

Original Article

# Nutritional Behaviors Among Children and Adolescents with Autism Spectrum Disorder

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## Abstract

Nutritional issues related to autism spectrum disorder are among the constitutes major concerns among families with autism. The prevalence of eating disorders in children with autism has been reported in previous studies around 46-89%. **Aim of the study** was to assess the nutritional behaviors among children and adolescents with autism spectrum disorder. **Material and methods:** **Research design:** A descriptive cross-sectional design was used in the present study. **Setting:** Data were collected from the Altawahud and Bashaer Al-Nour Associations - Latakia City and Al-Majd Association - Tartous city /Syria. **Sampling:** the study was conducted on a convenient sample of 55 parents of patients diagnosed with autism spectrum disorder. **Study Tools: Nutritional Behaviors for patients with autism structured questionnaire.** It was developed by researcher and consists of two parts; Part 1: demographic data, Part 2: dietary behaviors among patients with autism spectrum disorder. **Results** of the current study showed that the positive behaviors related to accompanying eating were found in 77.8% of the subjects, followed by excessive selective behaviors towards food in 56.5%, then behaviors after refusing food was found in 53% of the subjects and behaviors associated with eating in 50.5%, then sensory problems came in a ratio of 42.5% of the subjects, while the behaviors that interfere with eating came in 38.8% of them, and finally digestive problems accounted for 36.8% . **Conclusion:** positive dietary behaviors are found among the majority of the study subjects including enjoying food which comes with the highest mean and negative behaviors that interfere with daily dietary intake were also found including excessive food selecting behaviors which come with the second mean value.

**Key words:** Adolescent, Autism, Children, Nutritional behaviors.

## Introduction:

Autism Spectrum Disorder (ASD) a neurodevelopmental disorder characterized by severe specific impairment in social interaction, verbal and non-verbal communication. The causes of autism are still unknown, but genetic factors, along with stimulating environmental factors and epigenetic factors, play the main role. There is no cure or medication for autism spectrum disorder, and behavioral therapy still the most effective treatment. <sup>(1,2)</sup>

World Health Organization (WHO) reported in (2022) <sup>(3)</sup> that ASD affected. about one child out of every 100 children around the world Males are four times more likely than females to suffer from this disorder, furthermore, ASD usually affects children between the ages of 3 and 8 years. <sup>(3,4)</sup>

There are no documented studies about the prevalence of ASD in Arab countries but there are some local estimations. In Lebanon, the prevalence of autism is about 1.53%. In Egypt, the number of reported cases living with ASD is around 800,000, or 1% of the population. In Saudi Arabia, the number of Autistic people reached 25 per 1,000 children, or 2.51%.<sup>(5-7)</sup>

Likewise, there are no statistics on the number of Syrian children with autism. A study conducted in Damascus and its countryside 2012 reported that there are 146 cases among males and the number of females reached to 108 cases in the countryside while in Damascus city 440 males with autism and 307 females were found.<sup>(8)</sup>

Issues related to ASD that may affect nutritional adequacy are among the major concerns for families those have children with ASD. Identifying key factors related to ASD and their influences on food preferences would be the first step in understanding the dietary behaviors of patients with autism.<sup>(9)</sup>

There are many factors that threaten health and safety of the individuals and they can these factors can play negatively a fundamental role in the possibility of contracting diseases and their complications. The most important factor behavioral changes that individual follows is changing dietary habits to include new behaviors as eating more caloric foods. High levels of stress and lack of physical activities are the main two problems in the recent lifestyles for many people these changes affect individuals' nutritional behaviors which can be identified: eating habits and methods used in preparing foods and the number of meals eaten per day. Moreover, timing, types, place and the amount of eaten food this also including amounts of calories taken.<sup>(10,11)</sup>

The prevalence of the problems of feeding behaviors in children with autism was reported by 46-89% of children which is estimated to be five times higher than other children in the same age group and do not have ASD. Some specialists have suggested that eating problems in early childhood may represent an early sign of autism. The seriousness of eating problems in children with autism spectrum disorder lies in their negative impact on their nutrition process because these problems limit the quantity and quality of the food they eat, which reduces their access to the sufficient amount necessary for healthy growth and thus they become exposed to the risks of malnutrition such as anemia, obesity, weight gain and caries the teeth. Various studies have shown that at least 70-90% of parents of children with autism spectrum disorder report problems related to eating and nutrition.<sup>(12-15)</sup>

