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Análise do estado nutricional, consumo e comportamento alimentares de crianças com transtorno do espectro autista

Analysis of nutritional status, consumption and eating behavior of children with autistic spectrum disorder

Abstract

Introduction: Children with autism spectrum disorder (ASD) have restricted or repetitive behaviors, such as food selectivity, which limits food variability and can be reflected in nutritional status. *Objective*: To trace the nutritional status, consumption and eating behavior of children with ASD in the municipality of Morada Nova, Ceará. *Methods*: A cross-sectional, quantitative and descriptive study was conducted with children aged three to 10years old diagnosed with ASD. Food consumption was evaluated through application of a Food Frequency Questionnaire answered by the parents/guardians, who also answered the Labyrinth Scale of Eating Behavior in ASD, composed of 26 questions. In addition, the children's weight and height were verified for analysis of nutritional status according to the anthropometric indices: Weight/Age (W/A), Weight/Height (W/H), Height/Age (H/A) and BMI/Age. *Results*: There were 27 children, most of whom were male (77.77% n=21). Foods in the groups of beans, cereals, meats and sweets obtained higher consumption scores. The eating behavior domains whichpresented the highest scores were: meal skills, rigid behaviors related to eating, and food selectivity. The majority of the sample was of adequate weight according to the W/A (74%) and BMI/A (51.8%) indices; and adequate height according to H/A (96.3%). *Conclusions*: Children with autism have preferences for foods from the groups of beans, cereals, meats and sweets, and have eating behavior problems. In addition, there was a higher prevalence of adequate weight among the participants.

Keywords: Autism Spectrum Disorder. Nutritional assessment. Eating behavior. Nutritional status. Food intake.

Resumo

Crianças com transtorno do espectro autista (TEA) possuem comportamentos restritos ou repetitivos, tais como a seletividade alimentar, que limitam a variabilidade alimentar, podendo se refletir no estado nutricional. *Objetivo*: Traçar o estado nutricional, o consumo e o comportamento alimentares de crianças com TEA no município de Morada Nova, Ceará. *Métodos*: Estudo transversal, quantitativo e descritivo, realizado

com crianças de três a dez anos de idade diagnosticadas com TEA. Avaliou-se o consumo alimentar através da aplicação de um Questionário de Frequência Alimentar respondido pelos responsáveis, que também responderam à Escala LABIRINTO de Comportamento Alimentar no TEA, composta por 26 perguntas. Adicionalmente, verificaram-se o peso e a estatura das crianças para análise do estado nutricional conforme os índices antropométricos: Peso/Idade (P/I), Peso/Estatura (P/E), Estatura/Idade (E/I) e IMC/Idade. ***Resultados***: Houve participação de 27 crianças, sendo a maioria do sexo masculino (77,77% n=21). Alimentos dos grupos de feijões, cereais, carnes e guloseimas obtiveram maiores *scores* de consumo. Os domínios de comportamento alimentar que apresentaram maiores pontuações foram: as habilidades nas refeições, os comportamentos rígidos relacionados à alimentação e a seletividade alimentar. A maioria da amostra estava com peso adequado de acordo com os índices P/I (74%) e IMC/I (51,8%); e estatura adequada conforme E/I (96,3%). ***Conclusões***: Crianças com autismo possuem preferências por alimentos dos grupos de feijões, cereais, carnes e guloseimas, e apresentam problemas de comportamento alimentar. Ademais, verificou-se maior prevalência de peso adequado entre os participantes.

Palavras-chave: Transtorno do Espectro Autista. Avaliação nutricional. Comportamento alimentar. Estado nutricional. Ingestão de alimentos.

INTRODUCTION

Autism spectrum disorder (ASD), more commonly known as autism, is defined as a category of neurodevelopmental disorders characterized by social and communication impairment, as well as restricted or repetitive behaviors that become more apparentin the second year of life, and whose intensity can vary. Genetic, environmental and physiological aspects can be related to development of ASD.[1]

The parameter currently used for measuring ASD prevalence is from the *Center of Diseases Control and Prevention* (CDC), an agency linked to the United States government, which revealed that the prevalence of ASD in 2020 was one in 36 eight-year-old children (about 2.7% of the population).[2] Projecting this proportion to the Brazilian population, which does not yet have epidemiological data on prevalence, it is possible to stipulate approximately 5.48 million autistic people in Brazil.

