

Children and Mothers' Preferences of Dentists' Attire in Public Daycare Centers

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Abstract

According to the environment and appearance of the professional in the dental office, the child may have different emotional reactions. New designs and styles of clothing are emerging in the market and offered to health professionals. This study aimed to verify the preference of mothers and children from 3 to 6 years of age concerning dental attire. Material and Method. The sample had 621 preschoolers of both genders, age randomly selected in public daycare centers in 6 cities, covering the Brazil states of Tocantins, Goiás, Pará, and Bahia. The study was conducted with a child playful projective test and an interview questionnaire for the mothers.

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The results among children's preferences of dental attire from daycare centers in different cities showed a statistically significant correlation at the level of 5% ($P < 0.0001$). The mother's preferences for attire showed a significant correlation at the level of 5 % ($P = 0.0004$). The children's preferences were for colorful attires, and their respective mothers prefer blue color. This selection has no cultural character nor for the family environment, as demonstrated in the various places the non-predominance of a single preference they mothers and their children. Preschool children were able to select their game options with this infant test.

Keywords: Children; parents; attire; dentist; preferences.

1. Introduction

The behavior of the child in front of dental care can be influenced by many factors and variables. Concerning age, younger children are generally less cooperative and report greater fear and anxiety than older children [1]. To establish good communication with children, the professional must provide tranquility and confidence for the child to collaborate in dental care [2]. Depending on the environment and appearance of the professional in the dental office, the child may have different emotional reactions [3]. Personal Protective Equipment (PPE) such as a lab coat, cap, and mask for health professionals is mandatory for dental care because, in addition to protecting it, it prevents primary- infections and cross-infection to staff and patients. Studies show that there may be a relationship between child anxiety and fear according to the professional's clothing, especially if there is the " White coat hypertension "[4]. Currently, Brazilian dentists have widely used new designs and colors of this garment and the market is investing more and more in this economic sector. The literature shows us that there are several studies of Asian origin and a few of the West [3,4,5,6]. This greater concern may be an indication that in these localities there is a greater concern in this aspect of the dental care of children. Preferences and behaviors may be related to cultural aspects [7]. Therefore, the need for this study in the northern region of Brazil is because of a high rate of caries among children aged 3 to 6 years, and the search for alternatives to assist in public dental care for children. This age group from 3 to 6 years does not easily respond to interview tests and questionnaires. Thus, a playful test for the child was selected, involving a children's story as a stimulus to achieve subjective individual data of their preferences [8]. There is a strong association of parents' fear and dental anxiety regarding their children's behavior [9] and it is known that parents have a strong influence on their children's behavior. Due to the importance of the theme and the need to reach answers about this information to professionals, this study aimed to verify the preference and perception of mothers and children from 3 to 6 years of age concerning dental attire.

2. Material and methods

This study was approved by the Ethics Committee on Research of Human Beings Ethics Committee of the Lutheran University of Brazil of Palmas, under protocol number 86898218.7.0000.5518. All parents authorized participation in the study, as well as their children. The cross-sectional study was carried out in public daycare centers in the six Brazilian cities: Gurupi, Palmas, Araguaina and Porto Nacional (State of Tocantins), city of Ceres (State of Goiás) and cities of Itabuna (State of Bahia), i.e. covering the macro-regions Midwest, Northeast, and North of Brazil. The mothers and their children's preferences regarding the attire of the dentist

were evaluated. The sample calculation was based on the literature that indicated a sufficient sample of 583 children [5], so the minimum number of 100 children for each city was stipulated. The 621 children with 3 to 6 years old answered a playful infant projective test and their mothers answered a questionnaire. The six examiners, living in different Brazilian cities, were previously calibrated to minimize variations in the application of the test (Kappa=0.86), performed the projective tests with the children, and presented the research and questionnaires to mothers. Seeking to standardize the data in each city, there was the selection of daycare centers with more than 100 students enrolled in this age group, and when there was more than one daycare center in the city, there was a draw between them. After the authorization of the daycare center, there was a draw of 120 children in this age group, to invite the study. When it did not reach the number of 100 children in the daycare center, more children were drawn until filling the number of 100. The inclusion criteria were children of any race, both sexes, aged 3 to 6 years, enrolled in authorized daycare, with previous experience of a dental visit. Children with physical, mental disabilities, presence of syndromes, who did not have mothers as responsible, were excluded.

The study took place in two steps:

Step 1: The selected mothers were invited to a meeting, in which the examiners presented the research, collected the signature of the authorization term, and applied the interview about the preferences of the mothers regarding the dentist's attire (Figure 1), and questions about dental history concerning experience, and anxiety of the child.



