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THE FOOD SELECTIVITY OF CHILDREN WITH AUTISM SPECTRUM DISORDER ENROLLED IN NATEA CAETÉS

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ABSTRACT

Introduction: Autism Spectrum Disorder (ASD) is understood as a neurological disorder characterized by behavioral heterogeneity, affective blunting and stereotyped behaviors. Objective: To understand the eating habits of children with Autism Spectrum Disorder and what are the main foods and restriction regarding the child's diet. Methodology: It is an observational, cross-sectional study, with a qualitative descriptive approach, since the objective is to observe and deepen the food selectivity of autistic children. The target population will be the mothers of children with autism spectrum disorder registered in NATEA in the municipality of Capanema. Results: The sample consisted of 42 participants, of which 85.71% were male, reflecting the male predominance often observed in ASD diagnoses. The most represented age group was from 5 to 12 years old (61.90%), and most participants identified themselves as brown (85.72%). Regarding the diagnosis, 64.29% of the children were diagnosed between 1 and 5 years of age, and the levels of support varied between mild (33.33%), moderate (40.48%) and intense (26.19%) support. Regarding food, 80.49% of the children showed food selectivity, with a greater preference for carbohydrates and sweets, and low acceptance of vegetables and fats. Meal times were challenging for caregivers, with 70.97% reporting greater difficulty in starting meals, suggesting initial resistance to food engagement. In addition, 80% of participants reported difficulties with food consistency, highlighting the importance of tailored nutritional interventions. Conclusion: The results indicate the need for integrated strategies to improve food acceptance and provide emotional support to caregivers. It is concluded that the demographic profile, associated with food selectivity and socioeconomic difficulties, reinforces the importance of multidisciplinary support programs to promote a balanced diet and well-being for this population.

Keywords: Autism. Autism Spectrum Disorder. Feeding. Children. TEA. Restrictions.

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INTRODUCTION

Autism Spectrum Disorder (ASD) is characterized as a neurological disorder that manifests a wide behavioral heterogeneity, affective blunting and stereotyped behaviors, being part of a set of psychiatric disorders of neurological development. These disorders are mainly defined by deficits in social interactions, interpersonal communication, and repetitive and stereotyped behaviors, often associated with intellectual disabilities1. Additionally, food selectivity is a common characteristic in children with ASD, directly influencing family dynamics, especially during meals. This selectivity can be exacerbated by sensory sensitivities to aspects such as smell, texture, color, temperature, taste, and even noises produced by food, and many parents report a preference of their children for foods with a crunchy texture and salty taste2.

Studies indicate that such dietary peculiarities present significant challenges in everyday social communications and interactions, in addition to impacting the restricted and repetitive behavioral patterns of children with ASD3. The persistence of these difficulties highlights the importance of early diagnosis and treatment, which can not only help mitigate parental stress, but also improve communication within the family environment. Unfortunately, prejudice still persists, and many parents are hesitant to accept the diagnosis, compromising the effectiveness of therapeutic interventions.

Food selectivity in children with Autism Spectrum Disorder (ASD) is often influenced by their unique sensory sensitivities, which affect the perception and acceptance of different foods. This condition can result in an extremely restrictive diet, often limiting yourself to foods of specific textures and flavors. Such restrictions can lead to significant nutritional challenges, including deficiencies in essential vitamins and minerals, which are crucial for child development and overall well-being. The literature highlights that nutritional intervention, when carefully administered, can play a key role in improving the quality of life of children with ASD, by addressing not only their specific dietary needs, but also by promoting more varied and healthy eating habits4. Thus, it is essential that health professionals, educators and caregivers are able to identify and implement effective food management strategies, adapted to the particularities of each child, to ensure adequate nutrition and improve their quality of life.

This research sought to understand the eating habits of children with ASD and assess how the lack of knowledge about these specific needs can impact families.

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METHODS

The methodology of the present research was designed in accordance with the ethical principles established by the international guidelines of the Declaration of Helsinki and the Nuremberg Code. In addition, it complied with the Standards for Research Involving Human Beings, according to Resolution No. 466/2012 of the National Health Council (CNS). The research was submitted to and approved by the Research Ethics Committee (CEP) of the State University of Pará, under opinion number 6,720,743.