Food selectivity (ASD) stands outamong the behavioral changes common in children with ASD, which plays a crucial role in the quality of life of these children and is characterized by a lack of appetite, refusal to eat, and lack of interest in food. ASD is associated with sensory disorder and tactile defensiveness, which can directly affect acceptance of foods and textures, and can lead to greater resistance when trying new foods, configuring itself as a restricted eating habit with limited food variability.[3-5]

It is noteworthy that children with ASD are more likely to have unsatisfactory BMI values at the extremes of low weight or obesitywhen compared to children of typical development.[6] It has been verified that a combination of factors such as high food selectivity, inadequate food intake, low physical activity level, sedentary behavior, irregular sleep, genetics and medication use can contribute to an inadequate nutritional status.[7]

The nutritional status classification, whether by underweight or overweight, can be associated with several adverse health outcomes. It has additionally been proven that children and adolescents with ASD with feeding problems have higher rates of gastrointestinal symptoms, challenging behavior, and sensory problems.[8] At the same time, it is also mentioned that nutritional inadequacies due to an abnormal dietary pattern are also observed in children with ASD, which makes them susceptible to high nutritional risk and requires attention, since the childhood phase has a direct influence on their long-term development.[9]

Therefore, once food and nutritional problems are detected early, it is possible for nutritional interventions to be implemented in a timely manner. In addition, understanding the peculiarities that permeate the dietary pattern of these subjects is essential to ensure elaborating adequate, complete and safe conducts.

In view of the above and due to the increase in the incidence of children diagnosed with ASD, and considering that both nutritional deficiencies and excesses can cause damage to the growth and development of these children, a study was developed to outline the profile of nutritional status, food consumption and eating behavior of children with ASD in the municipality of Morada Nova, Ceará, Brazil.

METHODS

This is a cross-sectional and descriptive field study with a quantitative approach, developed during the months of June to August 2023 in a specialized center with multiprofessional care, located in Morada Nova, a municipality on the east coast of Ceará, 162 kilometers from the state capital city of Fortaleza.

The Center provides public service at the secondary care level and is composed of a multidisciplinary team which offers (among other services) specialized care to individuals with suspected and conclusive

diagnosis of autism or other similar disorders, such as oppositional defiant disorder (ODD) and attention deficit hyperactivity disorder (ADHD). Access to this service occurs through a reference form prepared by primary healthcare professionals.

The study had the voluntary participation of parents and children diagnosed with ASD, accompanied or waiting for a vacancy for care by the psychology service of the aforementioned institution. There were nine children monitored and 24 awaiting follow-up during the data collection period, totaling a population of 33 children.

Children aged three to 10 years, of both genders, diagnosed with ASD according to the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-V) were included.[1] Children diagnosed with a neurological disease, children who were ill, as well as those who changed territory during data collection or who did not attend on the scheduled days due to the distance from their home were excluded.

Data collection began after approval from the Research Ethics Committee (CEP) in June 2023, when there were already 53 children registered at the Center. However, the final sample after screening by the inclusion and exclusion criteria consisted of 27 children.

First, an analysis of the children's medical records was conducted with the Center's team to identify which would fit the inclusion criteria proposed in this study. Next, an invitation by telephone contact provided by the reference institution was made, the objective of the study was explained, and finally a meeting was scheduled to perform the data collection, which only began after signing the Informed Consent Form (ICF) by the parents and the Informed AssentForm (IAF) by the child studied.

A form prepared by the researcher was initially applied to identify the sociodemographic characteristics of each participant, containing questions regarding the child's age, gender, address, source of income, use of medications and behavior.

Habitual food consumption was investigated through application of a Food Frequency Questionnaire (FFQ), which was answered by the person in charge. The FFQ developed by Baptista[10] was applied in order to contemplate the age group studied, and 87 items were analyzed, divided into nine food groups. The following possibilities for the consumption frequency of each studied food included: never, less than 1 time a month, 1-3 times a month, 1 time a week, 2-4 times a week, 1 time a day, 2-3 times a day, 4 or more times a day. Considering that the questionnaire presents space for the inquiry of other foods consumed and due to the habit and food culture of the region where the study was developed, it is noteworthy that all parents were also asked about the consumption frequency of couscous, tapioca and some cereal flour used to prepare porridge.

Next, each FFQ response was assigned a score of their own authorship ranging from 0 to 6to analyze food intake, which was useful to identify the group and food items most consumed by these children. Foods that were rarely or never consumed received the lowest score, 0; those consumed less than 1 time a month, score 1; 1-3 times a month, score 2; 1 time a week, score 3; 2-4 times a week, score 4; 1 time a day, score 5; and those consumed more than 1 time a day received a score of 6. The scores of each group were added and the result divided by the number of foods in the group. It is noteworthy that couscous, tapioca and cereal flour were included in the group count for cereals, breads and tubers.

