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Perception of undergraduate Dentistry students at the University of Brasília about the choice of behavioral management techniques in Pediatric Dentistry

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Abstract This study aimed to analyze the acceptance of undergraduate students in the first, sixth, and ninth semesters about the child behavioral management techniques and to explore the potential influence of the curriculum path on their perception. An online questionnaire (n=55) with questions about mental guidance techniques in Pediatric Dentistry was applied. Their accessibility was assessed using a Likert scale. The Kruskal-Wallis and the Dunn test were used to analyze the difference between the three groups of students. Spearman's correlation was used to analyze confounding factors. In general, all students exhibited greater acceptance of basic techniques when compared with voice control, protective stabilization, and pharmacological techniques. Participants in the ninth semester showed greater acceptance of "parent/team protective stabilization", "voice control" and "wrap protective stabilization" techniques, and less acceptance of "parental presence/absence" and "promised reward" compared to the first semester. Compared to the sixth, students in the ninth semester had greater acceptance of "parent/team protective stabilization" and "wrap protective stabilization" techniques and less acceptance of "parental presence/absence", "promised reward" and "explain that it may involve pain". "Don't let people talk" was the only technique that demonstrated a difference between the first and sixth semesters, with lower acceptance among students in the sixth semester. The student's semesters seem, therefore, to influence the acceptance of behavioral management techniques used in Pediatric Dentistry.

Descriptors: Cross-Sectional Studies. Dentistry. Pediatric Dentistry. Students, Dental. Child Behavior.

Percepción de estudiantes de la carrera de Odontología de la Universidad de Brasilia sobre la elección de técnicas de manejo de conducta en Odontopediatría

El objetivo de este estudio fue analizar la aceptación de técnicas de manejo de la conducta infantil por parte de estudiantes de primero, sexto y noveno semestre de la carrera de Odontología, y la influencia que las materias impartidas pueden tener en esto. Para ello se aplicó un cuestionario (n=55) que contenía preguntas sobre técnicas de orientación conductual en odontopediatría. La aceptación de los mismos se evaluó mediante una escala Likert. Para evaluar las diferencias entre los tres grupos de estudiantes se utilizó la prueba H de Kruskal-Wallis seguida de la prueba de Dunn. Además, se realizó la correlación de Spearman para evaluar posibles factores de confusión. En general, se observó que las técnicas básicas fueron más aceptadas entre todos los estudiantes, mientras que el control de la voz, la estabilización protectora y las técnicas farmacológicas fueron menos aceptadas. Los participantes del noveno semestre aceptaron más en promedio "estabilización protectora de padres/equipo", "control de voz" y "estabilización protectora envolvente", y menos "presencia parental permitida" y "recompensa prometida" en comparación con los del primer semestre. En comparación con el sexto, los estudiantes del noveno semestre tuvieron una menor aceptación de "presencia parental permitida", "recompensa prometida" y "explicar que puede implicar dolor", y mayor de "estabilización protectora padres/equipo" y "envoltura protectora de estabilización". La única técnica que demostró una diferencia entre el primer y el sexto semestre fue "no dejar hablar" con menor aceptabilidad entre los estudiantes del sexto semestre. Por lo tanto, la posición del estudiante en el plan de estudios parece influir en la aceptación de las técnicas de manejo conductual utilizadas en odontología pediátrica.

Descriptores: Estudios Transversales. Odontología. Odontología Pediatrica. Estudiantes de Odontología. Conducta Infantil.

Percepção dos alunos de graduação em Odontologia da Universidade de Brasília acerca da escolha de técnicas de manejo comportamental