The parents or guardians of the children participating in the research were informed in detail about the objective and procedures of the study. They received the Informed Consent Form (ICF), which was read and signed by those who agreed to participate. The data collected will be used exclusively for this research and kept confidential for five years, as stipulated by Resolution No. 466/2012 CNS. After this period, electronic records will be deleted and physical documents incinerated, ensuring the confidentiality and protection of participants' information.

This study is characterized as observational, cross-sectional, with a descriptive qualitative approach, aiming to investigate food selectivity in children diagnosed with Autism Spectrum Disorder (ASD). The target population includes mothers and/or guardians of children with ASD registered at the Center for Assistance to People with Autism Spectrum Disorder (NATEA) in the municipality of Capanema, Pará.

The interviews were conducted in a calm and inclusive environment, in the NATEA-CAETE waiting room, providing mothers with a safe space to express their concerns and expectations while waiting for their children's multidisciplinary care.

The exclusion criteria include mothers who are not present at the time of the research or who have difficulties in understanding the importance of the study. Data collection was carried out through a self-administered questionnaire, consisting of objective questions about the personal data of children and their guardians, as well as questions related to food selectivity and the strategies used by guardians to deal with this behavior.

Among the topics investigated, the parents or guardians were asked if the child or adolescent had food selectivity, if they had specific preferences during the main meals (breakfast, lunch and dinner), and what these preferences were, if any. In addition, the questionnaire sought to identify whether the child had difficulties with the consistency of certain foods and how the parents or guardians dealt with these difficulties. The strategies that parents or guardians adopt to minimize food selectivity and whether this selectivity has

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already caused any negative impact on the child's health were also explored, requesting details about these possible damages. Finally, it was asked if the child undergoes nutritional monitoring.

The collected data were organized and described using the Microsoft® Word software, with the support of tables generated in Microsoft® Excel. To ensure the anonymization of the data, the participants were identified by alphanumeric codes formed by the initials of their names and a sequential number (e.g., AP1, GAT2), ensuring the confidentiality of the information provided.

RESULT

The sample of this research consisted of 42 children, residents of the municipality of Capanema, metropolitan region of the state of Pará, who were being monitored at NATEA-CAETÉ, in the period of August and September 2024.

Table 1 presents the demographic data and profile of the individuals diagnosed with Autism Spectrum Disorder (ASD) included in the study. Regarding gender, most participants were male, corresponding to 85.71% (n=36), while 14.29% (n=6) were female. The age distribution showed a predominance of individuals in the 5 to 12 year age group (61.90%).

Regarding race, most participants identified themselves as brown (85.72%), with a lower representation of white (11.90%) and black (2.38%) individuals. Regarding the level of support required, 40.48% of the participants were classified as support level 2, followed by support level 1 (33.33%) and support level 3 (26.19%).

Regarding the diagnosis of ASD, 30.95% of the individuals were diagnosed between 1 and 3 years of age, and 33.34% received the diagnosis between 4 and 5 years of age. These data show a mostly male profile, with a higher prevalence of brown children and an age group concentrated between 5 and 12 years, in addition to a diversity in support levels and diagnosis times within the autistic spectrum.

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Table 01: Demographics and ASD profile

Variable	Category	Quantity	Percentage
Gender	Male	36	85,71
	Female	6	14,29
	Total	42	100,00
Age group	0 to 1.6 years	1	2,38
	1.6 to 3 years	-	-
	3 to 5 years	6	14,29
	5 to 12 years	26	61,90
	13 to 19 years old	9	21,43
	Total	42	100,00
Race	Brown	36	85,72
	White	5	11,90
	Black	1	2,38
	Total	42	100,00
TEA Support Level	1	14	33,33
	2	17	40,48
	3	11	26,19
	Total	42	100,00
Diagnosis of ASD	Less than 1 year	4	9,52
	Between 1 and 3 years	13	30,95
	Between 4 and 5 years	14	33,34
	Between 6 and 10 years old	9	21,43
	Above 10 years old	2	4,76
	Total	42	100,00

Source: Prepared by the authors, 2024.

