

AN EDUCATIONAL LECTURE IMPROVES FOOD CONSUMPTION AND ORAL HYGIENE OF CHILDREN AGED 3 TO 5

UMA PALESTRA EDUCACIONAL MELHORA O CONSUMO DE ALIMENTOS E
HIGIENIZAÇÃO BUCAL, DE CRIANÇAS DE 3 A 5 ANOS

UNA CHARLA EDUCATIVA MEJORA EL CONSUMO DE ALIMENTOS Y LA
HIGIENE BUCAL EN NIÑOS DE 3 A 5 AÑOS

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ABSTRACT

Educational/preventive strategies have been effective in reducing inequities that compromise oral health. Good oral hygiene and food selection can be decisive for adequate oral health. The present study aimed to verify the impact of a lecture on food consumption and oral hygiene on parents' perception of food selection and oral health of children aged 3 to 5 years from a public and a private school in cities from the north of the state of Goiás. Twenty-eight children from a public school and 31 from a private school and their respective guardians participated in the study. An educational lecture was held. A sociodemographic questionnaire and part of the questionnaire used by the Food and Nutrition Surveillance System were administered before the lecture and 60 days after it. The results showed that there was a difference in the perception of food selection and oral hygiene between the pre- and post-lecture time points ($p = <0.001$), but with no difference between schools, and several aspects of food choice improved after the lecture. It can be concluded that educational interventions are fundamental to promoting healthy habits from childhood, contributing to the prevention of oral diseases and a better quality of life.

Keywords: Caries. Disease Prevention. Child Nutrition. Oral Health.

RESUMO

Estratégias educacionais/preventivas têm sido eficazes na redução das iniquidades que comprometam à saúde bucal. Uma boa higienização bucal e a seleção dos alimentos pode ser determinante para uma adequada saúde bucal. O presente estudo teve a intenção de verificar o impacto de uma palestra sobre o consumo de alimentos e higienização bucal, sobre a percepção dos pais na seleção de alimentos e na saúde bucal de crianças de 3 a 5 anos, de escolas pública e privada de cidades do norte do estado de Goiás. Participaram do estudo 28 crianças da escola pública e seus respectivos responsáveis e 31 da escola particular. Foi realizada uma palestra instrucional. Um questionário sociodemográfico e parte do questionário utilizado pelo Sistema

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de Vigilância Alimentar e Nutricional foram aplicados antes da palestra e após 60 dias da mesma. Os resultados encontrados mostraram que houve diferença na percepção da seleção dos alimentos e na higiene bucal entre os momentos pré e pós ($p = <0,001$], mas sem diferença entre as escolas, e melhoraram diversos aspectos no consumo de alimentos específico após a palestra. Pode-se concluir que intervenções educativas são fundamentais para promover hábitos saudáveis desde a infância, contribuindo para a prevenção de condições de adoecimento bucal e para uma melhor qualidade de vida.

Palavras-chave: Cárie. Prevenção de Doença. Nutrição da Criança. Saúde Bucal.

RESUMEN

Las estrategias educativas/preventivas han sido eficaces para reducir las inequidades que afectan la salud bucal. Una buena higiene bucal y la selección de alimentos pueden ser determinantes para una salud bucal adecuada. El presente estudio tuvo como objetivo verificar el impacto de una charla sobre el consumo de alimentos e higiene bucal en la percepción de los padres respecto a la selección de alimentos y la salud bucal de niños de 3 a 5 años, de escuelas públicas y privadas en ciudades del norte del estado de Goiás. Participaron en el estudio 28 niños de la escuela pública y sus respectivos responsables, y 31 de la escuela privada. Se realizó una charla instructiva. Se aplicó un cuestionario sociodemográfico y parte del cuestionario utilizado por el Sistema de Vigilancia Alimentaria y Nutricional antes de la charla y 60 días después. Los resultados mostraron que hubo una diferencia en la percepción de la selección de alimentos y en la higiene bucal entre los momentos previo y posterior ($p = <0,001$), pero sin diferencia entre las escuelas, y se mejoraron diversos aspectos en el consumo de alimentos específicos después de la charla. Se puede concluir que las intervenciones educativas son fundamentales para promover hábitos saludables desde la infancia, contribuyendo a la prevención de condiciones de enfermedad bucal y a una mejor calidad de vida.