Each guardian answered the tool entitled Labyrinth Scale for the Assessment of Eating Behavior in ASD[11] in order to characterize the eating behavior of the children studied. This is a recently validated tool composed of 26 problems or difficulties related to this aspect, with answer options ranging from 0 (no) to 4 (always). The purpose is to identify the eating behavior dimensions which are altered in individuals with ASD,

namely: Motricity in chewing; Food selectivity; Meal skills; Inappropriate behavior related to meals; Rigid behaviors related to food; Oppositional behavior related to food; and Food allergies and intolerance.

The 26 questions of the LAZE scale answered by the parents/guardians, were subdivided into seven different dimensions of eating behavior, namely: four questions about the Motricity factor in chewing; three about Food selectivity; five about Meal skills; two about Inappropriate behavior related to meals; six about Rigid behaviors related to food; three about Oppositional behavior related to food; and three on Allergies and food intolerance.[11]

The scores for each of these seven factors were summed separately to obtain the specific score for each factor. With this, it was possible to identify which eating behavior dimension was most altered in each child.

Anthropometric data such as weight and height were collected for nutritional status, which were subsequently used to calculate body mass index (BMI). Weight was determined using a Multilaser® digital scale, which holds a maximum of 180 kg. The scale was turned on just before weighing each child, and the child was positioned in the center of the equipment with light clothing, barefoot, upright position and with the feet together and their arms extended along the body.[12]

Height was obtained using a Biopulse® digital stadiometer with graduation in centimeters (cm) and a maximum capacity of 2 meters. The child was measured standing, barefoot and without the presence of head props, in an upright position, lower limbs together, arms extended along the body and head following positioning in the Frankfurt plane.[12]

The nutritional status diagnosis was established by anthropometric indices recommended by the World Health Organization (WHO) and adopted by the Ministry of Health (MoH). The following indices for children aged between 3 (36 months) and 5 years (60 months) were used: Weight/Age (W/A), Weight/Height (W/H), Height/Age (H/A), BMI/Age (BMI/A). In addition, the following were used for those aged between 5 years (61 months) and 10 years (120 months): H/A, W/A and BMI/A.[12]

Anthropometric data from children aged 36-60 months were analyzed using the Antho software (version 3.2.2).Those of children aged 61-120 months were analyzed using the Antho Plus software (version 1.0.4). Both programs use the WHO standards and calculate the z-score and percentile of the anthropometric indices mentioned above to facilitate monitoring the growth and development of children and adolescents.[13.14]

These data were tabulated in Microsoft Office Excel spread sheets (version 2016) and presented through graphs and tables, with results expressed by simple descriptive statistics in mean, standard deviation and percentage frequency.

The study complied with the ethical principles contained in Resolution No. 466/2012 of the National Health Council (CNS) regarding research involving human beings, and was only initiated after approval by the Research Ethics Committee (CEP) of the Escola de Saúde Pública do Ceará (School of Public Health of Ceará) under opinion number 5,999,589.

RESULTS

A total of 27 children with a confirmed diagnosis of ASD and aged between 3-10 years participated in the study. There was a predominance of males (77.77%, n=21), with 51.85% of the sample (n= 14) aged 60 months ≤and 48.15% (n≥13) aged 61 months.

The mean scores of the food groups analyzed are shown in Table 1, in which it can be seen that the foods with the highest consumption scores belong to the beans, cereals, meats and sweets groups, while the vegetables group had the lowest consumption frequency.

As can also be seen in Table 1, it was possible to verify that factors regarding eating behavior related to meal skills, food selectivity and rigid behaviors related to food were the most altered dimensions in the studied group.

Table 1. Mean scores of eating consumption and behavior divided by age group of children with ASD attended at a public institution in Morada Nova, Ceará, Brazil, 2024.