The data presented in Table 02 detail the socioeconomic and educational profile of the parents or guardians of the children and adolescents assisted by NATEA-CAETÉS. Regarding monthly income, it was observed that 57.15% of the caregivers have a monthly per capita income between 1 and 3 minimum wages, while 35.71% have an income below one minimum wage.

Regarding education, 38.10% of parents and guardians have completed high school and 35.71% have higher education, either complete or incomplete. These data indicate a relatively high educational level among those in charge. In addition, 58.54% of the parents or guardians declared themselves to be home workers, suggesting that many take care of their children full time, being dependent on the help offered to children and adolescents.

Regarding the number of people per household, 38.10% of the households have 4 residents, while 26.19% have 3 residents. As for the occupation of parents and guardians, in addition to the majority being housewives, 24.39% are self-employed and 14.63% are salaried. The analysis of the contribution to family income reveals that, in 97.62% of households, only one or two people contribute to the total income. These results indicate that, although most families have a relatively low income, there is a high level of education

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among those responsible for them, which may reflect in the dedication to the care of children and adolescents with ASD.

Table 02: Socioeconomic and education data

Variable	Category	Quantity	Percentage
Number of People in the Address	1 or 2	5	11,90
	3	11	26,19
	4	16	38,10
	5	7	16,67
	6	2	4,76
	Above 6	1	2,38
	Total	42	100,00
Parents/Guardians' Education	Illiterate	1	2,38
	E.F.I.	6	14,29
	E.F.C.	1	2,38
	E.M.I.	3	7,14
	E.M.C.	16	38,10
	E.S.I.	15	35,71
	Total	42	100,00
Parent/Guardian Occupation	From Home	24	58,54
	Autonomous	10	24,39
	Wage earner	6	14,63
	Fisherman	1	2,44
	Total	41	100,00
Average Monthly Income	Less than 1 minimum wage	15	35,71
	From 1 to 3 salaries	24	57,15
	From 3 to 6 salaries	1	2,38
	From 6 to 8 salaries	1	2,38
	Above 8 salaries	1	2,38
	Total	42	100,00
Daily Workload	Between 4 and 6 hours	6	35,30
	Between 6 and 8 hours	5	29,41
	Between 8 to 12 hours	5	29,41
	Less than 4 hours	1	5,88
	Total	17	100,00
Number of People Contributing to Income	1 or 2	41	97,62
	3	1	2,38
	Total	42	100,00

Source: Prepared by the authors, 2024.

Figure 01 presents the results obtained from the evaluation of meal times experienced by the guardians of children and adolescents with ASD. The difficulty scale ranged from "Very Difficult" (D.), "Relatively Difficult" (R.D.), "Moderate" (M.), "Relatively Easy" (R.F.) and "Easy" (F.).

The data indicate that 29.26% of the guardians of children and adolescents with ASD considered the moment of meals "Very Difficult", representing the highest percentage observed. For 9.76% of the respondents, the meal times were "Relatively Easy" and

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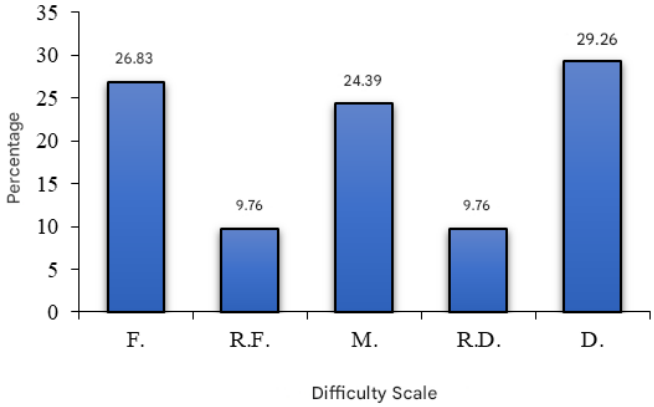
"Relatively Difficult", respectively. These results suggest a balanced distribution between extreme difficulties (very difficult) and quieter moments (easy), highlighting that a considerable part of caregivers face significant challenges during meals with their children.

Figure 01: Meal times



Source: Prepared by the authors, 2024.

