

Assessment of the Nutritional Status of Autistic Patients in AL-Hilla City

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Abstract

Background: The prevalence of people with autism spectrum disorder (ASD) is rising, making early screening crucial. As nutritionally vulnerable populations, a detailed nutritional assessment is essential in order to recommend timely and intensive interventions. **Material and Methods:** A descriptive study design" was employed to assessment of the nutritional status of autistic patients in Alhilla city in. from 1st / November / 2021 to 26st June 2022. Convenience (non-probability) sample" consisted of (200) samples, which is chosen during the sampling process through the period from (27th January 2022 to 5th April 2022). **Results:** The majority of ages of sample were within the 25-36 years old category by about (49.0%). The majority of the study's participants (33.0% and 59.0%) were educated and in institute school respectively. there is statistically high significant association between nutritional status and income monthly (P-value = 0.036). Also, there is statistically high significant association between educational level and nutrition condition (P-value = 0.021). **Conclusions:** The higher percentage of parents were educated, most of them were within (25-36 years) age group. Most of child in the current study were less than three years mean age were 2.93 most of them were male. The majority of parents reported a moderate level of nutritional status concerning their autistic children. There is a significant relationship between nutritional status with a parent educational.

Keywords: Dietary assessment, Nutritional assessment, Autism spectrum disorders, Nutritional status

1. Introduction

Children with autism spectrum disease (ASD) have been found to have lower intake of key nutrients compared to children without ASD (Malhi, et al.2017). In addition to poor nutrient intake, the incidence of overweight and obesity in children with ASD is greater than children with neurotypical development (ND), (Kwon, et al. 2022) which in turn puts children with ASD at risk for other comorbidities such as lipid disorders and metabolic syndrome (CDC,2015). Feeding problems at mealtimes in children with ASD occur much more frequently than in children with ND (McAuliffe, et al.2017). Some of the common feeding problems in children with ASD include not chewing food, lack of appropriate for age self-feeding, eating inadequate amounts, and prolonged meal times (Malhi, et al.2017). Food selectivity and food aversions may also occur which may be a result of sensory issues (Bandini, et al.2019). Studies have explored feeding problems in children with ND (Davis, et al. 2014; Bandini, et al.2019) as well as children with ASD, but few have simultaneously evaluated feeding problems and nutrient intake (Allen, et al. 2015; Castro, et al.2016). Research evaluating the dietary intake and mealtime behaviors of children with ASD is limited. To our knowledge, only Castro et al., 2016, investigated such issues simultaneously (Castro, et al.2016). Studies have explored feeding problems in children with ND as well as ASD children, but few have simultaneously evaluated feeding problems and

nutrient intake (Davis, et al. 2014; Bandini, et al.2019). The Morbidity and Mortality Weekly Report (MMWR) states that ASDs continue to be a major concern for public health in the USA (Lonnie Zwaigenbaum, MD et al., 2019). There is no exact cause of ASD but genes can interact with environmental influences to impact development in a way that may contribute to autism. Certain factors increases the availability of developing autism includes: having a sibling (sister or brother) with autism, having a parents with autism, having assured genetic conditions (fragile X syndrome, Down syndrome) and very low birth weight (Simonstein & Mashiach-Eizenberg, 2016).

Early signs of ASD can be detected earlier in children in age (6-18) months old, when a child fixes objects or doesn't react to his parents or people. Toddlers and older babies may be not react to his names, avoiding of eye contact, lose mutual attention or repetitive movements like arm flapping or rocking. If parents or caregiver see these signs, they must be contact the paediatricians or psychologist to make a developmental screening (Chuthapisith & Ruangdaraganon, 2011). The food intake of ASD children may be impacted by abnormal feeding behaviors. When comparing to age- and sex-matched normally developing children (TDC), ASD children demonstrated considerably worse self-feeding, greater food anti - social behavior, and more food neophobia, the 2008 research found (Martins, Young & Robson). In addition, compared to parents of TDC, parents of 5- to 12-year-old ASD

children report greater too much feeding issues, including food refusal, needing particular utensils or presentation of food, having to accept just meals with low texture, like pureed food, and having to eat a restricted variety of foods (Schrek, Williams & Smith, 2004). Parents of ASD children may be more likely to experience parental stress due to feeding challenges, which may exacerbate other difficulties for the parent, particularly around mealtimes (Curtin et al., 2005), which can have a detrimental impact on the life (Postorino et. al, 2015).