Food consumption	N=27
	Medium (±SD)
Sweets	1.64 (0.77)
Savory snacks and preparations	0.94 (0.50)
Milk and dairy products	1.27 (0.69)
Cereals, breads and tubers	2.06 (0.61)
Vegetables	0.45 (0.72)
Fruits	1.10 (1.00)
Meat	2.08 (0.69)
Beans	3.22 (2.54)
Drinks	1.26 (0.86)
Eating behavior	
Feeding motor skills	4.37 (3.47)
Food selectivity	7.96 (3.55)
Skill in meals	10.78 (5.03)
Inappropriate behaviors related to meals	1.00 (1.65)
Rigid behaviors related to Eating	9.63 (5.24)
Food-related opposition albehavior	4.48 (3.35)
Food allergies and intolerances	0.19 (0.83)

Source: prepared by the authors, 2024

When evaluating each category of the questionnaire, it was highlighted that the item most scored by parents regarding meal skills was restlessness/motor agitation which makes it difficult to sit at the table. There was greater rejection in the food selectivity category for cooked and/or raw vegetables. Furthermore, it was found that always eating with the same utensil, always eating in the same place and always eating the same foods were the most detected behavioral problems for rigid behaviors related to food. There was a low number of children with food allergies or intolerances.

Table 2 shows the classification of nutritional status according to the four anthropometric indices and the age groups of both genders in months.

Table 2. Classification of nutritional status according to age group of children with ASD attended at a public institution in Morada Nova, Ceará, Brazil, 2024.

	≤ 60 months (n=14)	≥ 61 months (n=13)	Total (n=27)
Weight by age			
Age-appropriate	40.7% (n= 11)	33.3% (n= 9)	74% (n= 20)
High for age	11.2% (n= 3)	14.8 % (n= 4)	26% (n = 7)
Weight per height			
Eutrophy	50.0% (n = 7)		50.0% (n = 7)
Risk of overweight	21.4% (n = 3)	Unanalyzed index	21.4% (n = 3)
Overweight	14.3% (n = 2)		14.3% (n = 2)
Obesity	14.3% (n = 2)		14.3% (n = 2)
Height by age			
Age-appropriate	51.9% (n= 14)	44.4% (n=12)	96.3% (n=26)
Low for age	0% (n=0)	3.7% (n=1)	3.7% (n= 1)
BMI by age			
Eutrophy	25.9% (n= 7)	25.9% (n= 7)	51.8% (n=14)
Risk of overweight	11.1% (n = 3)	0% (n = 0)	11.1% (n=3)
Overweight	7.4 % (n = 2)	3.7% (n = 1)	11.1% (n=3)
Obesity	7.4 % (n = 2)	7.4% (n = 2)	14.8% (n=4)
Severeobesity	0% (n = 0)	11.1 % (n= 3)	11.1% (n=3)

Source: prepared by the authors, 2024

According to the body mass index for age (BMI/A), nutritional status was classified as normal for the majority of the sample evaluated, totaling 51.8%.

In analyzing two other anthropometric indices weight-for-age (W/A) and height-for-age (H/A), it is observed that most of the total children are classified as having the appropriate weight for their age (74%), as well as the appropriate height for their age (96.3%).

The weight-for-height index was only used for children aged ≤ 60 months, which revealed that 50% had a diagnosis of normal weight, while 50% were overweight.

DISCUSSION

It was possible to observe a higher proportion of male childrenin the present study, with the majority of the sample presenting weight and height appropriate for their age. It was also observed that these children have greater acceptance of foods from the groups of beans, cereals, sweets and meats, but also manifest problems related to eating behavior, with meal skills, rigid behaviors related to food and food selectivity being the highest scored.

The finding regarding the higher prevalence of males is consistent with other national studies.[15,16] There seems to be a concession that autism is more common in males, being 3.8 times more prevalent.[2] Although the clear reason for this is not yet so widely discussed in the literature, Jacquemont et al.[17] believe that men seem to have a lower threshold for brain abnormality than women, so that male brains would need a lower mutation load to reach the diagnostic threshold of ASD.

In addition to hereditary factors involving mutations in sex chromosomal genes, it is suggested that sex hormones, especially high levels of prenatal testosterone, may modulate the effects of genetic variation in

presenting an autistic phenotype, increasing the risk for men and attenuating it for women. However, data are still limited to elucidate the precise mechanisms by which these specific factors regulate presentation of the autistic phenotype.[18]

A high frequency of food consumption was found in four groups, namely: beans; cereal; breads and tubers; meats and sweets. In contrast, foods from the groups of vegetables, snacks and preparations, and fruits were the least consumed by the children studied.