Palabras clave: Caries. Prevención de Enfermedades. Nutrición Infantil. Salud Bucal.



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INTRODUCTION

Dental caries is still a major public health problem in many countries today. It was among the 10 most common diseases/conditions in both primary and permanent dentitions in 195 countries and territories between 1990 and 2016 (GBD, 2017; Corrêa-Faria *et al.*, 2018). It is estimated that 60-90% of school-age children and the vast majority of adults are affected by caries (GBD, 2017; Corrêa-Faria *et al.*, 2018; Maharani *et al.*, 2021).

Among the various diseases affecting oral health-related quality of life (OHRQL) in childhood, periodontal disease and especially caries dysbiosis can be considered the most

common and easily acquired. It can affect in-mouth food processing and oral ecology, have a negative impact on social and psychological aspects, and cause pain. In addition, caries in children can lead to loss of appetite, insomnia, and difficulty concentrating, as well as excluding the child from social life and making it difficult to resolve the problem (Heilmann; Machuca Vargas; Watt, 2021; Heilmann; Ziller, 2021). Alongside periodontal disease, caries is responsible for the vast majority of tooth loss. Its treatment is considered costly and often cannot be resolved in a single appointment (Gushi et al., 2015; Heilmann; Machuca Vargas; Watt, 2021; Heilmann; Ziller, 2021).

Dental caries is caused by an imbalance in the oral ecosystem that leads to demineralization of dental tissue, and its progression is positively correlated with the frequent consumption of large amounts of carbohydrates. This promotes a physiological imbalance due to the action of the pathological biofilm and contributes to the progressive deterioration of the enamel and underlying dental tissue (Goldenfum et al., 2020). Once the cariogenic condition is established, the organic acids produced by bacterial metabolism lead to a decrease in oral pH triggering the demineralization process of the tooth structure. When the pH drops below 5.5, demineralization of the enamel begins, and when it drops below 6.5, the demineralization of the dentin occurs (Miranda et al., 2017).

Fluorides (generally contained in treated water) are considered important in neutralizing the resulting acids, but this strategy alone is often not sufficient to protect against caries (Heilmann; Machuca Vargas; Watt, 2021; Heilmann; Ziller, 2021). Frequent and proper oral hygiene is crucial for the disruption of bacterial biofilm and for the prevention and control of caries dysbiosis (Paula et al., 2019; Paredes et al., 2020; Dixit et al., 2021).

The social, political, and economic aspects of a population, as well as the perception and knowledge of parents about oral health, are also decisive for children's oral health. Dental caries, in turn, is associated with the presence of a pathogenic biofilm, dietary habits, obesity, and excessive consumption of sugar, especially in sweetened beverages. Avoiding these types of food can help reduce the risk of developing cavities, while consuming foods rich in fiber, vitamins, and minerals such as fruits and vegetables can aid in preventing periodontal disease. Equally important are measures to improve access to health services, including increased clinical care and a focus on preventive oral health education (Teixeira et al., 2020; Park; Kim; Choi, 2021).

Several studies have investigated the impact of educational and preventive strategies on the oral health of schoolchildren. A review of 20 studies found that most (except two) showed

positive results in terms of oral health in Brazilian schoolchildren, using different strategies (Castro et al., 2012).

Another study underscored the significance of integrating playful activities into interventions and its positive impact on the oral health of schoolchildren (Cota; Costa, 2017). Along these lines, a recent study indicated that activities such as lectures on "healthy eating" and role-playing shopping can effectively educate school children about healthy food choices (Lima et al., 2022).

