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Original Article

Evaluation of children's food habits with Autism Spectrum Disorder (ASD): a case study

Avaliação dos hábitos alimentares de crianças com o Transtorno Do Espectro Autista (TEA): um estudo de caso

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Abstract

Objective: to evaluate the eating habits of autistic children assisted by an association located in Montes Claros, Minas Gerais. **Materials and Methods:** it is a case study carried out with three children diagnosed with ASD, aged between three and five years. A semi-structured questionnaire was sent to the children's parents, via Google forms, with questions related to eating habits, food selectivity and difficulties when feeding the participants. This study was approved by the Research Ethics Committee under opinion 4.293.222. **Results:** all children had difficulty in eating, and 66.7% (n=2) like to eat the same things. As for the insertion of new foods, 66.7% (n=2) has difficulty in acceptance. 66.7% (n=2) has selectivity in relation to the texture, color and odor of the food. **Closing remarks:** most children have different food preferences and maintain selectivity throughout their growth, a fact that demonstrates the importance of the participation of the nutritionist throughout the child's growth.

Keywords: Nutrition. Autism. Food. Selectivity.

Resumo

Objetivo: avaliar os hábitos alimentares de crianças autistas assistidas por uma associação localizada em Montes Claros, Minas Gerais. **Materiais e Métodos**: trata-se de um estudo de caso realizado com três crianças diagnosticadas com TEA, com idade entre três e cinco anos. Foi enviado para os pais das crianças, via *Google forms*, um questionário semiestruturado com questões relacionadas aos hábitos alimentares, seletividade alimentar e dificuldades no momento da alimentação dos participantes. O presente estudo foi aprovado pelo Comitê de Ética em Pesquisa sob o parecer 4.293.222. **Resultados**: todas as crianças apresentaram dificuldade no momento de se alimentar, sendo que 66,7% (n=2) gostam de comer as mesmas coisas. Quanto à inserção de novos alimentos, 66,7% (n=2) apresentam dificuldade na aceitação. 66,7% (n=2) apresentam seletividade com relação à textura, cor e odor dos alimentos. **Considerações finais**: grande parte das crianças apresenta diversas preferências alimentares e mantêm a seletividade ao longo de seu crescimento, fato esse que demonstra a importância da participação do profissional nutricionista ao longo de seu crescimento.

Palavras-chave: Nutrição. Autismo. Alimentação. Seletividade.

INTRODUCTION

Autism Spectrum Disorder (ASD) is among the Invasive Developmental Disorders (TID) and can be characterized by a delay in communication development that interferes with social relationships, leading to restricted behavior, usually identified until two years of age, but may show signs of it during the first year of life. Its main characteristics are patterned and repetitive behaviors and language impairment[1].

The concept of this disease has evolved a lot over time, and there has also been an increase in the number of diagnosed cases which, according to studies, is due to the better precision in the criteria used for the diagnosis of this disorder. The causes are still unknown; it is assumed that some external agents, such as food toxins or metal poisoning, and genetics are the main suspects that lead to the development of this disorder[2].

There are no specific tests that can lead to confirmation. The diagnosis is based on the perception and observation of behavior throughout the individual's growth and development, and, after confirmation, a multi-professional treatment is started that aims to help develop the patient's social and communication skills[3].

Besides the failure in social development, the autistic individual may also present some gastrointestinal disorders, such as inflammation in the intestinal wall, reflux, difficulty chewing, and decreased production of digestive enzymes. This fact leads to the need for special attention regarding the nutrition of these individuals because, in addition to these changes, they are also highly selective and resistant to new foods, which hinders the insertion of new foods into their routine[4].

Some studies have shown that the food intake of autistic patients can directly influence their behavior, such as, for example, the intake of milk and dairy products, bread and pasta, and foods with high sodium and lipid content tend to make them more irritable.

Therefore, the family's role in supervising and guiding what is or is not appropriate for the daily intake of these individuals is fundamental[5].

According to Pinto *et al.*[6], during growth, a multi-professional accompaniment is necessary, which will direct the family on how to proceed, aiming to guide about the best methods to deal with these individuals. One of these professionals is the nutritionist, who will help in the balance between food and the needs of these people, obtaining a better response in their development, since these children have a greater tendency to develop nutritional deficiencies, and supplementation may be necessary to complement their diet.