The evaluation carried out on the presence of food selectivity among children and adolescents with ASD revealed that 80.49% of the participants have food selectivity, while 19.51% do not demonstrate this behavior. These results suggest that the vast majority of children/adolescents with ASD included in the study have restricted food preferences.

Figure 02 illustrates the results of the assessment of the moments when children or adolescents with ASD tend to refuse food during meals. The analysis was based on three distinct periods: "Beginning of the meal", "During the meal" and "End of the meal".

The data reveal that most caregivers reported that food refusal occurs predominantly at the beginning of the meal, with 70.97% of the participants indicating this moment as the most challenging. Next, 19.35% of the caregivers reported that the refusal occurs during the meal, and only 9.68% reported difficulties at the end of the meal. These results suggest that most children and adolescents show resistance right at the beginning of the feeding moment, which may indicate an initial challenge in engaging with the meal. These data are essential to direct more effective dietary intervention strategies for this population.

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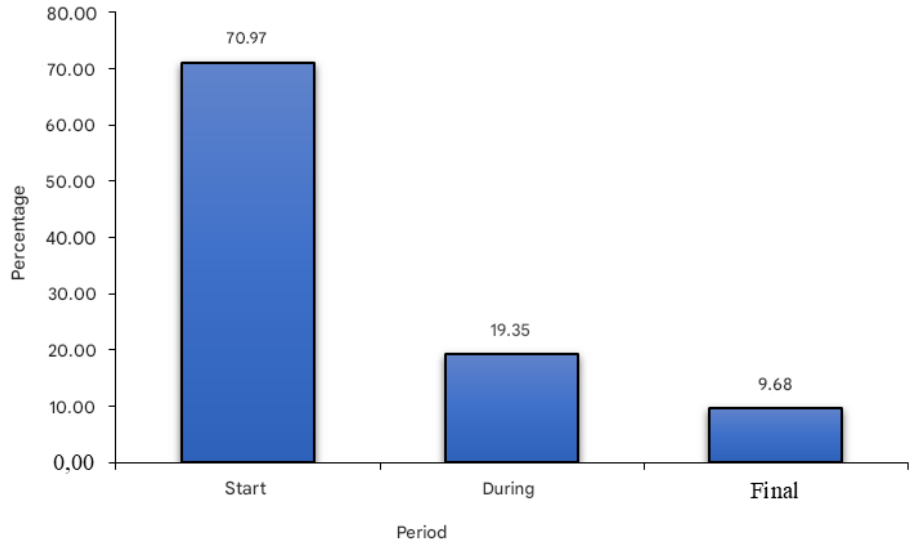
Figure 02: Food refusal



Source: Prepared by the authors, 2024.

When the parents were asked about their children's difficulties with the consistency of food. The majority of respondents, representing 80%, indicated that their children have difficulties with the consistency of food. On the other hand, 20% of the guardians reported that their children do not have this type of difficulty. These results indicate that food consistency is a relevant factor in the diet of children and adolescents with ASD, which may require adjustments in the preparation and presentation of foods to improve food acceptance and behavior.

Figure 03 presents the results of the assessment of the food preferences of children and adolescents with ASD. Among the foods analyzed, carbohydrates were the most mentioned, with 27.94% of the responses, indicating a clear predilection for foods such as bread, rice, pasta and cereals.

Next, foods classified as sugars and sweets and fruits both received 19.12% of the responses, also pointing to a significant preference for items such as cakes, cookies, and fruits such as apples and bananas. Proteins, such as meat and eggs, were preferred by 14.71% of the children, while dairy products (milk, cheese, yogurt) accounted for 11.76%.