Various problems related to feeding behaviors include picky eating, restrictive eating, binge eating, overeating, anorexia, rumination, and allergic reactions to food Obesity in particular. The most common problem reported and researched in children with autism is picky eating, where the child refuses to eat some types of food. Picky eating is the cause of weakness, anemia or chronic illness due to lack of eating and is an important problem that can be linked to malnutrition. Eating habits those established early in childhood can affect health outcomes in adulthood. Also, among the eating behaviors that have been reported and researched in children with autism are aggressive behaviors, such as crying, head turning, screaming, and pushing utensils away during a meal, and disruptive behaviors, such as spitting food, pushing food off the table, or running away from the table.<sup>(12)</sup>

Characteristics of eating behaviors in children with ASD may also displayed by a strict preference to type, temperature, texture, smell or taste, and colors of food that is reported to be preferred by more than 90% of children with ASD, Crunchy food are also the most popular foods (unlike fruits and vegetables) and children with ASD typically prefer meals with uniform texture, either crunchy and smooth puree while mixed textures may cause some resistance.<sup>(16)</sup>

In a study conducted by Mayes et al2019in the United States, it aimed to evaluate atypical eating behaviors in children and adolescents with autism, attention deficit hyperactivity disorder and other disorder. The results showed that atypical eating behaviors were more common in people with autism by 70.4%, in children with other disorders by 13.1%, and in normal children by 4.8%. For children with autism who had atypical eating behaviors, the most common behavior was limited food preferences. (88%, followed by hypersensitivity to food texture at 46%, and other oddities that often only eat one type of food at 27%. Grain products or chicken were the preferred foods for 92% of children with autism who have restricted food preferences.<sup>(16,17)</sup>

### Significance of the study:

This study treats a very important topic in the lives of children and adolescents with autism spectrum disorder, which is considered to be one of the basic characteristics of ASD patients, which can help in identifying their most inappropriate eating behaviors. Identifying the most common eating behaviors among autistic children and adolescents will help in developing appropriate nursing programs in order to improve their health and prevent chronic diseases associated with atypical nutritional behaviors.

**Aim of the study:**

This study aimed to assess the nutritional behaviors among children and adolescents with autism spectrum disorder.

**Research Question:**

What are the nutritional behaviors among children and adolescents with autism spectrum disorder?

**Material and Methods:**

**Research Design:**

This research followed the descriptive cross-section study design.

**Setting:**

This research was conducted in Altawahud and Bashaer Al-Nour Associations in Latakia, and Al-Majd Association in Tartous – Syrian Arab Republic. These three settings are private associations under the supervision of the ministry of social affairs they provide caring and educating professional services for patients with autism.

**Sampling:**

The present study was conducted by using convenient sampling technique which was available, non-random and included 55 subjects of parents of children and adolescents with autism spectrum disorder (a relative/caregiver). All the ASD patients in the three settings were investigated and the study subjects were conveniently selected according to the following criteria: An adult agreed to participate, able to read and write and care giver of a patient with ASD.

The total number of ASD children and adolescent patients in each association are included in the sample and were distributed as the following:

	Association	Sample size	percentage
1	Altawahud	23	41,8
2	Bashaer Al-Nour	17	30,9
3	Al-Majd	15	27,3
the total		55	100%

**Study Tools:** One tool was used and developed by the researcher after a thorough reviewing of the previous literature:

**Nutritional Behaviors for patients with autism structured questionnaire:**

It consists of two parts:

**Part I: Demographic data of a child/adolescent with autism spectrum disorder:**

It included (11) questions about: (gender, age, number of family members, patient’s arrangement within the family, place of residence, father’s educational level, father’s work, mother’s educational level, mother’s work, monthly family income, source of income family).

**Part II: Child/Adolescent Nutritional Behaviors Form:**

It consisted of (68) questions divided into 7 dimensions including:

1. Eating-disruptive behaviors (9 questions).
2. Behaviors after refusing food (7 questions).

3. Behaviors associated with eating (20 questions).
4. Excessive food selectivity (15 questions).
5. Sensory problems (3 questions).
6. Digestive problems (6 questions).
7. Positive behaviors associated with eating (8 questions).

The scale correction key was determined according to a four-point Likert scale [Never (1) Rarely (2) Sometimes (3) Always (4)] [The total answers range between (68-272). The higher score indicates negative nutritional behaviors.