Although there have been studies on oral health, dietary intake, and oral hygiene practices in preschool children (aged 3 to 5 years), which is a critical period for the development of primary teeth, these interventions are often conducted during school hours without parental involvement. Therefore, an intervention that engages both parents and children simultaneously, using language that is appropriate for both, could facilitate a constructive family moment. This approach could involve both parents and children in food choices and the promotion of proper oral hygiene (Teixeira et al., 2020).

This study aimed to assess the effectiveness of a targeted educational intervention in promoting healthy eating and improving oral hygiene habits among preschool children. Recognizing that early childhood is a critical period for establishing lifelong healthy behaviors, the research also explored how these interventions influence parental practices and evaluates the feasibility and outcomes of public policies designed to promote oral and nutritional health in young children. By addressing these aspects, the study aimed to provide comprehensive insights into the best strategies for ensuring long-term well-being starting from the preschool years.

METHODOLOGY

The study design involved a comprehensive approach, including cross-sectional, descriptive, prospective (monitor learning at different intervention points), and retrospective (food recall) elements. The study was approved by the Human Research Ethics Committee of the Federal University of Goiás under Protocol No. 6,512,603/2023.

Participants included preschoolers aged 3 to 5 years who were enrolled in and regularly attended school, along with their parents or guardians who had accepted and signed the free and informed consent form. The exclusion criteria were children and parents who did not meet the inclusion criteria or whose guardians did not consent to participate.

Two schools, one public and one private, were chosen to participate in the study to ensure a diverse representation of educational settings. The study involved children aged 3 to 5 and their parents or guardians, who were divided into two experimental groups: public school and private school. Two questionnaires were administered to collect data; the first questionnaire was used to gather sociodemographic information, providing a context for the participants' backgrounds, and the second questionnaire focused on the dietary habits of the children and their families. Both questionnaires were completed before the intervention and 60 days after to assess changes over time.

Sociodemographic Questionnaire the Food and Nutrition Surveillance System (SISVAN) Questionnaire

To ensure a thorough understanding of the sample profile, a sociodemographic questionnaire was developed and administered. In addition, the "Food Consumption Markers Form", a standardized instrument from SISVAN utilized by the Ministry of Health, was applied. For the purposes of this study, only the section pertinent to the age group of the sample was used. These tools are known to provide standardized, reliable data, which is critical for assessing the impact of educational interventions on the dietary habits and sociodemographic characteristics of the participants (Brasil, 2015). The questionnaires included items about parents and children, and were completed by the parents. This method ensured the collection of accurate and reliable data regarding the dietary habits and sociodemographic characteristics of the participants.

Lecture

During the 30-minute lecture, the main researcher A.C.A. discussed the effects of processed foods and the food pyramid on the oral health of children aged 3 to 5. The presentation included visual aids such as posters depicting healthy and unhealthy foods and a demonstration using a "happy/sad tooth" model. Dental mannequins, both with and without caries, were used to illustrate the impact of industrialized foods on biofilm formation and caries development. Additionally, the lecture emphasized the proper use of fluoride toothpaste, effective brushing techniques, and the importance of flossing.

Statistical Analysis

Initially, a descriptive analysis of the data was conducted using absolute and relative frequency (%). For this analysis, only the data collected before the lecture was used. To compare the scores given by the parents/guardians of the preschool children on a scale from 0 to 10 before and after the lecture, the Wilcoxon test was used.

Additionally, a two-way ANOVA was performed to compare the scores across time points and by school type, examining the interaction between school type and time points (school type*time point interaction). Multiple comparisons were made using the Tukey test. Despite the non-normal distribution of these variables, they had homogeneity of variances, which allowed the use of ANOVA without the need to correct for sphericity. Consequently, ANOVA was deemed appropriate even though it traditionally assumes a normal distribution of data.

The association between sociodemographic variables and school type, as well as variables derived from the SISVAN with school type was assessed with the Fisher's exact test. Significant associations were identified via adjusted standardized residual values, with values exceeding 1.96 or falling below -1.96 deemed significant. Additionally, the impact of the lecture on qualitative variables concerning meal quality perception and SISVAN variables was assessed with the McNemar test. Data analysis was conducted using Jamovi software version 2.3.28, and findings with p-values below 0.05 were regarded as statistically significant.