Figure 1: The image presented dental attire to mothers used by dental professionals with agreed numbering from left to right, 1B (Blue), 2D (Dark), 3C (Color), and 4W (White).

Step 2: The examiner individually applied the projective test with self-analysis for the children, in a place reserved for this evaluation.

This playful test was an instrument composed of a painted canvas (0.60 x 0.40 meter) with the scene showing a dental office, dolls representing the child, and the dentist (figure 2). The application of the test consisted of the selection of a doll that she identified, and soon after the examiner told a playful story of the dental care of a child. After the story, the child was asked to choose which of the 4 dentists (dolls) dressing a lab coat, mask, and cap preferred to attend in the dental office (Figure 3). The child chose the doll and placed it on the board representing the child's care, and then the corresponding number was registered.



Figure 2: The projective test being performed with the playful instrument of self-analysis and the examiner telling the story to the child.

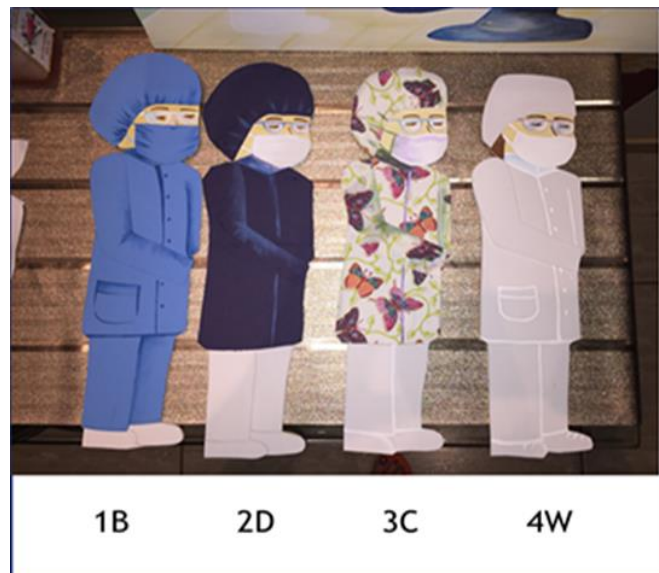


Figure 3: Dolls of professional dental attire, with conventional numbering from left to right, 1B (Blue), 2D (Dark), 3C (Color), and 4W (White).

The data were analyzed and presented with tables and graphs processed in the SPSS (statistical package for the Social Sciences) program in version 15. Pearson's Chi-square test was used to associate the children's dental attire preference with the significance level $p < 0.05$.

3. Results

The total sample consisted of 728 authorizations from the six cities, but only 621 preschoolers attended the test. Only the answers of the mothers of the children who participated were used. Of the 621 children evaluated, 11 children participated in the projective test but did not respond to the examiner. The selection cities were A = Palmas/TO; B = Ceres/GO; C = Araguaína/TO; D = Gurupi/TO; E = Itabuna/BA and F = National Port/TO.

Among the children, the mean age was 4.5, with 46.2% female and 53.8% male (Table 1).

Table 1: Presentation of the profile regarding the cities, the population of each city, Latitude and longitude coordinates, age, and gender of children (Brazil, 2019).

	A	B	C	D	E	F	Total
Age	5.17 ± 0.59	4.3 ± 1.32	4±1,03	5.21±0.51	4.8±.1.04	4.01±0.83	4.5±0.88
Gender	n	n	n	n	n	n	n
Female	60	49	47	39	47	45	287
Male	51	61	53	61	53	55	334
	111	110	100	100	100	100	621
Population	299.127	22.191	180.470	86.647	213.223	53.010	
Geographic Position	Latitude: 10° 10' 8" Sul, Longitude: 48° 19' 54" Oeste.	Latitude: 15° 18' 49" Sul, Longitude: 49° 36' 12" Oeste.	Latitude: 7° 11' 31" Sul, Longitude: 48° 12' 28" Oeste	Latitude: 11° 43' 30" Sul, Longitude: 49° 4' 34" Oeste.	Latitude: 14° 47' 21" Sul, Longitude: 39° 16' 40" Oeste.	Latitude: 10° 42' 27" Sul, Longitude: 48° 24' 51" Oeste	

The table 2 shows the result of the preferences of the paramentation types represented by codes 1B = Blue; 2D = Dark; 3C = Color and 4W = White. The selection cities were A = Palmas/TO; B = Ceres/GO; C = Araguaína/TO; D = Gurupi/TO; E = Itabuna/BA and F = National Port/TO.