**Methods:**

1. Official approvals to conduct this research were obtained from the relevant authorities.
2. The research tool was developed and the validity of the tool was tested by a committee of three experts and the necessary modifications were done.
3. The study sample included the parents of children/adolescents with autism spectrum disorder and a verbal consent was obtained from them after they being informed about the aim of the study
4. A pilot study was conducted on (5) individuals caring of children/adolescents from the study population to demonstrate the clarity of the tool.
5. Cronbach's alpha coefficient was calculated to determine the reliability of the questionnaire items, R= 0.760 and the tool is reliable.
6. The questionnaire was distributed to parents of children/adolescents, allowing them to take the questionnaire at home, giving them a maximum period of one week to return the questionnaire. During this week the researcher answered and clarified all the questions those been asked by the subjects. Data was collected during the period from 1/6/2023 to 30/8/2023.
7. Data taken from the questionnaires were coded and then transcribed into the statistical analysis program (SPSS), version 25, and were processed with appropriate statistical tests and then displayed in tables and charts.

**Results:**

**Table1:** shows the distribution of the sample members according to their demographic data. It shows that the majority of children and adolescents with autism spectrum disorder (80%) were males and more than one third of them (36,4%) were aged(5-10years) and more than two thirds of the study subjects reported small families of 4 or 3 persons . Regarding the arrangement of the patients in the family children, those which reported that they were the first child are about half of the study subjects 47.3%. As regards to family income 60% of fathers reported that they were responsible of families' income. Half of the study subjects 50.9% reported that they gain more than 200000 SP per month

**Table 1:** distribution of the study subjects according to the demographic characteristics:

Variables		N=55	
		N	%
Sex	Male	44	80.0
	Female	11	20.0
Patient Age	< 5 years	6	10.9
	5 – 10 years	20	36.4
	> 10 - 15 years	13	23.6
	> 15 years	16	29.1
number of family members	≤ 4 individuals	38	69.1
	5- 7 individuals	17	30.9
Arranging the patient within the family	the first	26	47.3
	the second	18	32.7

	the third	5	9.1
	Fourth and above	6	10.9
Place of residence	City	47	85.5
	the countryside	8	14.5
Source of family income more than one option can be) (chosen	Father	33	60.0
	Mother	1	1.8
	Father and Mother	18	32.7
	Father, mother and children	3	5.5
Family monthly income	Less than 100 thousand	4	7.3
	From 200-100 thousand	23	41.8
	More than 200 thousand	28	50.9

**Table 2:** shows the average, order and percentage of behaviors that disturb eating among the study subjects, it was found that that the behavior (he / she leaves the dining table before finishing the meal) obtained the highest mean  $2 \pm 981$  with a percentage of 50% of the subjects while the behavior (He/ she puts the food in the pocket without eating it) came with the lowest mean  $1.11 \pm 0.369$  with a percentage of 27.8% of the subjects.

**Table 2: distribution of the study subjects according to distributive eating behaviors**

Disruptive eating behaviors	M	SD	Ranking	% Relative weight
Screams or cries while eating	1.64	0.910	4	41.0
Turns his face or body away from the food	1.84	0.977	3	46.0
He leaves the dining table before finishing the meal	2.00	0.981	1	50.0
Leaves food in the mouth without swallowing it	1.27	0.592	7	31.8
He gets angry at mealtimes	1.87	0.818	2	46.8
He engages in aggressive behavior towards objects and people around him while eating	1.47	0.790	6	36.8
He engages in aggressive behavior towards himself while eating	1.27	0.560	8	31.8
He puts food in the pocket without eating it	1.11	0.369	9	27.8

He delays eating by talking	1.49	0.879	5	37.3
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**Table 3** shows the averages, order, and percentage of behaviors after food refusal among study subjects, where it showed that the behavior (asking for food between meals) received the highest mean  $2.80 \pm 0.890$  and came in first place with a percentage of 70%, while the behavior “(refuses to eat meals that require good chewing) ranked last with the fewest arithmetic mean  $1.56 \pm 0.870$  with a percentage of 39% of the study subjects.