Similar results to the present study were evidenced in 2021, through a case-control study which aimed to determine the dietary pattern in children attendedata university hospital in Córdoba, Spain. The study included 54 children with ASD and 57 typical children. The study reported that children with ASD had a dietary pattern characterized by relatively high consumption of cereals, pasta, and dairy products, but a small intake of lean meat and eggs. In addition, all children (control and with ASD) ate little fruit, vegetables and fish. Instead, they consumed large amounts of fatty meat, as well as drinks, snacks, sweets, and baked confectionery. High consumption of snacks, sweets, and baked goods in children with ASD was especially associated with increased consumption of beverages and fats, and lower consumption of fruits and vegetables.[19]

Silva, Santos & Silva[15] state that children with ASD have a strong preference for foods that are sources of starch, as well as processed and ultra-processed foods. At the same time, they greatly reject fruits, vegetables, and foods that are sources of protein, which can not only contribute to weight gain, but also to the emergence of other chronic non-communicable diseases (NCDs). In addition, they mention that dairy products and cereals are widely consumed by this group. However, the consumption of these foods can contribute to the appearance of common gastrointestinal alterations, such as chronic constipation, diarrhea, abdominal pain and intestinal inflammation.

In this regard, the suggested hypothesis is that there is an excess of poorly digested peptides in the intestine in some subjects with ASD due to incomplete digestion of foods containing gluten and casein, triggering an immune response that can result in gastrointestinal inflammation.[20]

Ina study carried out in 2017 with 29 children with ASD in a municipality in the Northeast of Brazil aiming to verify the association between nutritional status and the consumption of ultra-processed foods, it was found that 61% of the total calories in the diet derived from *natural* or minimally processed foods, which are the basis of these children's diet. However, the higher consumption of ultra-processed foods, which corresponded to 27.6% of the caloric contribution, was associated with overweight, verified in 55.2% of the sample. In addition, it was observed that fruit intake represented only 4.3% of the total caloric contribution, while vegetables were the least consumed *in natura* foods by children, which, according to the authors, represents a health risk, as it can lead to nutritional deficiencies and negatively affect the symptoms of the disease.[21]

Thus, based on the results found herein, it is noted that children with ASD have a high preference for foods that are sources of starches such as cereals and breads, as well as for meats and sweets, while they have a greater aversion to fruits and vegetables.

The eating behavior dimensions related to meal skills, food selectivity and rigid behaviors related to food were the most detected problems in the group studied.

In a Brazilian study that aimed to analyze the eating behavior of 21 children and adolescents with ASD, the authors also found a trend towards food selectivity and changes in habitual behaviors during meals. Regarding changes in meal skills, only 8% of the sample demonstrated some problem in relation to this

domain. In addition, they also observed that the participants had motor difficulties with regard to chewing and food intake. Furthermore, there was a correlation between food selectivity with behavioral aspects, and behavioral aspects with sensory sensitivity and meal skills.[22]

In a 2021 case-control study conducted in Hong Kong which aimed to compare the eating behavior and diet quality of 65 children aged 3-6 years with ASD and 65 children of the same age and typical development, it was shown that children with ASD had higher food refusal scores, problems with eating at mealtimes and lower diet quality and diversity when compared to typical children.[23]

Mendes et al.[24] confirm that these children have low consumption of fruits, vegetables, fish and dairy products, in addition to great food refusal and resistance to eating these same foods. They also observed problematic behaviors, such as difficulty sitting at the table, eating with other people, and accepting new preparations, which are similar behaviors to those found in this research. The authors highlight that the behavior of parents directly influences food selectivity and their choices, emphasizing that the family is capable of developing behaviors which can help in the educational process of these children.

It is also explained that the etiology of eating problems seems to involve physiological weaknesses along with sensory, motor, cognitive and emotional dysfunctions. These children often have alterations in sensory processing or difficulties in oral motor skills, such as chewing and swallowing. As a result, the behavioral response can be fear, aggression, or flight.[3]

Difficulty in sensory processing is considered one of the main factors that contributes to behavioral problems at mealtimes and to restrictive eating patterns resulting from food selectivity and refusal.[25.26]

This relationship between food selectivity and sensory alterations in children with ASD is also pointed out in the study by Silva et al.,[27] in which the authors describe three types of sensory sensitivities: oral, tactile and olfactory. The first is the refusal of food due to texture and taste. Tactile refusal occurs due to touch, while food is refused due to smellin olfactory sensory sensitivity.