Foods such as vegetables (broccoli, carrots, spinach) obtained a lower percentage of preference, with 5.88%, and fats and oils (such as butter and avocado) were mentioned by only 1.47% of the participants. These data suggest that children with ASD tend to prefer foods rich in carbohydrates and sweets, with low acceptance of vegetables and fats, which

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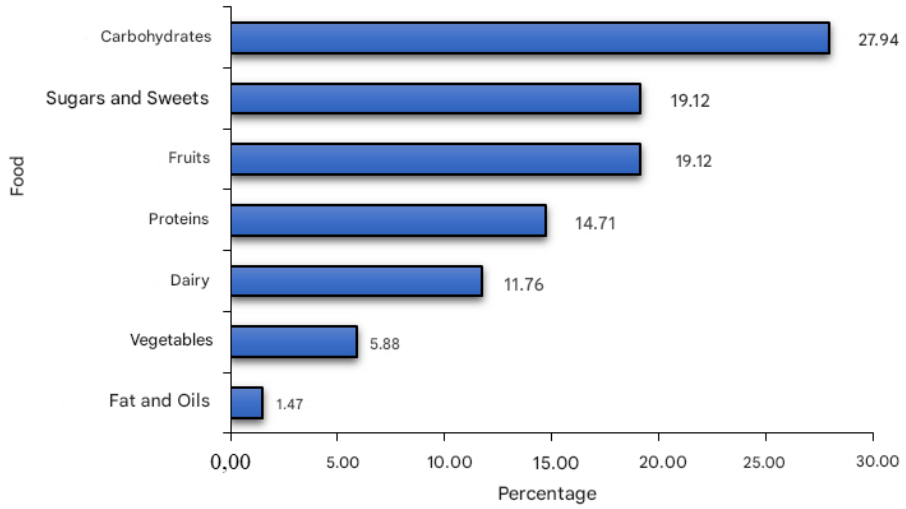
can directly influence the nutritional quality of their diets and demand special attention for food diversification.

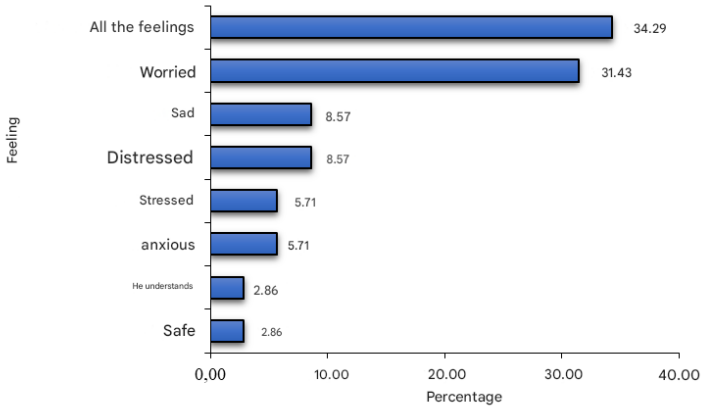
Figure 03: Food predilection



Source: Prepared by the authors, 2024.

The evaluation of the feelings of the caregivers in the face of the difficulties faced in care revealed varied results, as shown in Figure 04. The majority of participants, 34.29%, reported experiencing all the feelings mentioned, demonstrating a significant emotional overload. In addition, 31.43% reported feeling worried about these difficulties.

Figure 04: Feelings in the Face of Difficulties



Source: Prepared by the authors, 2024.

Figure 05 presents the results of the evaluation of the strategies used by the parents or guardians to minimize food selectivity. The most common strategy reported was dialogue, used by 38.24% of the participants, followed by negotiation, mentioned by

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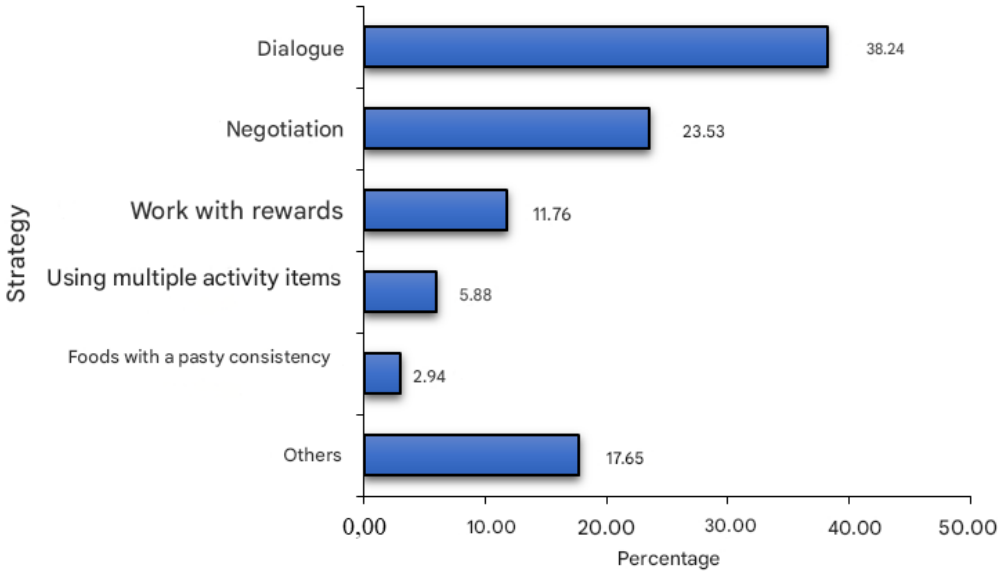
23.53%. These results indicate that dialogue and negotiation approaches are the most common among caregivers to deal with food selectivity, highlighting the importance of constant communication and interactive strategies to encourage food acceptance.