Resumo O objetivo deste estudo foi analisar a aceitação das técnicas de manejo de comportamento infantil por estudantes de primeiro, sexto e nono semestres de um curso de graduação em Odontologia, e a influência que as disciplinas ministradas podem exercer sobre esta. Para isso, foi aplicado um questionário (n=55) contendo questões sobre técnicas de orientação comportamental em Odontopediatria. A aceitação sobre as mesmas, foi avaliada por meio de escala Likert. O teste H de Kruskal-Wallis foi utilizado para avaliar diferença entre os três grupos de estudantes seguido do teste de Dunn. Além disso, foi realizada a correlação de Spearman para avaliar possíveis fatores de confusão. De forma geral, notou-se que as técnicas básicas foram mais aceitas entre todos os estudantes, já as técnicas de controle de voz, estabilização protetora e as farmacológicas foram menos aceitas. Os participantes do nono semestre aceitaram mais em média "estabilização protetora pais/equipe", "controle de voz" e "estabilização protetora *wrap*", e menos "presença permitida dos pais" e "recompensa prometida" em relação aos do primeiro semestre. Em comparação ao sexto, os alunos do nono semestres tiveram menor aceitação para "presença permitida dos pais", "recompensa prometida" e "explicar que pode envolver dor", e maior para "estabilização protetora pais/equipe" e "estabilização protetora *wrap*". A única técnica que demonstrou diferença entre o primeiro e sexto semestres foi "não deixar falar" com menor aceitabilidade entre os estudantes do sexto semestre. A posição do aluno no percurso curricular parece, portanto, influenciar na aceitação das técnicas de manejo comportamental usadas na Odontopediatria.

Descritores: Estudos Transversais. Odontologia. Odontopediatria. Estudantes de Odontologia. Comportamento Infantil.

INTRODUCTION

A major challenge faced by dental surgeons and dental students is the behavioral management of pediatric patients. It is crucial to recognize that successful treatment is closely linked to how patients are approached and the trust developed between the child and the professional. Child behavior techniques may reduce stress and anxiety and increase the level of comfort during the dental procedure[1].

To meet the individual needs of each child, the literature highlights a wide variety of behavioral adaptation techniques, ranging from basic ones to more advanced approaches. The first aim is mainly to establish and maintain effective communication with the patient[2]. "Tell-show-do" can be cited as an example of a basic behavior guidance technique. In this approach, initially, a verbal explanation of the procedure is given according to the child's level of understanding, then it is demonstrated, and then the procedure is carried out. Another example is "positive reinforcement" which aims to reinforce good patient behavior and encourage the return of this positive behavior. This motivation can be done through praise, gestures, and facial expression, or even through gifts, known as a "promised reward". In "voice control" the volume, tone, or rhythm of the voice is changed to direct children's behavior. Interrupting this communication, or "don't let people talk", may be necessary to avoid interfering with the procedure. With "distraction", the patient's attention is diverted during treatment, through visual, sound, or tactile strategies. The "*parental presence*" in the dental office during the child's care can also be used to obtain greater collaboration, as can their absence[2,3]. Still, by these techniques, the professional can use practical devices to facilitate communication with the child, such as "use of euphemisms and metaphors", "sensory play", "encourages being brave", "literal explanation of the treatment" and "explain that it may involve pain"[1].

Most pediatric dentistry patients benefit from these basic approaches, however, for children with cooperative incapacity inherent to their age or resulting from a disability, more advanced techniques may be indicated[2]. These aim to restrict unwanted and unsafe movements, including active and passive restraint practices such as "parent/team protective stabilization" and "wrap protective stabilization", and pharmacological ones such as "nitrous oxide", "sedation with Midazolam®" and "general anesthesia"[2,4].

To choose the most appropriate management technique for each child, prior knowledge of these methodologies[5] is necessary, which must be acquired during the educational training process, since, in addition to applying them, it is up to the dentistry professional and students to explain them to the person responsible for the child patient. Therefore, knowing the opinion of future dental surgeons about such techniques can help in evaluating the theoretical and practical components administered during the undergraduate course, as well as helping to understand the public's view of them[1,6].

This study aimed to analyze the acceptance of child behavioral management techniques by undergraduate students in the first, sixth, and ninth semesters of the Dentistry course at the University of Brasília and the potential influence of the curriculum path on their perception.

METHODS

Study design and ethical aspects

This is a cross-sectional study approved by the Ethics Committee of the Faculty of Health Sciences of the University of Brasília (Protocol Number: 4.560.038 and CAAE: 42305220.5.0000.0030) and followed the guidelines of Strengthening the Reporting of Observational Studies in Epidemiology (STROBE)[7]. Undergraduate students from the first, sixth, and ninth semesters of the Dentistry course answered a questionnaire about techniques for managing child behavior in Pediatric Dentistry.