Table 2: Distribution in number and percentage of children according to localities and preferences of the dental attire (Brazil, 2019).

Children's option	A		B		C		D		E		F		total n
	n	%	n	%	n	%	n	%	n	%	n	%	
1B	17	15	41	37	14	15	38	39	31	32	27	27	168
2D	29	26	21	19	29	30	17	18	21	21	20	20	137
3C	41	37	15	14	15	16	18	19	19	19	20	20	128
4W	24	22	33	30	37	39	23	24	28	28	32	33	177
	111	100	110	100	95	100	96	100	99	100	99	100	610

**p* < 0.0001

* Chi-square test with a significance level of P < 0.05.

The result among children from daycare centers in different localities, and child preferences dental attire showed a statistically significant correlation at the level of 5% (P < 0.0001) with $\chi^2= 50.78$.

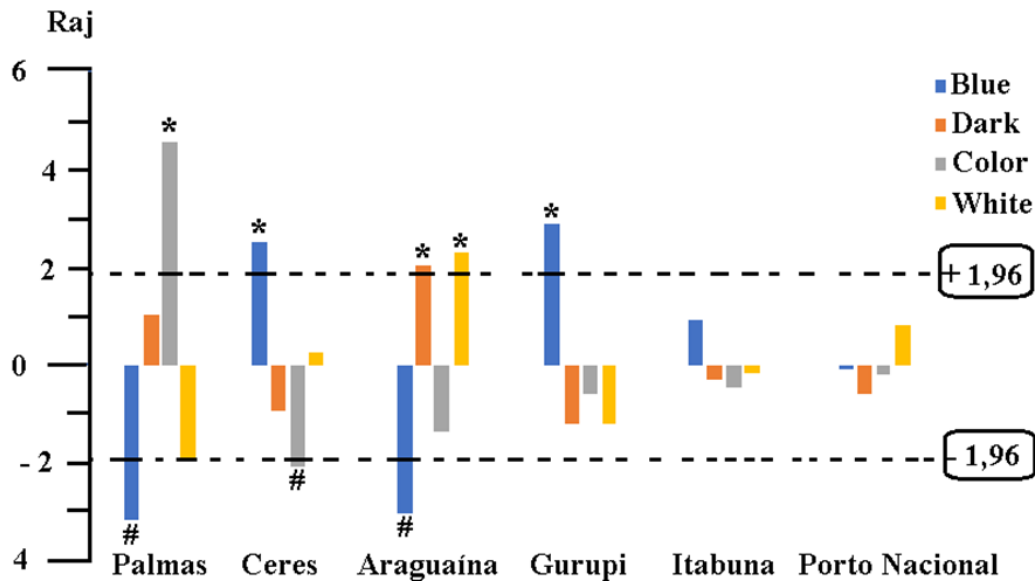


Figure 4: Adjusted residuals (Raj) calculated from standardized residuals of observed data of the correlation between localities, according to children's preferences. Residues above + 1.96 or below – 1.96 indicate the significance obtained in the Chi-square test and show several individuals with higher or lower levels of disease, respectively than would be expected if they were casual.

The residual graph illustrates that antagonistic infant preferences occur depending on the municipalities analyzed. The preference of the children of Palmas was color (3C), and the preference for Blue (1B) was significantly rejected by the children. In Ceres and Gurupi, the preference was significantly for Blue (1B) and in Ceres, there was still rejection for color (3C). For the children of Araguaína, the choice was for the Dark (2D) and White (4W) attire, which significantly rejected Blue (1B).

Table 2: Distribution of mothers according to localities and preference of the type of dental attire (Brazil, 2019).

Mothers' option	A	B	C	D	E	F	total
1B	3	17	3	5	19	10	57
2D	2	4	1	2	1	1	11
3C	53	35	38	47	40	49	262
4W	53	54	58	46	40	40	291
	111	110	100	100	100	100	621

The mothers' preferences of dental attire were collected through questionnaires, and the statistical inference analysis for independent samples was used, and the Chi-square test, G-test, and Williams G test (due to low frequencies, lower than 5) were used. These tests showed similar results when crossing the responses of mothers from different locations regarding the preference of dental attire. The Chi-square test showed a significant correlation at the level of 5% ($P = 0.0004$) exacerbating a $\chi^2=40.23$ value.