**Table 3: distribution of the study subjects according to food refusal behaviors**

Behavior after food refusal	M	SD	Ranking	% Relative weight
He closes his mouth tightly when he is given food	2.20	1.026	4	55.0
He refuses to eat on time	1.62	0.828	6	40.5
Refuses to eat or taste new foods	2.25	1.040	3	56.3
He hates some foods and does not want to eat them	2.40	0.955	2	60.0
Refuses to eat meals that require good chewing	1.56	0.856	7	39.0
He tries to negotiate what to eat	2.02	0.972	5	50.5
He asks for food between meals	2.80	0.890	1	70.0

**Table 4** shows the averages, order, and percentage of behaviors associated with eating among the study subjects, as it showed that the behavior (can eat independently) showed the highest mean  $3.05 \pm 0.848$  and came in first place with a ratio 76.3% of the study subjects, while the behavior (excessive amount of food eaten to the point of vomiting) was ranked last with an arithmetic mean  $1.49 \pm 0.717$  with a ratio of 37.3% of the study subjects.

**Table (4):Averages, order, and percentage of behaviors associated with eating among sample members .**

Behaviors associated with eating	M	SD	Ranking	% Relative weight
He likes to have food prepared for him in a certain way	1.75	0.947	15	43.8
He likes to have food served to him on specific cutlery, such as (a specific plate)	1.53	0.813	18	38.3
He likes to eat the food in the same place	1.89	1.048	12	47.3

He can eat independently	3.05	0.848	1	76.3
He needs help eating	2.35	1.058	2	58.8
He eats only a small amount of the food offered	2.15	0.970	9	53.8
He eats excessive amounts of food to the point of vomiting	1.49	0.767	20	37.3
He spends a long time eating	2.13	0.862	10	53.3
He moves a lot while eating	2.24	1.105	7	56.0
He continues to eat as long as food is offered to him	2.07	1.120	11	51.8
He eats greedily	2.16	1.067	8	54.0
He eats exceptionally quickly	1.82	0.925	14	45.5
He asks for food whose name he can pronounce repeatedly	2.25	1.109	6	56.3
He watches TV during meals	2.33	0.963	3	58.3
He is unable to imitate others' correct eating habits	2.31	1.136	4	57.8
Plays with food during meals	1.49	0.717	19	37.3
Plays with eating utensils during meals (spoon, plate)	1.84	0.918	13	46.0
Takes food outside meal times	2.31	0.940	5	57.8
Brings games to the table	1.60	0.894	16	40.0
Re-chew food	1.53	0.900	17	38.3

**Table 5** shows the averages, order, and percentage of excessive food-selectivity behaviors among sample members, as it showed that the behavior (prefers “crunchy” foods such as snacks and biscuits) received the highest mean  $2.98 \pm 0.952$  and came in first place with a ratio of 74.5% of the study subjects, while the behavior (prefers foods with specific temperatures) was in latest place with an arithmetic mean of  $1.64 \pm 0.988$ , with a ratio 41% of the study subjects.

**Table (5): Average, order and percentage of Excessive food selectivity behaviors among study subjects**

Excessive food selectivity	M	SD	Ranking	% Relative weight
He eats specific types of food and insists on them	2.67	1.055	3	66.8
Prefers foods with a certain taste	2.58	1.066	6	64.5
He refuses most types of food	1.87	1.019	12	46.8

Refuses to eat foods that require a lot of chewing (for example: eats only soft or mashed foods)	1.67	0.982	13	41.8
Prefers foods of certain colors	1.65	0.947	14	41.3
Prefer foods with certain temperatures	1.64	0.988	15	41.0
He hates some foods and does not eat them	2.40	1.011	7	60.0
He hates eating dishes in which many ingredients are mixed	2.18	0.964	8	54.5
Preferably eating food on the plate in a specific order (e.g. first potatoes)	2.13	1.072	9	53.3
Prefers “crunchy” foods (such as snacks and crackers)	2.98	0.952	1	74.5
Prefer “starchy” foods (pasta, potatoes, bread)	2.89	1.022	2	72.3
Prefers only sweet foods (candy and sweetened cereals)	2.58	1.166	5	64.5
Prefers food prepared in a certain way (for example, eats mostly fried foods)	2.09	0.948	10	52.3
Prefer foods with extra flavors (spices, peppers)	1.95	1.061	11	48.8
It is preferable to eat meat	2.67	1.019	4	66.8

**Table 6** shows the averages, order, and percentage of sensory problems among study subjects, where it showed that the problem (I have difficulty identifying the smell of food) It received the highest mean score of  $1.75 \pm 0.956$  and ranked firstly with a ratio 43.8% of the study subjects, while the problem (I have difficulty determining the taste of food) reported the lowest mean  $1.65 \pm 0.907$ , with a ratio 41.3% of the study subjects.