Validation and content of the instrument

The questionnaire applied to students was elaborated based on a previous study[6] and was validated for the proposed objective.

To verify the item's relevance and to ensure the data quality following the translation stage, the questionnaire underwent analysis by an expert committee[8]. The inclusion criteria for the expert committee was to be a dental surgeon specializing in Pediatric Dentistry. The sample was from convenience and data such as age, sex, time since graduation, length of experience in Pediatric Dentistry, and area of expertise of the judges were collected. Nine experts participated and classified the items as relevant or not relevant, adding comments after each item when necessary.

The descriptive data and the results from the validation process are available on the Open Science Framework website and can be accessed at: https://osf.io/6tngd/?view_only=894ee35d68304ee79e81aa02e1528895 (doi: 10.17605/OSF.IO/6TNGD).

The quantitative content validation was done to assess the degree of relevance of each item and to ensure that they were representative of the construct. Content Validity Index (CVI)[9] was calculated: CVI = (number of experts who considered the item relevant/total number of experts) x 100. Items with CVI greater than or equal to 80% were maintained, items with CVI less than 80% and greater than or equal to 50% were reformulated, and items with CVI less than 50% were discarded. The expert's comments were used to reformulate the questions. CVI data are available at: https://osf.io/6tngd/?view_only=894ee35d68304ee79e81aa02e1528895 (doi: 10.17605/OSF.IO/6TNGD).

After the validation process, a pilot study was carried out with three Dentistry undergraduate students, one from each semester (first, sixth, and ninth), to assess the methodology and applicability of the questionnaire. The final version of the questionnaire is available at: https://osf.io/6tngd/?view_only=894ee35d68304ee79e81aa02e1528895 (doi: 10.17605/OSF.IO/6TNGD).

The survey was divided into 2 sections: Section 1 - Demographic Data and Section 2 - Behavior Management Assessment. Section 1 consisted of 13 questions about sample characterization and clinical medical/dental experience. Variables such as "age", "semester", "sex", "accompanied your sibling to the dentist", "children", "long restorative treatment", "relative who is a dentist", "observe a children's dentistry treatment", "medical treatment", "bad dental appointment experience", "bad medical appointment experience", and "experience in children's caring" were considered possible confounding factors and were correlated with the behavior management techniques. Section 2 consisted of 17 questions about behavior management techniques. Each technique was described in a simple sentence, and the technique's acceptability was rated from one (completely unacceptable) to 10 (completely acceptable), using a Likert scale[10]. The questionnaire did not include participants' identification.

Sample size selection and estimation

Undergraduate students in the first, sixth, and ninth semesters of the Dentistry course from the University of Brasília participated in this study. The selection of students from different semesters was based on their varying levels of experience, to investigate the potential impact of theoretical and practical components on their choice of behavioral management techniques. According to the Pedagogical Project of the Dentistry Course at the University of Brasília, in the first semester, students still do not have clinical care experience and/or theoretical classes about Pediatric Dentistry. In the sixth semester, the students have their first experience with child patients in Public Oral Health Practices, but without a theoretical basis. In the ninth semester, students have theoretical/practical knowledge and clinical experience with childcare. Since this was a convenience sample research, intending to survey all students from each pre-established semester, there was no sample size estimation.

Data collect

Data collection was conducted between 19th March and 19th April 2021. The questionnaire was applied via Google Forms given the social isolation and remote teaching regime resulting from the COVID-19 pandemic. The participant's recruitment was through social media, WhatsApp, and e-mail. It is important to highlight that the students in the sixth and ninth semesters participated in practical subjects in the previous semesters, in person, which enabled contact with pediatric patients.

Statistical analysis

Data were presented descriptively. The Spearman correlation was applied to investigate possible confounding factors' correlations between the dependent and independent variables. Kruskal-Wallis test was applied to identify the presence of differences between the choices of child behavioral management techniques during dental care among the three groups of students from the three different semesters. Dunn test was applied in case of differences between groups. Absolute and relative frequencies were used to generate a ranking with the most accepted management techniques among all students. The Statistical Package for the Social Sciences (SPSS) software was used was used in data analysis. The statistical significance established was 5%.