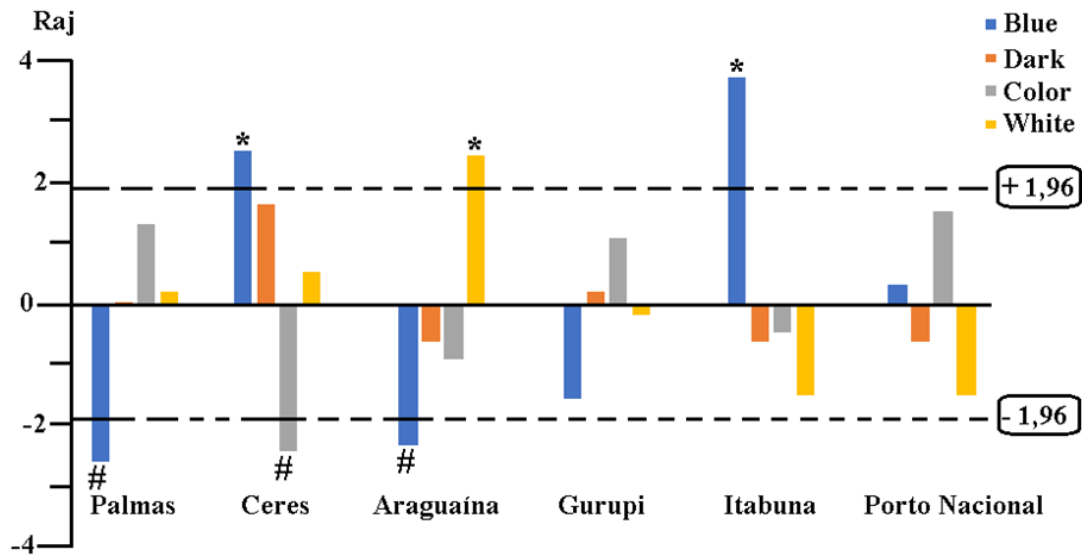


Figure 5: Adjusted residues (Raj) calculated from the observed data of the correlation between locations, presented the residues standardized according to maternal preferences. Residues above + 1.96 or below - 1.96 indicate the significance obtained in the Chi-square test and show the number of individuals with higher or lower levels of disease, respectively than would be expected if they were casual.

The residual plot illustrated in Figure 4 shows that the preferences of mothers regarding dental attire also varied from locality to some of them, depending on the municipalities analyzed, similar to the preference index manifested by the children. The mothers of Palmas city did not express a preference for one or the other dental attire, but significantly rejected the Blue (1B). The mothers of Ceres city, when requested, answered a significant preference for Blue (1B) and significant rejection by Color (3C). For the mothers of Araguaína, there was a significant preference for White (4W) and significant rejection for Blue (1B), and for the mothers of Itabuna, in turn, the choice was for the Blue attire (1B). The mothers of Gurupi and Porto Nacional did not express any particular preference or rejection. When comparing Figures 2 and 3, the graphs of Raj values related to the joint perceptions of children and their mothers about dental attire, in the survey conducted in the capital Palmas-TO, there was significant agreement (5%) of children and mothers regarding the rejection of Blue attire, although the children showed a significant preference for Color (3C), and it was indifferent to the mothers. In Ceres, however, they showed results almost opposite to palmas, with Blue (1B) being preferred for both children and mothers, who significantly rejected Color (3C). In Araguaína, there was an agreement of mothers and children with low frequencies of preference to Blue, being high the preferences of both white and a significant preference to dark on the part of children, being this dental attire indifferent to the mothers of Araguaína. In Gurupi, the mothers were indifferent to the types of dental attire, but the children of this municipality showed significant preference only to the Blue and the opposite phenomenon occurred in Itabuna, where the mothers showed a significant preference for Blue and the children showed indifference to the types of dental attire used by professionals. In Porto Nacional, both children and mothers showed no preference for any type of dental attire.