Some studies show that there are foods that can negatively influence the body of autistic people, and can cause intestinal discomfort, as well as slowing down the central nervous system. Due to the difficulty in absorbing some proteins, there are often deficiencies of important nutrients, such as copper and zinc, which act in cell growth and immunity, besides altering the gastrointestinal function and aggravating the symptoms of the autistic leading to behavioral changes[7].

An alternative method that aims to improve the clinical picture that has been discussed by researchers today would be to better adapt the eating plan of children with ASD to follow up and monitor whether there is improvement in their clinical picture, since some studies have already been conducted in this direction, in which with the change in eating habits there were changes in relation to their effects resulting from the disorder[8].

Given this context, the objective of this study was to gather data regarding the eating habits and the difficulties in eating of children with ASD assisted by

an association located in Montes Claros - MG, aiming to collect data on the presence of selectivity and food preference of these children.

MATERIALS AND METHODS

This is a case study carried out with three children diagnosed with ASD, who attended an autism support institution, located in the city of Montes Claros - MG.

The data collection was conducted in the month of October 2020, online, with sending to the parents, who agreed to participate in the study, the link of the questionnaires via *Google forms*.

The instrument used for data collection was a semi-structured questionnaire, adapted from Oliveira9, containing questions related to socioeconomic data and eating habits to assess the participants' eating habits, difficulties at mealtimes, and the presence of food selectivity.

After approval for the study, parents were invited, through contact via WhatsApp and e-mail, to participate in the research by sending the link to the form via *Google forms*. In the first session of the form, the Informed Consent Form (ICF) was present, and upon acceptance to participate in the study, the parents were directed to the questionnaire response session.

The data collected were analyzed with the help of the software *Statistical Package for the Social Sciences* (SPSS), version 22.0. Descriptive analyses were performed through absolute and percentage frequency distributions.

The study was approved by the Research Ethics Committee of the Faculdades Unidas do Norte de Minas, under opinion number 4.293.222.

RESULTS

The eating habits of three children, aged between three and five years, were evaluated; 33.3 (n=1) were female and 66.7% (n=2) were male. Regarding the time of diagnosis, 66.7% (n=2) were diagnosed with ASD two years ago and one two and a half years ago. When parents were asked about the level of ASD, 33.3% (n=1) did not know the level, one child was diagnosed with mild level and another, severe level.

As for the year of school the child was attending on the date of data collection, 33.3% (n=1) are attending introductory, 33.3% (n=1) are attending kindergarten, and 33.3% (n=1) had not yet entered school.

Table 1 describes the data related to the sociodemographic variables of the parents of the children participating in the study. The children's parents were aged between 31 and 39 years old.

All children evaluated presented difficulty when eating, two (66.7%) like to eat the same things and one (33.3%) does not usually consume the same foods. As for the difficulty in introducing new foods, most of the children (66.7%; n=2) presented resistance, with one of the children refusing food frequently and the others not having this habit. When a new food was presented, there was no change in behavior regarding this food in two of the three children.

Table 1 - Sociodemographic information of the parents of the children evaluated. Montes Claros - MG, Brazil, 2020.

Variables	n	%
Gender		
Female	2	66.7
Male	1	33.3
Education level		
High school complete	2	66.7
Higher education incomplete	1	33.3
Profession		
Employee	2	66.7
Unemployed	1	33.3
Marital Status		
Single	1	33.3
Married	2	66.7
Number of children		
1	1	33.3
2	1	33.3
3 or more	1	33.3

As for selectivity regarding food texture, color and odor, 66.7% (n=2) of children were selective and one child was not selective. The parents of the three children reported that they used strategies to improve the acceptance of some foods, 66.7% (n=2) of the parents played games, 33.3% (n=1) changed the way the food was prepared, used different colors in the meals and let the child eat while playing and/or playing with the cell phone. The most consumed and preferred foods by the children were fruits and carbohydrates (n=1), pasta (n=1) and vitamins and juices (n=1).

As for hydric intake, two of the children had good hydric intake, while one child had regular intake. As for temperament, two of the children (66.7%) were restless and easily irritated, one of them, in addition to these two characteristics, also had hyperactivity, and 33.3% (n=1) had an anxious temperament.