RESULTS

A total of 59 parents/guardians agreed to participate in the study. Within this cohort, 83.1% were female and 16.9% were male. Moreover, 71.2% identified themselves as of mixed race, with 5.1% identifying as black. Additionally, 61% reported being married, while 1.7% indicated being divorced. Regarding age demographics, 49.2% fell within the 25-35 age bracket, and 8.5% were aged over 45. Almost 50% had a secondary school diploma, and 5.1% had an incomplete secondary education. Furthermore, 78% were currently employed, while 1.7% were retired, 64.4% reported earning between one and two minimum wages, and 3.1% received less than the minimum wage and had at least three dependents. Among the preschool children assessed, 59.3% were girls and 40.7% were boys. Of these children, 52.5% were enrolled in private schools and 47.5% attended public schools.

According to parents/guardians perception, the majority (71.2%) of preschoolers ate their meals while watching a mobile device and consumed four meals per day (71.18%). The survey also revealed that the majority of preschoolers ate beans (78%), fresh fruit (83.1%), vegetables (62.7%), hamburgers and/or sausages (61%), sweetened drinks (81.4%), instant noodles, packaged snacks or savory cookies (84.7%), and stuffed cookies, candy, sweets (candies, lollipops, chewing gum, caramel, gelatin) (83.1%) on the day before the survey (Table 1)

Table 1. Dietary characteristics of preschoolers according to the perception of their parents/guardians (taken from the SISVAN questionnaire). Nova Crixás - GO and Mozarlândia – GO, 2023/2024.

Has meals while watching mobile devices	n	%
Yes	42	71.2
No	17	28.8
Number of meals a day		
3	3	5.1
4	42	71.2
5	10	16.9
6	4	6.8
Had beans the day before		
Yes	46	78.0
No	12	20.3
Doesn't know	1	1.7
Had fresh fruit the day before^a		
Yes	49	83.1
No	8	13.6
Doesn't know	2	3.4
Had vegetable the day before^b		
Yes	37	62.7
No	21	35.6
Doesn't know	1	1.7
Had hamburger and/or processed food the day before^c		
Yes	36	61.0
No	23	39.0
Had sweetened beverages the day before^d		
Yes	48	81.4
No	11	18.6
Had instant noodles, packaged snacks or savory biscuits the day before		
Yes	50	84.7
No	9	15.3
Had sponge cake, sweets, treats (candies, lollipops, chewing gum, caramel, gelatin) the day before		
Yes	49	83.1
No	10	16.9

^aNot including fruit juice; ^bnot including potatoes, cassava, manioc, coffee, yams; ^cham, mortadella, salami, sausage, sausage; ^dsoft drink, boxed juice, powdered juice, boxed coconut water, guarana syrup, black currant, fruit juice with added sugar.

Source: Authors.

In the qualitative survey on the perception of the quality of preschool children's meals and their oral hygiene before and after the lecture, the number of those who rated the quality of meals and oral hygiene as poor and satisfactory decreased, while the number of those who rated it as good increased in both schools. Moreover, fewer parents/guardians reported that the lecture was not very helpful because they already knew most of the information, while more parents/guardians reported that they did not know most of the information and found the lecture helpful (see Table 2).

Table 2. Perceptions of parents/guardians regarding the quality of meals, oral hygiene of their children and the effectiveness of educational conversations in decision-making regarding food choices and oral hygiene before and after the intervention. Nova Crixás - GO (public school) and Mozarlândia – GO (private school), 2023/2024.

