

The Effectiveness of Nutritional Edification Programs for Mothers and Supervisors of Autistic Children

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ABSTRACT

The lack of health and food awareness of mothers is the uniting factors affecting the nutritional status of autism children. Therefore, the research sample was divided into two groups; which included the first set before implementing the program of (75) mothers, a while the numbers of supervisors (68) were chosen from three centers in the cities of Cairo and Mansoura. The second group composed of a total number of (29) mothers and (29) supervisors. The first model: a questionnaire for the mother, the second model: a questionnaire for the supervisors, the third model: A special questionnaire to develop the skill of the manual study sample in the basics of nutrition and meal planning. The results showed after correcting their answers that the degree ranged between 12 to 21 degree, an average of 17.17 ± 2.28 , which means the standard level, was average, which confirmed that more advanced workshops are needed to raise the level of the knowledge. Afterwards applying the workshop scheduled for extension program for the improvement of knowledge in planning meals that were measured through the knowledge test. The test to measure the level of knowledge is evident from these results after correcting their answers and their grades ranged between 13 to 25 degrees, an average of 18.04 ± 3.39 degree, which means, the standard level was average. The study concluded the importance of further education programs and the dissemination of food program at all extension centers in the Arab Republic of Egypt.

Key words: *Autism, extension programs, awareness of food, food habits.*

INTRODUCTION

Autism is defined as severe psychiatric disorder of childhood marked by severe difficulties in communication and forming relationships with other people, in developing language, repetitive, and limited patterns of behaviors and obsessive resistance to small changes in familiar surrounding (**Chezet *et al.*, 2006**). Autism is a chronic disorder with an onset before the age of 3 years, characterized by the following three main sets of behavioral disturbances: social abnormalities, language abnormalities and stereotyped repetitive patterns of behavior (**Volkmar and Klin 2005**). It is considered one of the pervasive developmental disorders which represent a group of clinical syndromes that have two fundamental elements: developmental delays and developmental deviations (**El-Baz *et al.*,**

2011). Over the past 20 years, there has been a marked increase in the diagnosis of individuals with Autism Spectrum Disorders (ASDs). In 1966; Lotter undertook the first epidemiological study of autism, estimating the prevalence of autism disorder to be 4.5/10,000. Two decades later, the estimate rose to 10.1/10,000. Currently, the community prevalence of ASDs is estimated to be at least 36.4/10,000, with some estimates as high as 67/10,000 (**Matson and Sturme y 2011**). Nutrient deficiencies are common among children with autism (**Vancassel, *et al.*, 2001; Arnold *et al.*, 2003 and Adams, *et al.*, 2006**). Poor quality and limited diets exacerbate this problem. Additionally, supplementation has shown to be supportive (**Martineau, *et al.*, 1985 and Dolske, *et al.*, 1993**) and a

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nutrient dense diet can supply needed nutrients. Specific nutrients are required for complex biochemical processes, and nutrients can only be digested and absorbed through food and supplementation when the GI tract is functioning well. In addition to getting a wide variety of nutrients through foods, supporting digestion is important. The aim of the research is to identify the nutritional problems and practices faced by the mothers and supervisors in feeding the autistic children and to try to find suitable solutions for them and to study the effectiveness of the nutritional edification program in improving the knowledge of the sample.

Subject and method

Subject

The samples have been selected from the Psychiatric Hospital of El Abbassia, Mansoura University

Hospital and Baraa center for treatment of autistic children.

Target group: The study sample consisted of two categories

- Mothers of Autistic Children who visit the three centers for treatment of autistic children, they were 75, Supervisors of autistic children in the same centers and they were 68. The indicative program has been implemented 29 of mothers who agreed to attend all the food extension sessions and were excluded from attending only one or two sessions, While the number of research sample of supervisors 29 sample of those attending all group counseling sessions, excluding those attending only one or two sessions. The data for this research and the application of the indicative program were collected during the time period from October to December 2017.

The study plan is carried out according to the following:

- First: Field study

Questionnaire: There are three models of the questionnaire

- The first model: a questionnaire for the mother and includes the following axes
 - General data
 - Practices and dietary habits when feeding an autistic child
 - Food awareness of mothers while feeding an autistic child
 - Mother skill in planning the meal
 - Favorite foods for an autistic child
- The second model: a questionnaire for the supervisors and includes the following axes
 - General data

- Practices and dietary habits when feeding an autistic child in the center
- Food awareness of supervisors while feeding an autistic child
- Supervisor skill in planning the meal
- The third model: A special questionnaire to develop the skill of the manual study sample in the basics of nutrition and meal planning

Educational content of sessions of the food education program:

- A presentation of the nutritional problems experienced by mothers and supervisors during the nutrition of children with autism
- Building foods and their importance in nutrition a child autism

- Energy foods and their role in nutritional child autism
- Prevention foods and their role in the prevention of autism children
- The basis of planning balanced meals within the limits available to the child of autism
- A workshop to develop the skills of planning a balanced meal according to **Obidat, et al., (2004)**.

middle education among the mothers (52%), followed by high one (38.6%), it was also shown the high percentage of the father of high education (51.9%) followed by middle education level (36%).