In a study carried out in the Brazilian Northeast throughout 2018 which evaluated the sensory changes, behavior and food consumption of children with 30 children aged 3-10 years diagnosed with ASD, it was found that the behavior of food selectivity was negatively associated with vegetable consumption. In addition, those with greater difficulty in behavioral aspects related to meals, in addition to consuming fewer vegetables, consumed more sweets and snacks. On the other hand, it was also noticed that children who have better sensory-oral processing are those who consume the most vegetables.[28]

With regard to nutritional status, a greater predominance of children with weight and height appropriate for their age can be perceived in this study according to the anthropometric parameters of the Norma Técnica do Sistema de Vigilância Alimentar e Nutricional (Technical Standard of the Food and Nutrition Surveillance System) adopted by the Ministry of Health.[12] However, national studies carried out in the Brazilian Northeast denote a trend towards overweight in children with autism.[15,16]

In a municipality in the state of Ceará, 26 children aged 3-10 years diagnosed with ASD were investigated by Caetano & Gurgel[16] regarding their nutritional profile. The BMI/A anthropometric index revealed that 38.5% were at risk of overweight, 23.1% were overweight, and 15.38% were obese. In turn, the E/A Index showed that 100% of the children had adequate height for their age.

In a study conducted in 2018 by Silva, Santos & Silva,[15] which aimed to assess the nutritional status and presence of gastrointestinal alterations in autistic children in Maceió in the Brazilian Northeast, 64.1% of the 39 children with ASD in the age group between 3 and 10 years were overweight according to the BMI/A index.

It is noteworthy that the BMI/A index is the ratio between weight and height squared and is adequate to identify excess weight among children and adolescents. This index is internationally recommended in the individual and collective diagnosis of nutritional disorders, since it incorporates information on the individual's age and has been validated as an indicator of total body fat in the upper percentiles.[12,29]

In turn, W/A is useful for monitoring weight gain and expresses the child's overall situation, but does not differentiate current nutritional impairment from previous ones; therefore, it is important to analyze it together with the other indices. The W/E is used to identify both the child's weight loss and excess weight. Finally, H/A is the index which best indicates the cumulative effect of adverse situations on the child's growth, thus revealing chronic impairment.[12,29]

Children with ASD are at risk of having inadequate nutritional status.[6] In the present study, there was a predominance of eutrophic children according to the classification of BMI/A and W/A indices, and there were no children classified as underweight. However, the results showed the presence of overweight or obese children.

Childhood obesity has been associated with outcomes that greatly contribute to the onset of other diseases, such as insulin resistance, diabetes, cardiovascular disease, and certain cancers. The low consumption of natural or minimally processed foods and the high consumption of ultra-processed foods contribute to changes in nutritional status.[19,30]

It is noteworthy that in addition to dietary issues, factors such as deficits in social communication, secondary comorbidities, medications, challenges in practicing physical exercise, biological influences and lack of follow-up with qualified professionals also contribute to excess weight of these subjects.[31]

In a study developed by Padmanabhan & Shroff[25] in 2018, which aimed to assess the food intake, eating behavior, and nutritional status of 146 children with ASD in Mumbai, India, there was a positive and significant relationship between food consumption and the nutritional status of children. According to the authors, difficulties in sensory integration may be the cause of behavioral problems at mealtimes and inadequate food intake in these children. In parallel, higher food intake, even if poor in nutrient diversity, may be related to a higher probability of being overweight.

Thus, based on the data found and the evidence presented, it is assumed that physiological factors characteristic of ASD, such as sensory sensitivity, may be determinant for the emergence of behavioral problems in these children, such as food selectivity, which in turn contributes to a restrictive eating habit, poor in fresh foods and high in foods with increased caloric value, which can result in weight gain as a consequence.

The limitations of this study are the sample size and the impossibility of statistical analyses capable of better substantiating the results found. However, it is a relevant and incident theme in society, in addition to allowing reflections on the nutritional and behavioral specificities of the public studied, corroborating the scientific literature already produced.

CONCLUSION

In this study on the nutritional status, behavior and food consumption of children with ASD, it was detected that these children had problems in eating behavior, especially with regard to difficulties and skills at meals, rigid behaviors related to food and food selectivity. There was a greater preference for foods from the groups of beans, cereals, sweets and meats, and lower consumption of foods from the group of fruits

and vegetables. Finally, a higher prevalence of children with adequate weight was observed, but excess weight was also found.

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Contributors

Rabelo Neto M contributed to the collection, analysis, data interpretation and writing the article; Lima RSS contributed to develop the study design, data analysis and interpretation, as well as to the review and final approval of the article; Maia MI contributed to data collection; Sousa MJA contributed to the study conception and design.

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