RESULTS

The total number of students in each semester at the time of the survey was 27, 21, and 28, respectively, but the total number of questionnaires answered was 55, of which 20 were from the first semester, 15 from the sixth semester and 20 from the ninth semester. Participation in the research was voluntary, justifying the non-participation of the total number of students enrolled in the respective semesters. The average age of the students was 22.1±3.4 years; with the first semester 18.8±1.2 years, the sixth semester 23.4±3.8 years, and the ninth semester 24.4±1.7 years ($p<0.001$). The descriptive characteristics and clinical medical/dental experience of the total sample of students who responded to the questionnaire, and the detailed data by semester (first, sixth, and ninth), are presented in Table 1 under absolute and relative numbers.

A linear correlation was observed between sample characteristics and management techniques ($p<0.05$). Independent variables with a correlation coefficient closer to -1 or 1 showed greater correlation strength, while those with values close to 0 showed weaker correlations[11]. The "use of nitrous oxide" and the "sensory play" method did not have a statistically significant relationship with the demographic data of the participants. The results of the correlation analysis are presented as supplementary material at https://osf.io/6tngd/?view_only=894ee35d68304ee79e81aa02e1528895 (doi: 10.17605/OSF.IO/6TNGD).

Table 1. Descriptive data and clinical medical/dental experience of the total sample and by semester.

Variables	Total sample (n=55) 100%	Semesters		
		First (n= 20) 36.4%	Sixth (n=15) 27.3%	Nineth (n=20) 36.4%
Sex				
Female	44 (80.0%)	19 (43.2%)	11(25.0%)	14 (31.8%)
Male	11 (20.0%)	1(9.1%)	4 (36.4%)	6 (54.5%)
Did you accompany your sibling to the dentist?				
Yes	29 (52.7%)	13 (44.8%)	9 (31.0%)	7 (24.1%)
No	22 (40.0%)	4 (18.2%)	5 (22.7%)	13 (59.1%)
I do not have siblings	4 (7.3%)	3 (75.0%)	1 (25.0%)	-
Do you have children?				
Yes	2 (3.6%)	-	1 (50.0%)	1 (50.0%)
No	56 (96.4%)	20 (37.7%)	14 (26.4%)	19 (35.8%)
Did you receive a long restorative treatment?				
Yes	20 (36.4%)	11(55.0%)	3 (15.0%)	6 (30.0%)
No	35 (63.6%)	9 (25.7%)	12 (34.3%)	14 (40.0%)
Do you have a relative who is a dentist?				
Yes	12 (21.8%)	4 (33.3%)	2 (16.7%)	6 (50.0%)
No	43 (78.2%)	16 (37.2%)	13 (30.2%)	14 (32.6%)
Did you observe a children's dentistry treatment?	22 (40.0%)	4 (18.2%)	4 (18.2%)	14 (63.6%)
Yes	33 (60.0%)	16 (48.5%)	11 (33.3%)	6 (18.2%)
No				
Did you receive a medical treatment?				
Yes	38 (69.1%)	15 (39.5%)	9 (23.7%)	14 (36.8%)
No	17 (30.9%)	5 (29.4%)	6 (35.3%)	6 (35.3%)
Did you have a bad dental appointment experience?				
Nothing bad	23 (41.8%)	3 (23.2%)	4 (30.8%)	6 (46.2%)
Little bad	28 (50.9%)	16 (45.7%)	8 (22.9%)	11 (31.4%)
Much bad	4 (7.3%)	-	1 (25.0%)	3 (75.0%)
Did you have a bad medical appointment experience?				
Nothing bad	13 (23.6%)	3 (23.1%)	4 (30.8%)	6 (46.2%)
Little bad	35 (63.6%)	16 (45.7%)	8 (22.9%)	11 (31.4%)
Much bad	4 (7.3%)	-	1 (25.0%)	3 (75.0%)
Did you have any experience in children's caring?				
No experience	11 (20.0%)	6 (54.4%)	5 (45.5%)	-
Little experience	35 (63.6%)	12 (34.3%)	7 (20.0%)	16 (45.7%)
Much experience	9 (16.4%)	2 (22.2%)	3 (33.3%)	4 (44.4%)

The most accepted behavioral management techniques among all students were "sensory play" and "positive reinforcement". However, there was a statistically significant difference in the acceptance of techniques among students from different semesters, as demonstrated in Table 2.

