinforcement. While positive reinforcement has been well valued by parents, especially Colombians, considering it the preferred technique, the presence/absence of parents and distraction have been the least accepted basic techniques, only above nitrous oxide. Recent studies have shown that both are among the most effective techniques for reducing anxiety in children during treatments [Quek et al., 2022; Al-Namankany, 2023], significantly improve their behaviour and even reduce the perception of pain [Guinot et al., 2014, Guinot et al., 2021]. This low acceptance may be due to the fact that they are rarely used techniques and are even unknown to some dentists, which indicates that we must be in continuous training to learn techniques with good results, which will provide benefits for both clinicians and patients.

Most of the investigations analysed the preference of parents in cases of routine dental visit and did not take into account their acceptance in situations of dental emergencies, a factor that Al Zoubi et al. [2021] analysed between Germany and Jordan, assessing parental preference over advanced techniques. These authors found that, in emergency situations, parents in both groups were significantly more accepting of all advanced techniques, except for the use of active restraint in the German group. This was consistent with other research reporting that families were more willing to accept advanced BMT in emergency situations or when the child is experiencing pain or discomfort [Patel et al., 2016; Al Zoubi et al., 2019]; also coinciding with the results of the present

investigation, in which there was a greater acceptance of the use of nitrous oxide ($p<0.001$) and general anaesthesia ($p<0.001$) during emergency situations compared to regular treatment by Spanish parents; and the use of general anaesthesia ($p=0.003$) by Colombian parents.

We agree with other authors that the selection of techniques should be made with the parents, since they play a crucial role in the management of their children and most parents, when they have the relevant knowledge, make good decisions for their children [Guinot et al., 2021]. The acceptance of the techniques by the parents depends largely on how they are presented and the explanation that is offered to them, allowing them to understand the need and justification for the use of different techniques [Eaton et al., 2005; Peretz et al., 2013; Boka et al., 2014].

The scoring system used to evaluate each of the techniques was used because it is the most common way to rate the tests in Spain and Colombia, with the aim of being as objective as possible and making a better comparison with similar studies. Other authors used the Likert-type scale [Al Zoubi et al., 2019], however, being less familiar with this scale could have made it difficult to assess the techniques.

One of the limitations found by the authors of this article was the impossibility of using the same video used in other researches. In addition, the form and order of presentation of the techniques could affect the acceptance of the parents, as well as the explanation of the techniques in writing and the use of photographs could be confounding variables. Although Paryab et al. [2014] did not find statistically significant differences in the acceptance of BMTs by parents if they only read written information about the technique or if they watched a video. On the other hand, there is research that has shown that the order in which the techniques are presented influences parental acceptance, such as Patel et al. [2016] who found that when passive restraint was the last technique it was rated as less acceptable than when it was shown first. Future studies may consider presenting the BMTs in a different order to examine parental response. In this study, it was decided not to change the order of appearance, despite the limitations that it implies, in order to re-evaluate the results of the Spanish sample and to make them as reliable as possible.

Conclusions

The basic techniques were the most accepted by Colombian and Spanish parents. However, the Spanish parents had a better perception of both types of techniques compared to the Colombians. No statistically significant association was observed between the approval of the techniques and the age of the children or the dental anxiety of the parents. However, the annual economic income and the need for urgent treatment significantly influence the perception of parents about behavioural techniques.

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