Perception of the quality of meals for preschool children	Type of School	n (before)	%	n (after)	%
Poor	Public	3	5.1	0	0.0
	Private	3	5.1	0	0.0
Satisfactory	Public	17	28.8	9	15.5
	Private	23	39.0	13	22.4
Good	Public	8	13.6	18	31.0
	Private	5	8.5	18	31.0
Quality and frequency of oral hygiene of preschoolers					
Poor	Public	1	1.7	0	0.0
	Private	0	0.0	0	0.0
Satisfactory	Public	22	37.3	3	5.2
	Private	18	30.5	4	6.9
Good	Public	5	8.5	24	41.4
	Private	7	11.9	24	41.4
Excellent	Public	0	0.0	0	0.0
	Private	6	10.2	3	5.2
Did the lecture help to make decisions about the nutrition and oral hygiene of preschool children?					
A little, most of it I already knew	Public	19	32.2	3	5.2
	Private	16	27.1	3	5.2
Yes, I didn't know most of the information	Public	4	6.8	11	19.0
	Private	1	1.7	4	6.9
Yes, it was very helpful	Public	5	8.5	13	22.4
	Private	14	23.7	24	41.4

Source: Authors.

When the same question was addressed quantitatively, a statistically significant difference ($p < 0.001$) was found in the median perception of the quality of meals and oral hygiene when the schools were analyzed together. This indicates an improvement in these aspects after the lecture (see Table 3).

Table 3. Perception of the quality of meals and oral hygiene of preschool children before and after the lecture. Nova Crixás - GO and Mozarlândia – GO, 2023/2024.

Perception	n	Median	Minimum	Maximum
Quality of meals for preschool children (rating 0-10) (before)	59	6.0	4.0	10.0
Quality of meals for preschool children (after) (rating 0-10)	58	8.0*	5.0	10.0
Quality and frequency of oral hygiene in preschool children (before) (rating 0-10)	59	7.0	4.0	10.0
Quality and frequency of oral hygiene in preschool children (after) (rating from 0-10)	58	8.0*	5.0	10.0

Wilcoxon test. *p<0.001.

Source: Authors.

In comparing perceptions of food quality between public and private schools at different time points, the two-way ANOVA revealed a significant difference between time points ($F=34.58$, $p<0.001$). However, there was no significant interaction between school type and time point ($F=0.01$, $p=0.915$). Regarding the perception of oral hygiene quality, there was a significant difference between time points ($F=44.6$, $p<0.001$) and a significant interaction between school type and time point ($F=4.03$, $p=0.05$). Further analysis using Tukey's post-hoc test showed significant differences between before and after for both the public ($p<0.001$) and the private school ($p=0.006$) (Data not showed).

Table 4 shows the relationships between the variables assessed by the SISVAN questionnaire and the type of preschool attended by the children. Based on Fisher's exact test, significant associations were found between the consumption of fresh fruit and instant noodles, packaged snacks, or savory cookies the day before completing the questionnaire and the type of school. The adjusted standardized residuals indicated that both "Yes" and "No" categories were significantly associated with the type of school.

Table 4. Association between SISVAN questionnaire responses of parents/guardians and type of school of preschoolers. Nova Crixás - GO (public school) and Mozarlândia – GO (private school), 2023/2024.

TYPE OF SCHOOL				
Has meals while on mobile devices (before)	Public	Private	Adjusted residuals	p
Yes	17	25	1.7	0.149
No	11	26	1.7	
Has meals while on mobile devices (after)				
Yes	17	19	0.1	1.000
No	10	12	0.1	
Had beans the day before (before)				
Yes	22	24	0.1	0.634
No	5	7	0.5	