"Parental presence/absence" and "promised reward" techniques presented differences in acceptance between the students from the first and ninth semesters. These two techniques presented lower acceptance by students in the ninth semester whereas "parent/team protective stabilization", "voice control" and "wrap protective stabilization" techniques

presented greater acceptance. “Parental presence/absence”, “promised reward” and “explain that it may involve pain” techniques presented differences between the students in the sixth and ninth semesters. These three techniques had lower acceptance among students in the ninth semester whereas “parents/team protective stabilization” and “wrap protective stabilization” techniques had greater acceptance. “Don't let people talk” was the only technique that demonstrated a statistically significant difference in acceptance between the students from the first and sixth-semester students, with lower acceptance among sixth-semester students.

Table 2. Média e desvio padrão de aceitação das técnicas de manejo comportamental do total da amostra e por semestres, e comparação da aceitação das técnicas de manejo comportamental entre semestres.

Behavioral Management Technique or Clinical Situation	Mean ± standard deviation of the Total Sample	Mean ± standard deviation per semester			Pairwise comparison 1°-6th / 6 th-9th / 1th-9th
		1st	6th	9th	
Sensory play	9.95±0.29	10.00±0.00	10.00±0.00	9.85±0.48	0.16 / 0.16 / 0.16
Positive reinforcement	9.87±0.47	9.95±0.22	9.33±0.70	9.90±0.44	0.55 / 0.55 / 0.55
Encourages being brave	9.80±0.48	9.85±0.36	9.87±0.56	9.70±0.68	0.78 / 0.78 / 0.78
Distraction	9.65±0.96	9.60±1.39	9.80±1.97	9.60±1.81	0.30 / 0.30 / 0.30
Tell-show-do	9.42±0.93	9.50±0.88	9.53±0.91	9.25±1.02	0.50 / 0.50 / 0.50
Parental presence/absence	9.02±1.43	9.70±0.57	9.33±1.04	8.10±1.80	1.00 / 0.03* / 0.001*
Use of euphemisms and metaphors	8.55±2.09	9.05±1.23	8.27±3.08	8.25±1.88	0.52 / 0.52 / 0.52
Don't let people talk	7.76±2.31	8.65±1.84	6.73±2.68	7.65±2.20	0.03* / 0.73 / 0.42
Nitrous oxide	7.53±1.81	8.00±1.58	6.80±1.97	7.60±1.81	0.11 / 0.11 / 0.11
Literal explanation of the treatment	7.51±2.37	8.00±1.29	8.07±2.46	6.60±2.92	0.23 / 0.23 / 0.23
Promised reward	7.04±2.76	8.50±1.70	8.07±2.37	4.80±2.52	1.00 / 0.001* / <0.001*
Explain that it may involve pain	6.91±3.06	7.55±1.99	7.67±3.53	5.50±3.18	1.00 / 0.04* / 0.15
Sedation with Midazolam®	5.80±2.83	6.50±3.36	5.80±2.90	5.10±2.07	0.30 / 0.30 / 0.30
Parent/team protective stabilization	5.49±2.69	4.15±2.66	4.73±2.52	7.40±1.63	1.00 / 0.009* / 0.001*
Voice control	5.45±3.13	3.50±2.32	5.80±3.48	7.15±2.51	0.10 / 0.65 / 0.001*
General anesthesia	5.24±3.03	6.10±3.53	4.53±2.77	4.90±2.59	0.38 / 0.38 / 0.38
Wrap protective stabilization	4.09±2.97	2.45±2.18	3.27±2.25	6.35±.2.79	0.70 / 0.01* / <0.001*

* significant ($p<0.05$), Kruskal-Wallis H followed by Dunn Test,

DISCUSSION

Behavioral management techniques are used to adapt children's behavior during clinical procedures, minimizing the feeling of fear and anxiety[12,13]. They are valuable strategies used to secure the cooperation of children during dental care[14,15], and between the various approaches described in the literature[16], the dentist or undergraduate student can choose the technique that best suits their patient[17]. The curriculum influences this decision, as the combination of theoretical foundation and hands-on experience with pediatric patients leads to a better understanding and discernment regarding the most effective technique for each treatment plan[18].