**Table (6) Means, order and percentage of the sensory problems among the study subjects.**

sensory problems	M	SD	Ranking	% Relative weight
He has difficulty determining the taste of food	1.65	0.907	3	41.3
He has difficulty identifying the smell of food	1.75	0.966	1	43.8
He has difficulty tolerating the smell of some types of foods	1.71	0.956	2	42.8



**Table 7** shows the means, order, and percentage of digestive problems among study subjects this table showed that the problem (suffering from constipation) reported the highest mean  $1.62 \pm 0.805$  and came in first place with a ratio of 40.5%, while the problem “finds difficulty swallowing” was reported with the fewest arithmetic mean  $1.31 \pm 0.635$  with a percentage 32.8% of the study subjects.

**Table (7): Means, orders and percentage of digestive problems among study subjects**

digestive problems	M	SD	Ranking	% Relative weight
He finds it difficult to swallow	1.31	0.635	6	32.8
He finds it difficult to chew	1.55	0.812	2	38.8
Vomits during or immediately after eating	1.35	0.700	5	33.8
He drools during the meal	1.45	0.789	4	36.3
He suffers from constipation	1.62	0.805	1	40.5
He suffers from diarrhea	1.55	0.689	3	38.8

**Table 8** shows positive behaviors that accompany eating among the study subjects. it showed that the behavior (enjoys food) obtained the highest arithmetic mean  $3.64 \pm 0.729$  and came in first place with a ratio 91% of the study subjects, while the behavioral “helps clean the table” ranked at latest arrangement with a mean  $2.65 \pm 1.265$ , with a ratio of 66.3% of the study subjects.

**Table (8): Positive behaviors associated with eating among the study subjects**

positive behaviors associated with eating	M	SD	Ranking	% Relative weight
He chews food as expected for his age	3.40	0.894	3	85.0
Helps prepare the table	2.73	1.062	7	68.3
Comes promptly at meal time	3.47	0.920	2	86.8
Willing to try new foods	3.07	0.979	4	76.8
He enjoys food	3.64	0.729	1	91.0
He likes to share his meal with others	2.91	1.059	6	72.8
He feeds himself as expected for his age	3.02	1.063	5	75.5
Helps clean the table	2.65	1.126	8	66.3

**Table 9** shows the averages, order, and percentages of the eating behavior dimensions among study subjects. It showed that positive behaviors accompanying eating were the highest in frequency, with an arithmetic mean  $3.11 \pm 0.594$  and a ratio of 77.8% of the study subjects. This dimension followed by excessive food selective behaviors with a mean of  $2.26 \pm 0.545$ , with a percentage of 56.5%, then comes the behavior after food refusal with an average of  $2.12 \pm 0.538$ , with a percentage of 53%, fourthly come behaviors associated with eating with an average of  $2.02 \pm 0.313$ , with a percentage of 50.5% .Sensory problems had an average of  $1.70 \pm 0.795$  and a rate of 42.5%, then come behaviors that interfere with eating by mean of  $1.55 \pm 0.420$  and a rate of 38.8%, and finally digestive problems with an average of  $1.47 \pm 0.408$  and with a ratio of 36.8% of the study subjects .

**Table (9): Dietary behaviors dimensions among the study subjects**

Behavior axes	Min	SD	Max	M	Ranking	% Relative weight
Disruptive eating behaviours	1.00	0.420	2.56	1.55	6	38.8
Behavior after food refusal	1.00	0.538	3.29	2.12	3	53.0
Behaviors associated with eating	1.42	0.313	2.68	2.02	4	50.5
Excessive food selectivity	1.13	0.545	3.67	2.26	2	56.5
Sensory problems	1.00	0.795	4.00	1.70	5	42.5
Digestive problems	1.00	0.408	2.50	1.47	7	36.8
Positive behaviors accompanying eating	1.50	0.594	4.00	3.11	1	77.8

**Discussion:**

Autism is considered one of the newly studied diseases in the world in general and in Syrian society in particular. Therefore, the state has paid attention to this group by allowing the establishment of care centers, whether private or supported by charitable or governmental bodies .Nutritional behaviors affect the social life of people with autism spectrum disorder and their degree of independence. Therefore, identifying the main factors related to eating behaviors and their effects on food choice and preference would be a first step in understanding how people with autism can engage in eating behaviors<sup>(9)</sup>

The results of the current study showed that positive behaviors accompanying eating came in first place among more than 3 quarters of the study subjects , followed by excessively selective behaviors for food which came in the second place among more than half of the study subjects , then behaviors after refusing food came in third place among more than half of the study subjects followed by behaviors associated with eating in fourth place with a percentage 50.5%, then sensory problems came in fifth place among two fifth of the study subjects , followed by behaviors that interfere with eating in sixth place with a rate of 38.8%, and finally digestive problems with a rate of 36.8% in seventh place.