Figure 05: Strategies to Minimize Selectivity



Source: Prepared by the authors, 2024.

DISCUSSION

The present study identified a high prevalence of food selectivity among children and adolescents with Autism Spectrum Disorder (ASD) treated at Natea, in Capanema-PA. The observed preference for foods rich in carbohydrates and with a pasty consistency is in line with studies that highlight that children with ASD tend to have restricted eating patterns, contributing to an unbalanced intake of essential nutrients, such as fiber, iron, and vitamins (Molina-López et al., 2021). These behaviors may originate from sensory sensitivities, often reported in individuals with ASD, which negatively influence the acceptance of foods of different textures and flavors.

Our findings reflect the most recent literature, which indicates that food selectivity is common in children with ASD, affecting between 46% and 89% of this population, and is less prevalent in neurotypical children (Silva et al., 2024). In addition, this selectivity is associated with repetitive behaviors and difficulty accepting change, resulting in a higher risk of nutritional deficiencies, such as low calcium and vitamin D levels (Molina-López et al., 2021; Silva et al., 2024).

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Regarding the prevalence of ASD, our data corroborate studies that demonstrate a higher incidence in boys. The male-to-female prevalence ratio, traditionally reported as 4:1, has been explained by genetic and environmental factors. Studies suggest that sex hormones, such as fetal testosterone, may play a critical role in the development of behaviors associated with ASD (Li et al., 2023). In addition, the presence of the SRY gene on the Y chromosome contributes to the development of male characteristics and can influence the differentiation of the central nervous system, increasing the predisposition to ASD in boys (PLOS Biology, 2016). The "female protective effect" theory also proposes that girls require a higher genetic load to develop clinical symptoms of ASD, due to greater neurobiological resilience (Li et al., 2023).

In addition to food selectivity, our results indicated that food refusal is particularly intense at the beginning of meals. This behavior causes frustration and anguish in caregivers, since the introduction of new foods is often rejected, as already described in the literature on ASD (Campello et al., 2021; Molina-López et al., 2021). Interventions involving family guidance and multidisciplinary support have been shown to be effective in reducing stress and improving eating habits in children with ASD (Silva et al., 2024).

Finally, despite the relevance of the results, the conduct of this study faced limitations, including a high rate of rejection in participation, resulting in a smaller sample than expected. However, the findings reinforce the need for targeted programs that help promote a more varied and balanced diet for children with ASD, in addition to offering psychological support to parents and caregivers.

With this reformulation, the argument was strengthened through recent and well-founded references that address both the prevalence of ASD and the genetic and behavioral aspects related to food selectivity and gender difference in diagnosis. Sources include Molina-López et al. (2021), Silva et al. (2024), Li et al. (2023), and reviews on genetic predisposition and hormonal factors in ASD (PLOS Biology, 2016)

CONCLUSION

From the results found in the present study, it was possible to conclude that food selectivity is directly linked to Autism Spectrum Disorder and constitutes the characteristics of sensory eating dysfunctions. The behavior observed was due to the predilection for carbohydrates by children and adolescents, and with the highest percentage of males to

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females. Such findings can contribute considerably to the scientific society and caregivers of children with ASD.

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