2. Methodology

Design of the Study

"Convenience (non-probability) sample consisted of (200) samples, which is chosen during the sampling process through the period from (27th January 2022 to 5th April 2022).

A descriptive design of the study was used to assessment of the nutritional status of autistic patients in Alhilla city in Babylon Province. from 1st / November / 2021 to 26st June 2022.

The Settings of the Study

The existing study is directed at Babylon province autism centers that comprised o:

1. Babylon Autism centre – Al-Ataba Al-Abaseia 30%.
2. Babylon specialized centre for autism and speech therapy 33.37%.
3. Almusayeb Autism centre 30%.

4. Al-Rahma Autism centre 30%.

5. Amal Autism centre 30%.

The Study Instrument

Study questionnaire in order to implement this study and reach all its objectives. constructed questionnaire was prepared and modified after a thorough review of the relevant literature. The final study questionnaire covers two parts as following:

1. Demographical data.
2. Child's Nutritional status.

Methods of Data Collection

Throughout the use of the questionnaire and the self-report, the data collected from those parents who are coming to the autism centres. The data collected on individual base for filling the questionnaire by parents themselves under the researcher supervision and each self-report takes between (25-30) minutes. The data collection was carried out for the period of (27th January 2022 to 5th April 2022).

Data Analysis Approach

Analysis of the data in the current study was obtained by SPSS V.26. The frequency, percentage, mean, and SD have been used for descriptive statistics of the data. Independent t test, one way ANOVA, and Pearson correlation were used for inferential statistics. The outcomes have been considered statistically significant when the P-value = 0.05.

3. Results

Table 1a: Distribution of the study sample statistically based on their demographical characteristics

Demographical features		Freq.	%
Age Groups (Years)	<25	10	5.0
	25-36	98	49.0
	36-45	55	27.5
	46-55	24	12.0
	>55	13	6.5
	Total	200	100%
Education level	Illiteracy	32	16.0
	Educated	66	33.0
	Elementary	20	10.0
	intermediate	23	11.0
	Institute and above	59	29.5
	Total	200	100%
Marital status	Married	159	79.5
	Widow	20	10.0
	Separated	16	8.0
	Divorced	5	2.5
	Total	200	100%
Monthly Income	Enough	88	44.0
	Enough to certain limit	87	43.5
	Not enough	25	12.5
	Total	200	100%
Gender	Male	126	63.0
	Female	74	37.0
	Total	200	100%

Table (1) shows that the majority of ages of sample were within the 25-36 years old category by about (49.0%). The majority of the study's participants (33.0% and 59.0%) were educated and in institute

school respectively. In addition, this table shows that the majority of the study samples (79.5%) were married. Regard the Income, the table shows that more than half of the participants within the Enough

to certain limit income.