In the present study it was found that the presence of the following behaviors ( disrupt eating include leaving the dining table before finishing the meal, getting angry at mealtimes, and turning face or body away from the food) is consistent with the results of a study conducted by Kazek, et al. (2021)<sup>(18)</sup>, which showed that children with autism spectrum disorder frequently make noise while eating, need entertainment and divert their attention, are fed by their parents, and eat their meals away from the table. <sup>(18)</sup>

On the other hand, the studied behaviors associated with eating including being able to eat independently and watching television during meals agreed with the findings of a study conducted by (Seiverling L, et al 2010) which refers to the undesirable behaviors that a child with autism engages in while eating, such as: crying, excessive movement while eating, and watching TV during eating. <sup>(21)</sup>

As for the dimension excessive food selectivity represented by the studied behaviors including ( preference for crunchy foods such as snacks and biscuits and a preference for starchy foods (pasta, potatoes, bread), that the child used to eat specific types of food and insist on them This is consistent with a study conducted by (Narzisi A, et al.2021)<sup>(22)</sup>, where the results showed that children with autism spectrum disorder prefer foods that contain a high percentage of carbohydrates, such as white bread, pizza, cakes, biscuits, ice cream, or “fatty” foods. It also agrees with a study conducted by (Smith A, et al. 2004)<sup>(23)</sup> where the results indicated that autistic children eat specific and fewer types of food compared to non-autistic children. <sup>(23)</sup>

As regards the presence of sensory problems including the presence of a difficulty in identifying the smell of food and the difficulty tolerating some types of foods, this result is in line with a study conducted by (Leekam S, et al.2007)<sup>(24)</sup> the results revealed that more than90% of children with autism have sensory abnormalities. They had sensory symptoms in multiple sensory domains. Group differences were found between children with autism and clinical comparison children in specific domains of smell/taste and vision. <sup>(24)</sup>

Digestive problems are also found among patients with ASD in the present study the most frequent digestive problem was constipation , finding difficulty chewing, and suffering from diarrhea, these findings consistent with the results of a study conducted by (Kazek B, et al 2021)<sup>(25)</sup>, where the results showed that digestive system disorders are among the most common physical disorders observed in 46-91% of patients compared to 6-50% of their healthy peers (including physical factors such as allergies, food intolerances, gastrointestinal disorders - including GERD, constipation and diarrhea. It is also consistent with a study conducted by (Mayes Z, et al 2019)<sup>(26)</sup>, where the results showed that poor appetite and constipation were factors significantly related to atypical eating behaviors. <sup>(26)</sup>

Regarding the positive behaviors accompanying eating it was found that the response enjoying food comes with the highest mean, followed by the items: comes immediately at mealtime and chews food as expected for his age. These findings are in line with a study conducted by (Demir, A, et al, 2022)<sup>(27)</sup>, where the results showed that children with autism spectrum disorder have a greater response to food, and enjoying food. <sup>(27)</sup>

### Conclusions and Recommendations:

#### Conclusions:

From the study results it can be concluded that positive eating behaviors were found among the majority of the study subjects (77,8%) and the most frequent positive behavior was enjoying food among 91% of the study subjects. Secondly, comes the of selective food behavior among 56.6% of the study subjects, while the majority of them 74.5% preferred crunchy foods. Thirdly, comes the refusing food behaviors among 53% of subjects and most of study subjects asked for food between meals. Fourthly, regarding eating associated behaviors it was found among more than half of the subjects 50.5% and more than 3 quarters 76.3% of study subjects could eat independently. Fifthly sensory problems were found among 42.5% of the study subjects that 43.8% reported a difficulty in identifying the food smell. Sixthly, behaviors that interfere with eating were reported among 38.8% and half them were found that they leave the table before finishing their foods. Finally, more than one third of study subjects reported digestive problems and 40.5% of them had constipation.

#### Recommendations:

- Distributing brochures or booklets on the nutrition of autistic children and adolescents to every family that has an autistic patient.
- Conducting educational sessions for parents, especially in dealing with the eating behaviors of children and adolescents with autism spectrum disorder.
- The necessity of having a nutritionist in centers specializing in the care of autistic children and adolescents to supervise the quality of meals and supplements provided in the center.

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