As illustrated per statistical analysis of correlation coefficient, there is positive statistically significant correlation ($r = 0.46$, at $p \leq 0.0001$) regarding the parents education indicating that the higher of level for mother's education than higher the father's level of education.

RESULTS AND DISCUSSION

Educational level of parents:

Parents' education has a great role for children's care and regarding particularly for nutrition it enables them selecting the proper food, and provides the right nutritional needs for childhood, (**Algasem and Alhamad 2003**).

Findings from table (1) reveals: high percentage of

Economic status of the family:

This status does affect the autistic child care, in particular at the non-supported private centers including government authorities or charities, since joined to those centers, the child will need to a monetary support to cope with their high costs. Table (2) illustrates the monthly income was less than 5000

pounds, which indicates an average monthly income for the majority of the sample, which increases the financial burden of the family and this is consistent with the study (**Busch and Barry 2007**). The study of **Montes and Halterman (2008)** adds that the presence of a challenging child in the family represents a significant financial burden for the family's annual income because the family is confronted with the costs of child education, whereas one-third of the subjects of sample (36%) referred to a monthly income exceeding 5000 pounds.

This was followed by those receiving (3000>5000) pounds at a percentage of (22.7%), whereas those of middle income (1000>3000) pounds were at a rate of (18.7%), but those of low income percentage receiving less than 1000pounds was (15.9%), indicating and confirming that (57.3%) of those children's families

were of low or middle income. The statistical analysis did not show statistically significant moral differences in the levels of monthly income among the three centers, whereas the coefficient of correlation shows statistically significant correlation relation ($r = 0.29$ and at $p < 0.01$, $r = 0.47$ at $p \leq 0.0001$) between the monthly income of the family and educational level of both mother and father confirming that the higher the level of education for parents, the higher the monthly income of the family.

Mother's age:

The age of mother during pregnancy affects the health status of the child and to which extent will be exposed to several diseases. Table (3) refers to the mother's age during this current study that was 24-53 years with average 36.19 ± 6.52 years.

Moreover, the table findings refers to more than the half of the mother's ages ranged from 30-40 years (55.9%) followed by those whose ages ranged from 41-50 years at a percentage of (25.3%), whereas (2.7%) of the mothers did not mention their own ages since they did not consider any importance for this regard. The importance of the mother's age at marriage, the birth of the child, the number of pregnancies and births, the extent of her childbirth difficulties and the impact on the child's health and mental state. The results showed that the majority of mothers were married between the ages of 15 and 25; More than half of the sample (56%) gave birth to children with autism at an age of 20 to 30 years. In addition, (70, 6%) of mothers have between 5 and 10 members of their families. This is in line with **(Williams, et al., 2008)**.

Mothers level of awareness before and after the program application:

The guidance program has been implemented, where the mothers accepted to join the guidance program, they were (29) mothers. The findings of statistical analysis showed that the participant ages ranged from 24-50 years, at an average 34.73±6.17 years. It was also indicated that 33.3% of the mothers were of middle education, the rate of those of higher education went up to reach 48.1 % , where as it was 18.6% for those of low education.

Table (4) was shown from the findings after applying the guidance program the high level of food awareness from low to middle, where their scores were from 71 to 117 points, at average 96.68±12.14 points before the program application, and their scores went up to 124.55±16.4 to 8 points after program being

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applied, where they ranged from 78 to 148 points.

The statistical analysis by using (t) test there were statistically significant differences (0.0001) before and after (pre and post) the application of guidance program in favor of the post one.

This indicates its effectiveness in raising and enhancing the level of food awareness in the mothers

The food awareness is characterized by its impact on health situation of the family in general and the child in particular. The findings from table (5) concluded to suggestion that the majority of the study sample have a decrease and shortage in awareness about the food elements, indicating the shortage of knowledge in the research sample related to the food elements and its role in nutrition the Autistic child another suggestion from the findings, the high

awareness accomplished and created after applying the guidance program with statistically significant differences around the important of proteins in protecting the body against inflammation and diseases, and the importance of fibersin minimizing constipation. Moreover, the awareness of the study sample regarding vitamin (D), its sources and shortage, calcium sources and its importance in bones protection against rickets disease. The table refers also to low awareness about fats, omega and carbohydrates and the role played by both zinc and magnesium and their sources and importance for the body and the child with autism.

The social status of supervisors:

The social status of supervisors may affect their works as supervisors of autistic children, the giving, attention and care of this

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group of children vary according to the social situation, table (6) shows that 50 % of the sample is married, while 42.6% are unmarried or divorced by 7.4 %, and with statistically significant differences between three centers.