Table 2: Statistical distribution of nutritional status Items

Nutritional status –Items		Freq.	%
How do you think your child's nutritional status is balanced or unbalanced?	Balanced	137	68
	Unbalanced	63	31.5
Does autism affect the nutritional behavior of your child?	Yes	98	49
	I don't know	73	36.5
	No	29	14.5
How autism affect the nutritional behavior	Selective	109	62.6
	Obsessed	53	30.5
	Loss of appetite	12	5.2
	Vomiting	28	14
Is there an barriers or factor that prevents your child from getting a balanced nutrition?	Swallowing difficulty	65	32.5
	Refuse to eat	40	20
	Eats a lot	14	7
	Insufficient eating	17	8.5
	Carrying the food by mouth	9	4.5
	Tingling and pain with eating	1	5
	Nothing	26	13
How is your child's daily consumption of water?	0-250 ml	79	39.5
	250-500ml	79	39.5
	500-750ml	39	19.5
	750-1000ml	3	1.5
how many times a day is fruit eaten (fresh or frozen, but not juiced?).	0	79	39.5
	1-2	79	39.5
	3-4	39	19.5
	5-6	3	1.5
	6 or more	0	0
how many times a day do you eat vegetables (fresh, frozen or canned)	0	76	38
	1-2	78	39
	3-4	44	22
	5-6	2	1
	6 or more	0	0
How many times a day are dairy products (cow's milk or cheese) eaten?	0	65	32.5
	1-2	84	42
	3-4	51	25.5
	5-6	0	0
	6 or more	0	0
How many times a day should a milk substitute (soy milk, rice milk or almond milk)	0	48	24
	1-2	93	46.5
	3-4	58	29
	5-6	1	5
	6 or more	0	0
How many times a day do you eat meat (beef, chicken, turkey, fish, eggs).	0	75	37.5
	1-2	76	38
	3-4	49	24.5
	5-6	0	0
	6 or more	0	0
How many times a day do you eat other protein foods (nuts, better nuts, legumes).	0	43	21.5
	1-2	82	41
	3-4	75	37.5
	5-6	0	0
	6 or more	0	0
how many times a day do you eat cereals (bread, rice, noodles, pasta, crackers, burgers).	0	36	18
	1-2	69	34.5
	3-4	95	47.5
	5-6	0	0
	6 or more	0	0
how many times a day do you eat sweets (chocolate, candy, ice cream, cookies).	0	38	19
	1-2	66	33
	3-4	96	48
	5-6	0	0
	6 or more	0	0
how many times a day do you eat fats (butter, margarine, vegetable oil, olive oil).	0	26	13
	1-2	70	35
	3-4	104	52
	5-6	0	0
	6 or more	0	0
how many times a day do you eat fast food (cheeseburger, chicken strips, pizza).	0	45	22.5
	1-2	85	42.5
	3-4	70	35
	5-6	0	0
	6 or more	0	0

In regard to the Nutritional status Items, the table (2) reveals that the subjects' responses were severe at many items (means of scores were 2.246 and more).

Nutritional status Domain		Freq.	%	Mean ± SD	Assess.
Nutritional status	Mild	5	33.33	2.068±0.51	Moderate
	Moderate	6	40		
	Severe	4	26.66		

Abbreviation: SD=Standard Deviation, "Mild" when mean of score (<=1.86), "Moderate" when mean of score (1.86-2.246), and "Severe" when Mean of score (2.246 and more)

Concerning the Nutritional status Domain, the table (3) reveals that the subjects' responses were Moderate at overall domain (means of score was 2.068).

Demographic data		Freq.	%	P-value
Age Groups (Years)	<25	10	5.0	0.001 HS
	25-36	98	49.0	
	36-45	55	27.5	
	46-55	24	12.0	
	>55	13	6.5	
Education level	Illiteracy	32	16.0	0.001
	Educated	66	33.0	
	Elementary	20	10.0	
	Intermediate	23	11.0	
	Institute and above	59	29.5	
Marital status	Married	159	79.5	.092
	Widow	20	10.0	
	Separated	16	8.0	
	Divorced	5	2.5	
Monthly Income	Enough	88	44.0	.011 HS
	Enough to certain limit	87	43.5	
	Not enough	25	12.5	
Gender	Male	126	63.0	0.595
	Female	74	37.0	
Child age	Mean ± SD	2.93	1.23	0.922
Child gender	Male	126	63.0	0.659
	Female	74	37.0	
Total		200	100%	

Table (3) shows the relationship between mother's demographical characteristics and nutritional status according to demographic categories. The table show a significant association between Monthly Income and nutritional status (P-value = 0.036). Also, there is a significant association between educational level and nutrition condition and at (P-value = 0.021).

4. Discussion

Discussion of the distribution of the studied sample according to their demographic data.