4. Discussion

Professional clothing has a social role that transmits a nonverbal language, informs aspects with the profession, and reinforces the construction of the corporate image, such as organization, asepsis, discipline, subordination, credibility, security, among others. The white coat produces cultural visual stimuli and can socially highlight who wears it. This appearance has been worked for many years in the area of health and by society itself, becoming a traditional habit with an unconscious ideological practice [10]. The white coat has traditionally been seen as an identifier of health professionals, however, envisioning the patient in "consumer or client" with more humanized care, this change in society and health services, seeks to break this tradition [6]. The influence and perception of dental attire are complex and multifactorial, depending on the environment and beliefs [1]. It is at the discretion of the professional to choose the color of the garment that will suit children, opting for white or color. However, the regulatory standards of the National Health Surveillance Agency [11] argue that clothing should be made of clear fabrics, because thus, dirt that may reach the dentist during the procedures can be easily visualized. The data found in this research show that dental attire with blue or color was preferred by children. White can promote anxiety and childish fear due to "white coat hypertension", and refers to people who have phobia by third-party clothing with predominantly white color and in psychology, this fact is reported by people with a long medical history of painful experience [12]. Studies show that children with poor health, through several hospital medical visits [13], anxious children with a history of toothache, and those who do not have a habit of visiting the dentist, reject white attire [14,15]. Rank and his colleagues [16] conducted a study in the same region of Brazil with 746 children aged 7 to 12 years and the students interviewed preferred the white color of professional clothing, demonstrating that the white color was not rejected. Ellore and his colleagues [7] state that in this age group they can control fear and anxiety more easily. The relationship between a person's physical appearance and its effects on first impressions can interfere with interpersonal relationships. In pediatrics, several professionals seek to dress in cheerful attire or fantasies for children, to control child anxiety and greater acceptance of the child [17,18]. Studies on emotions of anger, happiness, sadness, surprise, disgust, and fear, would be hypothetically associated with colors such as red, blue, yellow, green, black, and white respectively [19]. The relationship with the parents and the experiences transmitted to the children are factors that can also interfere in the child's behavior [20]. Children who have attended the dentist since the first months of life are familiar with the dental environment and tend to have a better behavior. In addition to the child's own dental experience, the negative attitudes and experiences passed on by the mothers and their opinions about dental treatments can be determinant in the fear reaction and dental anxiety of the child, so the child's anxiety regarding the consultation can be a reflection of maternal anxiety [21]. The study of child self-analysis on child test demonstrates the quality or sophistication of the evaluation of perceptions and behaviors based on the observation of playful interactions [22]. Rank and his colleagues [16] managed a study to assess the preference and perception of children aged 3 to 12 years in schools in the city of Gurupi regarding dental attire, but children aged 3 to 6 years were unable to answer the test with photos and answer the interviews applied by the examiners. Thus, this age group was excluded due to the immaturity of understanding the test. Thus, the playful projective test was developed for this study, especially to achieve this result. By using age-appropriate methods, studies have shown that children between 4 and 5 years of age can reliably communicate in self-analysis [23] and that the child self-analysis concept itself is significantly associated with the personality reported by the

mother [24]. The present study was important to realize that the preference of this age group, from 3 to 6 years, was blue and colorful, agreeing with Münevveroglu [25] who stated that younger children prefer colorful coats. Each color has a compensating effect for biological balance, and that people establish associations with colors, which can help in the establishment of balance and contribute to the harmony of the body, mind, and emotions [26]. The mothers analyzed in this study generally preferred the color white, staying within the expected result, and according to the cities of Palmas, Ceres and Gurupi selected blue and color dental attire. The children, on the other hand, preferred the dentist to wear colorful clothes, following the study conducted by Mistry and Tahmassebi [14]. Only the cities of Ceres and Araguaina, mothers, and children had more similar preferences. It is noticed that mothers differ, for the most part, from the preference of children aged 3 to 6 years, who are attracted by the charm of colors [19]. It should be considered that the study presented some limitations. When interpreting the results, it is important to note that only children enrolled in public daycare centers with dental experience participated. The children could be evaluated by other types of tests, to understand if they would have anxiety about dental care, however, these schools did not have dental offices that would allow performing other more consistent tests. This study was conducted before the Covid-19 Pandemic, in which millions of health professionals in Brazil are at risk of contagion above 50% and the most vulnerable in the group are oral health technicians [27]. Thus, more mandatory accessories were incorporated for health professionals to use, such as face masks, aprons over lab coats, hospital caps, and sneakers, which would require further research to verify the acceptance of children. With the market requiring the implementation of clothing for health care, it is essential to verify whether this trend affects the perception of children and that these new proposals do not miss the true objective of dental attire as Personal Health Protection Equipment, with biosafety [28].

5. Conclusions

The results of this study carried out before the COVID-19 Pandemic showed that there were significant differences between the preference of children and their mothers, of children according to localities, as well as mothers and their cities. The greatest preference for children was for colored attire and mothers for the color blue. The mothers and the localities presented differences in options, the cities of Tocantins did not express a preference for one or the other attire, but significantly rejected the Blue. Thus, it was observed that this selection has no cultural character nor for the family environment, as demonstrated in the various places the non-predominance of a single preference they mothers and their children. Preschool children were able to select their game option with this infant test.

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