Doesn't know	1	0	1.1	
Had beans the day before (after)				
Yes	21	23	0.3	
No	5	8	0.7	0.535
Doesn't know	1	0	1.1	
Had fresh fruit the day before (before)^a				
Yes	19*	30	3	
No	7	1*	2.4	0.006
Doesn't know	2	0	1.5	
Had fresh fruit the day before (after)^a				
Yes	17*	31	3.7	
No	9	0*	3.5	<0.001
Doesn't know	1	0	1.1	
Had vegetables the day before (before)^b				
Yes	14	23	1.9	
No	13	8	1.7	0.078
Doesn't know	1	0	1.1	
Had vegetables the day before (after)^b				
Yes	21	18	1.6	
No	5	13	1.9	0.087
Doesn't know	1	0	1.1	
Had hamburger and/or sausage the day before (before)^c				
Yes	18	18	0.5	
No	10	13	0.5	0.790
Had hamburger and/or sausage the day before (after)^c				
Yes	7	8	0	
No	20	23	0	1.000
Had sweetened beverages the day before (before)^d				
Yes	22	26	0.5	
No	6	5	0.5	0.741
Had sweetened beverages the day before (after)^d				
Yes	6	8	3	
No	21	23	3	0.770
Had instant noodles, packaged snacks or savory biscuits the day before (before)				
Yes	19*	31	3.4	
No	9	0*	3.4	0.001
Had instant noodles, packaged snacks or savory biscuits the day before (after)				
Yes	7	6	0.6	
No	20	25	0.6	0.753
Had filled cookies, sweets, treats (candies, lollipops, chewing gum, caramel, gelatin) the day before (before)				
Yes	25	24	1.2	0.306

No	3	7	1.2	
Had filled cookies, sweets, treats (candies, lollipops, chewing gum, caramel, gelatin) the day before (after)				
Yes	15	17	0.1	1.000
No	12	14	0.1	

#Main effects by Fisher's exact test. *significant difference between school types in the same category (*indicates values higher or lower than those expected by the Fisher test), as determined by the adjusted Bonferroni test. ^anot including fruit juice; ^bnot including potatoes, cassava, manioc, coffee, yams; ^cham, mortadella, salami, sausage, sausage; ^dsoft drink, boxed juice, powdered juice, boxed coconut water, guarana syrup, blackcurrant, fruit juice with added sugar.

Source: Authors.

When assessing the association between perceptions of food quality, oral hygiene, and whether the lecture helped with food and oral hygiene decision-making and the type of school with SISVAN data from preschool children after the lecture, it can be seen that the number of those who reported having poor perceptions of food (in both schools) decreased after the lecture, while the number of those who reported being good increased. The classification of oral hygiene as poor was also reduced in both schools and the frequency of those who rated the lecture as good and very helpful increased.

As for the SISVAN data, it was found that the consumption of hamburgers and/or sausages and sweetened drinks decreased in both schools, while the number of those who reported not consuming them increased. Finally, the frequency of those who stated that they had instant noodles, packaged snacks, or savory snacks the previous day decreased, and the frequency of those who did not increased (Table 5).

Table 5. Association of sociodemographic and SISVAN variables questionnaire with type of school attended by preschoolers. Nova Crixás - GO (public school) and Mozarlândia – GO (private school), 2023/2024.

Time point						
	Type of School	Before (poor and regular)	After (poor and regular)	X ²	df	p
Quality of preschoolers' meals	Public	19	9	8.3	1	0.004
	Private	26	13			
		Before (Good)	After (Good)			
	Public	8	18	7.3	1	0.007
	Private	5	18			
Quality and frequency of oral hygiene in preschool children		Before (poor and regular)	After (poor and regular)			
	Public	22	3	10.7	1	0.001
	Private	18	4			
		Before (Good)	After (Good)			