As for stereotypy, the levels were different in each of the children, with 33.3% (n=1) showing little stereotypy, another 33.3% (n=1), moderate, and the rest, high. Regarding eye contact and speech development, 66.7% (n=2) of the children had good eye contact and good speech development, while 33.3% (n=1) did not show good eye contact and had difficulties in speech development.

The frequency with which some foods were consumed by the children is shown in Table 2.

Table 2 - Assessment of the food frequency of some foods by autistic children. Montes Claros - MG, Brazil, 2020.

Food	Once a week		Twice a week		Three times a week		Does not consume	
	n	%	n	%	n	%	n	%
Fruit	-	-	-	-	2	66.7%	1	33.3%
Vegetables	-	-	1	33.3%	1	33.3%	1	33.3%
Legumes	-	-	2	66.7%	-	-	1	33.3%
Meat and eggs	-	-	2	66.7%	1	33.3%	-	-
Breads, pastas and	-	-	2	66.7%	1	33.3%	-	-
Sweets and	2	66.7%	-	-	-	-	1	33.3%
Snacks	-	-	2	66.7%	-	-	1	33.3%
Oils and fats	-	-	-	-	2	66.7%	1	33.3%
Soda	1	33.3%	-	-	-	-	2	66.7%
Industrialized	1	33.3%	1	33.3%	-	-	1	33.3%
Natural Juice	-	-	-	-	3	100%	-	-

It can be seen in Table 2 that two (66.7%) of the children had a good frequency of fruit consumption, while a percentage referring to 33.3% (n=1) did not consume vegetables, fruits, and legumes.

DISCUSSION

Regarding the parents' schooling, all of them have a level of education that favors the search for information about their children's nutrition.

In the present study, it was found that all children evaluated had difficulty in eating, and most of them were selective with food. The results found in this study are similar to those found by Lázaro, Siquara, and Pondé4, in which 86% of the children evaluated showed difficulty in eating and 26% showed great selectivity in eating.

Children with ASD have a different eating pattern from those who do not have this diagnosis, and mealtimes, most often, are marked by restlessness, crying, refusal to eat, contributing to the non-intake of all necessary nutrients, due to this situation of food selectivity. The nutritional status of autistic children is

dependent on food intake and on metabolic and physiological processes, such as digestion and absorption processes[10].

The fact that children with ASD have repetitive behavior, interest, and focus on few things may be the main predisposing factor for food selectivity[11]. Several studies have been conducted in this regard, in which food surveys are used to obtain information about eating habits and preferences with the public chosen for the research in question[4,12-15].

Thus, the BAMBI[16] (*Brief Autism Mealtime Behavior Inventory*) was the first instrument developed specifically to assess the eating problems of children with autism. This method focused on the food preferences of these children and the factors that could negatively influence their eating. Selectivity and food refusal were present when this instrument was applied, when behavioral aspects were also included, such as difficulty in chewing, problems in oral motricity and other factors that may interfere in the feeding dynamics of the autistic child.

Regarding eating habits, even in the face of the difficulties presented regarding the feeding of children with this disorder, the family's eating habits are related to the formation of these children's habits12. Most parents of children participating in this study reported that they used strategies for better food acceptance by the child and this, according to Carvalho *et al*[11] , may contribute to minimize problems associated with feeding and even to improve the socialization and interaction of the autistic child.

However, the number of participants is a limiting factor in this study and further studies on this subject with a larger sample size are needed. There are still no studies that show that parents consider this eating difficulty a problem. Therefore, new studies are needed in order to actually carry out a survey that can evaluate these two sides, because it will be crucial to demonstrate how important the offer and acceptance of a balanced diet is for the autistic child to have a better development.

FINAL CONSIDERATIONS

By analyzing the results, it was possible to notice that parents were looking for methods that can improve the development of their children, reducing food refusal and selectivity, in addition to turning mealtimes into something pleasurable for the child. Further research is necessary in order to obtain clarifications about the positive contribution that proper nutrition can cause in the treatment of autism, such as the removal of foods containing gluten and lactose, aiming to improve the quality of life of autistic people and minimizing the disorders caused to them.

This study suggests that most children have diverse food preferences and maintain selectivity throughout their growth. This fact demonstrates the importance of the professional nutritionist's participation throughout the growth and development of children with ASD to improve their behavioral relationship with food.

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