Overall, at the onset of their undergraduate Dentistry course, students' perspectives on management methods may be shaped by their limited knowledge and personal experiences, potentially influenced by preconceived notions. These opinions might also mirror the viewpoints of parents and patients regarding these methods [1]. A previous study showed that the theoretical component influenced the perception of 73 first-year students. They participated in a course about human development and behavioral guidance techniques in Pediatric Dentistry and showed greater acceptability of

guidance on aversive behavior, sedation, general anesthesia, and modeling after the course[6].

Similarly, in the present study, when evaluating the acceptance of behavioral management techniques by undergraduate Dentistry students, first-semester students, who do not yet have a theoretical and practical load, showed a preference for basic behavioral management techniques over advanced techniques. On the other hand, the perspective may change from the moment there is contact, whether at the observatory or with pediatric dentistry care[1]. This explains the decrease in the average acceptance of certain techniques when comparing students from the first, sixth, and ninth semesters. Ninth-semester students develop a more incisive perspective of the choice of behavioral management techniques, understanding that the success of the procedure and treatment planning depends on the confidence established with the patient through the use of these approaches[1].

The most accepted techniques in the current research among all students were the basic ones "sensory play", "positive reinforcement", "Encourages being brave", "distraction" and "tell-show-do", which partially corroborates with a previous study[19]. The most used behavior technique was "tell-show-do" followed by "positive reinforcement"[19], which was among the five most accepted techniques by all students in this study.

Another study also compared the perception and acceptance of students from three different semesters (first, third, and eighth) regarding behavioral management techniques, and showed that the techniques most accepted by all students were "positive reinforcement", "distraction" and "tell-show-do", followed by "encourages being brave", "sensory play", "use of euphemisms and metaphors" and "parental presence/absence"[1]. However, there was no consensus regarding the least accepted techniques when comparing the three semesters[1]. On the other hand, in this study, the behavior management techniques "explain that it may involve pain", "sedation with Midazolam®", "parent/team protective stabilization", "voice control", "general anesthesia" and "wrap protective stabilization" were least accepted.

The curricular path is, therefore, extremely important, as it supplies the students with the knowledge of techniques and theories to effectively manage situations in which there is a lack of collaboration from child patients. This knowledge is responsible for generating greater confidence in correctly applying behavioral management techniques with a comprehensive understanding of their principles[20]. The academic curriculum has, however, limitations in knowledge of more advanced techniques[1]. Pharmacological approaches, such as the administration of nitrous oxide, sedation, and general anesthesia, require qualifications and training that are typically acquired through postgraduate courses [2]. Similarly, protective stabilization also requires adequate training to ensure the safety of both the child and the professional [21]. Furthermore, it is common to believe that physically restraining the patient may cause physical or psychological trauma[1]. These factors justify students' lower acceptance of advanced approaches.

Individual characteristics and personal experiences of students are other factors that influence the acceptability of child behavior management techniques. The presence of children and dentists in the family, the age, and previous experience with medical and dental appointments may reflect on the perception and judgment of behavioral management methods[1]. It is important to highlight that the decision on the management technique to be applied to a child patient must consider the opinion of those responsible, who must consent to its application through the "Free and Informed Consent" (TCLE)[2].

Although the study validated an adequate instrument to assess undergraduate students' acceptance of child behavior management techniques, this study has some limitations. The sample was from convenience, recruiting only students from one Dentistry course. Therefore, our results may not represent all Dentistry undergraduates in further locations. Furthermore, although there is a national pedagogical plan for Dentistry courses, there may be differences between the courses' curriculum, which can influence the results. More studies with representative samples and considering the post-pandemic scenario are necessary to better understand the acceptability of dentistry students regarding techniques for managing child behavior and the influence of the curriculum on this perception.

CONCLUSION

Basic behavioral management techniques were more accepted among all students when comparing the acceptability of students in the first, sixth, and ninth semesters of the undergraduate Dentistry course at the University of Brasília.

Techniques involving protective stabilization and pharmacological techniques were less accepted. The student's semester may influence the perception of the behavioral management technique used for pediatric dentistry patients.

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