	Public	5	24	3.3	1	0.071
	Private	13	27			
		Before (a little)	After (a little)			
Did lecture help to make decisions about the nutrition and oral hygiene of preschool children	Public	18	9	2.0	1	0.162
	Private	16	15			
		Before (A lot)	After (A lot)			
	Public	3	24	16.3	1	< .001
	Private	3	28			
		Before (Yes)	After (Yes)			
Has meals while on mobile devices	Public	17	17	1.5	1	0.217
	Private	25	19			
		Before (No)	After (No)			
	Public	10	10	1.0	1	0.317
	Private	6	12			
		Before (Yes)	After (Yes)			
Had beans the day before	Public	21	21	0.2	1	0.655
	Private	24	23			
		Before (No)	After (No)			
	Public	6	6	0.0	1	0.782
	Private	7	8			
		Before (Yes)	Post (Yes)			
Had fresh fruit the day before^a	Public	18	17	3.6	1	0.058
	Private	30	31			
		Before (No)	After (No)			
	Public	9	10	3.4	1	0.210
	Private	1	0			
		Before (Yes)	After (Yes)			
Had vegetables the day before^b	Public	14	21	0.1	1	0.763
	Private	23	18			
		Before (No)	After (No)			
	Public	13	6	0.3	1	0.593
	Private	8	13			
		Before (Yes)	After (Yes)			
Had hamburgers and/or sausages the day before^c	Public	17	7	4.8	1	0.028
	Private	18	8			
		Before (No)	After (No)			
	Public	10	20	1.5	1	0.223
	Private	13	23			
		Before (Yes)	After (Yes)			
Had sweetened beverages the day before^d	Public	22	6	12.5	1	< .001
	Private	26	8			
		Before (No)	After (No)			
	Public	5	21	9.8	1	0.002
	Private	5	23			
		Before (Yes)	After (Yes)			
Had instant noodles, packaged snacks or	Public	18	7	15.2	1	< .001
	Private	31	6			

savory biscuits the day before	Before (No)		After (No)		20.0	1	< .001
	Public	9	20				
	Private	0	25				
Had filled cookies, sweets, treats (candies, lollipops, chewing gum, caramel, gelatin) the day before	Before (Yes)		After (Yes)		2.1	1	0.150
	Public	24	15				
	Private	24	17				
	Before (No)		After (No)		1.3	1	0.251
	Public	3	12				
	Private	7	14				

#Main effects of Fisher's exact test. *Significant difference between schools in the same category (*indicates values higher or lower than those expected by the Fisher test), as determined by the adjusted Bonferroni test. ^anot including fruit juice; ^bnot including potatoes, cassava, manioc, coffee, yams; ^cham, mortadella, salami, sausage, sausage; ^dsoft drink, boxed juice, powdered juice, boxed coconut water, guarana syrup, blackcurrant, fruit juice with added sugar.
Source: Authors.

DISCUSSION

The results of this research provide important data on the eating and oral hygiene habits of preschool children and the impact of an educational lecture on the outcomes. The composition of the parent/caregiver sample reflects a relevant demographic diversity, with a predominance of women, people of brown skin color, married people, and people with a high-school education. These data demonstrate the importance of considering multiple sociodemographic factors when assessing eating behaviors and oral hygiene patterns.

Regarding the data on eating behavior and consumption of certain foods as assessed by parents/guardians, it was observed that the majority (71.2%) of preschoolers ate their meals while watching some type of mobile device. This trend is alarming, given that screen use during meals is linked to a range of adverse effects. Research shows that it is associated with less healthy food choices, decreased satiety feeling, and negative impacts on social interactions and oral health. For instance, children may be less likely to engage in family conversations and more prone to overeating unhealthy snacks, potentially leading to long-term health issues (Antoniassi et al., 2024).

In relation to the consumption of certain foods, it's worth noting that while the majority of parents stated that their children had eaten foods considered healthy (such as beans, fresh fruit, and vegetables) the day before the survey, they also reported that their children had consumed unhealthy foods (including hamburgers, sweetened drinks, instant noodles, packaged snacks, cookies, candy, and sweets). These findings indicate potentially concerning dietary habits, such as frequent intake of highly processed foods and sugary beverages, which may contribute to the

development of oral diseases and other health issues (Alvarenga et al., 2017). The same way that a person who exercises at least five times a week for at least one hour a day and yet spends ten hours of their day sitting down can be considered physically active, a person can have a high consumption of healthy and unhealthy foods at the same time.

In analyzing the impact of the lecture on the perception of the quality of meals and oral hygiene of preschool children, the number of parents who rated their children's quality of meals and oral hygiene as poor and regular decreased, while the number of those who rated it as good increased after the lecture. This demonstrates that the lecture was effective in improving these aspects. Other studies have also indicated that a simple, playful, and practical intervention can have a positive impact on the quality of meals, leading to improved eating habits and acceptance of healthy foods by children (Sigaud et al., 2017).