The results of study presented shows that the majority of ages of sample were within the 25-36 years old category by about (49.0%). The majority of the study's participants (33.0% and 59.0%) were educated and in institute school respectively. In addition, this table shows that the majority of the study samples (79.5%) were married. Regard the Income, the table shows that more than half of the participants within the Enough to certain limit income.

(Alkhalidy,etal2021) Beggiato et al. reported that girls were more likely to be under identified by some diagnostic instruments for ASD, and thus, the lower rates of ASD diagnosis compared to boys.

While more frequently in individuals with neurodevelopmental disorders like ASD. Consistent

with the literature, this study showed that children with ASD have significantly higher rates of difficulty when transitioning to supplementary food and nutrition in infancy. At present, these children were found to be more selective in food and were fed a less varied diet. Previous studies have reported that children with ASD more frequently have selective eating behaviors (Sohel, ketal 2021) and, in this study, the children in the research group had fewer Where eating behavior has parallels with variations in emotional status, and positive or negative emotional stimuli are thought to cause changes in eating habits. The physiological reactions observed after negative emotions or stress are similar to the feelings of satiation after nutrition; thus, loss of appetite and reduced food intake may be a natural physiological response when faced with negative feelings (Ersoy, etal; 2020).

In this study, lower education level among parents correlates with a higher risk of having an autistic child. The results were consistent with a comparative study between ASD and TD children in China. In India, lower education level among ASD mothers, but not fathers, was associated with higher ASD incidence in offspring. However, the difference was not significant. Conversely, another Chinese study reported higher parental education level for parents

in the ASD group than in the TD group (Şengüzel, et al;2021).

Where the current study supports this is findings of previous studies that show being the first child in the family, cesarean delivery, and treatment in the neonatal care unit were associated with increased risk of ASD. Other factors such as family history, did not statistically differ between the two groups in our study. Contrary to expectation, the final regression analysis of our results showed that familial history of autism, while significant was inversely related to the risk of ASD in the offspring. Our results contradicted previous studies that confirmed higher ASD risk with increased family incidence of ASD (Jia, et al;2019). Further investigation is merited. This study did not reveal any significant differences.

In regard to the Nutritional status Items, reveals that the subjects' responses were severe at many items (means of scores were 2.246 and more), concerning the Nutritional status Domain, reveals that the subjects' responses were Moderate at overall domain (means of score was 2.068)

Assessing nutritional behavior and feeding styles with scale tools and the use of parents' memories while evaluating past eating habits were other limitations of the study. Despite these limitations, this study is one of the few studies on the nutritional behavior of children with ASD and caregiver feeding styles in comparison with a control group. Other strengths of our study the inclusion of comparison with age and sex-matched children, including families with similar socioeconomic status, and excluding drug use. Identifying the nutritional and feeding problems of children with ASD, determining the long-term effects of these problems, and creating early intervention plans would provide significant contributions to the healthy growth and development of these children. Identified a significant correlation between parents' feeding While methods and children's food consumption and weight. Both emotional and instrumental feeding styles are known to affect children's nutritional choices and the development of obesity. In this study, regarding parental feeding styles, emotional feeding, instrumental feeding, and tolerance-controlled feeding scores were significantly higher in the ASD group. (Medicaletal;2022).

5. Conclusions

According to the interpretation of the results of this study, it concluded as follows:

1. The higher percentage of patients were educated, most of them were within (25-36 years) age group.
2. The majority of patient reported a moderate level of nutritional status.
3. There is significant relationship between nutritional status and monthly income.

6. Recommendations

According to the conclusion of the current study, the researchers recommended the following;

1. The results of the study point toward the sign of need to educating and training patients regarding nutritional standards.
2. Support governmental agencies and important stakeholders in improving the programs and facilities that will help to upsurge attentiveness and reinforce positive temperaments toward nutritional status for patients with autism.
3. Increase and development of educational training courses, seminars and workshop that held by the Ministry of Health for patients on the issue of ASD nutritional status.
4. Due to the lack in such researches in Iraq, it is recommended that more research be conducted to determine a standard tool for measuring behavior and nutritional status for children with autism.

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