Another aspect worth emphasizing is the decrease in the number of parents/guardians who indicated that the lecture was of little help because they already knew most of the information and the increase in the number of those who indicated that they did not know most of the information, showing that parents/guardians changed their minds about the lecture within two months. This fact could open up new areas of research aimed at assessing parents'/guardians' change of opinion regarding their perception of their knowledge about healthy eating and their children's oral hygiene.

The lecture was also effective in increasing the self-reported scores of parents/guardians on the perception of the quality of food and oral hygiene of preschoolers when the public and the private schools were assessed together. When the schools were analyzed individually, it was found that the difference between the pre- and post-lecture scores for food quality no longer existed, while the difference between time points for oral hygiene remained in both schools. This shows that parents/guardians of both schools internalized the concepts taught and were able to apply them similarly each within their own environments. Other studies have shown that educational lectures have a positive impact on children's food choices and oral health (Garbin et al., 2012), as they allow them to acquire knowledge and develop skills that enable individuals to form or change their attitudes toward their health. Countless variables can affect the results of a study that aims to evaluate the impact of an educational lecture. Therefore, in studies with larger samples, control variables must be used in statistical models.

The consumption of fruit by the students of the private school was higher, as was the consumption of instant noodles, packaged snacks, or savory cookies both before and after the

lecture. This, again, indicates that food choice is not determined solely by the socioeconomic level and educational background of parents or guardians. The consumption of processed foods affects everyone and needs to be strongly combated through public policies. In this respect, a recent decree was published to, for example, reduce or eliminate the supply of processed foods in the basic food basket of the Brazilian population (Brasil, 2024).

Finally, the results indicate: (a) a decrease in the number of those who had a poor perception of food (in both schools), with a corresponding increase in the number of those had a good perception after the lecture; (b) a decrease in those who classified the oral hygiene of preschoolers at both schools as poor and an increase in the frequency of those who rated the lecture as good and very helpful; (c) a decrease in the consumption of hamburgers and/or sausages and sweetened drinks and an associated increase in the number of those who reported not consuming these foods the day before the survey in both schools; and (d) a decrease in the frequency of those who reported consuming instant noodles, packaged snacks or savory snacks the previous day and an increase in the frequency of those who denied this; these results indicate that the lecture was indeed effective in changing most undesirable eating habits.

Data from SISVAN (Brasil, 2015) provided further evidence of the positive impact of the educational intervention, with significant reductions in the consumption of foods that are harmful to oral health and increases in the frequency of healthier food choices. These results confirm the importance of educational strategies in promoting healthy eating habits from an early age and highlight the potential of simple interventions, such as an informative lecture, in inducing positive changes in eating and oral hygiene behavior.

This study had some limitations. First, the sample size and location of the schools may not represent the entire population of preschool children in Brazil. Second, the fact that parents/guardians were invited to attend a professional lecture about making healthier decisions may have influenced their responses leading to a confirmation bias. Finally, the SISVAN questionnaire does not evaluate the decisions parents/guardians made after the lecture in the long term, as the items often refer to the day before the interview. Therefore, our results must be interpreted under the appropriate conditions.

In summary, the findings of this study underscore the significance of educational interventions aimed at fostering healthy eating habits and oral hygiene practices among preschool children. These interventions play a crucial role in increasing parental and guardian awareness regarding the significance of oral and nutritional health, while also exerting a positive influence

on children's dietary behaviors. Consequently, they contribute substantially to the prevention of oral diseases and the promotion of overall health from an early age.

CONCLUSION

The results of this study emphasize the importance of educational interventions aimed not only at children but also at parents and guardians to promote healthy eating habits and oral hygiene in preschool children. It is hoped that the results of this study can contribute to further future research that will serve as a basis for the development of public health policies and programs to promote oral and nutritional health in preschool children, hence enabling a healthier and more promising future for generations to come.

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