The presence of children at the supervisors:

The existence of children to the supervisors feel the extent to which the mothers of Autistic children, in addition to previous experiences of those supervisors of how to instill practices and habits of healthy food for children and how to deal with children, when identifying the presence of children at the supervisors, it was found that 51.5 % of the supervisors had no children compared to 48.5 %.

Educational level of supervisors:

Supervisors have an important role in caring for the child at the center, that is, it is considered a second mother. Its educational level plays a major role in its awareness of food, in the way of caring for children of Autism and of providing assistance and advice to the mother of the child.

The table (7) showed that the highest percentage was for the higher educational level, followed by the average educational level, and there is no supervisor with an educational level.

The statistical analysis of correlation coefficient showed a significant inverse correlation ($r = - 0.40$, at $p \leq 0.001$) among the age of the supervisor and the level of education, which means that the higher the age of supervisors lower level.

Supervisors level of awareness before and after the program application:

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The guidance program has been implemented, where the supervisors accepted to join the guidance program, they were (29) supervisors. The findings of statistical analysis showed that the participant ages ranged from 24-35 years, at an average 30.10 ± 5.5 years. It was also indicated that 100% of high education.

Table (8) was shown from the findings after applying the guidance program the high level of food awareness from low to middle, where their scores were from 77 to 115 points, at average 79.34 ± 10.73 points before the program application, and their scores went up to 116.79 ± 12.93 points after program being applied, where they ranged from 89 to 139 points. The statistical analysis by using (t) test there were statistically significant differences at moral level (0.0001) before and after (pre and post) the application

of guidance program in favor of the post one.

This indicates its effectiveness in raising and enhancing the level of food awareness in the supervisors.

The findings from table (9) concluded to suggestion that the majority of the study sample have a decrease and shortage in awareness about the food elements, indicating the shortage of knowledge in the research sample related to the food elements and its role in feeding the Autism child another suggestion from the findings, the high awareness accomplished and created after applying the guidance program with statistically significant differences around the important of proteins in protecting the body against inflammation and diseases, and the importance of fibers in minimizing constipation. Moreover, the awareness of the study sample regarding vitamin (D), its sources and

shortage, calcium sources and its importance in bones protection against rickets disease. The table refers also to low awareness about fats, omega and carbohydrates and the role played by both zinc and magnesium and their sources and importance for the body and the child with autism.

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Table (1): Educational level of parents:

Educational level	Mother education		Father education		Moral differences (N.S)
	T	%	T	%	
Low education	7	9.4	9	12.1	
Middle education	39	52	27	36	
High education	29	38.6	39	51.9	
Total	75	100	75	100	

*T= total N.S= non-significant *ANOVA*

Table (2): The monthly income of the family:

Income level	T	%	Moral differences
Less than 1000 pounds	12	15.9	(N.S)
1000-less than 3000 pounds	14	18.7	
3000-less than 5000 pounds	17	22.7	
More than 5000 pounds	27	36	
Those who did not disclose	5	6.7	
Total number	75	100	

N.S= non-significant

Table (3): The mother's age during this current study

The current age of the mother	T number	%
Less than 30 years	11	14.8
From 30-40 years	42	55.9
From 41-50 years	19	25.3
More than 50 years	1	1.3
Did not mention	2	2.7
Total number	75	100
Mean ± standard deviation	36.19±6.52	

T= Total

Table (4): Mothers average scores before and after implementing the guidance program

Points/marks	Mean ± standard deviation	Significant level
Before program being applied	96.68±12.14	0.0001
After program being applied	124.55±16.48	

Table (5): Illustrated the food awareness in the mothers before and after applying the program

Phrases	Before the application	After the application	Significant level
	Mean ± standard deviation	Mean ± standard deviation	
Animals proteins is not important in renewing the cells	0.49± 1.89	0.63± 2.24	Statistically significant
Eating fibers reduces constipation	0.18± 1.03	0.90± 1.62	
Fish are a source of fatty acid-omega 3	0.64± 1.25	0.97± 2.10	
Animal foods are viewed as a source of vitamin (A)	0.83± 1.46	0.98± 2.03	
Shortage in vitamin (D) results in rickets	0.85± 1.25	0.60± 2.17	
The daily need of vitamin (C) is 40-45 milligram	0.62± 1.21	0.78± 2.13	
Anxiety and disorders result from shortage in vitamin (B6)	0.56± 1.78	0.87± 2.24	
Animal foods are free from folic acid	0.66± 1.92	0.63± 2.44	
Calcium helps in blood liquidation (hemophilia)	0.49± 1.89	0.63± 2.75	
Excess in Zink results in weak capacity for education	0.65± 1.85	0.90± 2.37	
excess in magnesium helps transfer of nerve stimuli	0.49± 1.60	0.46± 2.89	

Table (6): Shows the social status of supervisors

Social status	T number	%	Significant differences
Married	34	50	(N.S)
Unmarried	29	42.6	
Divorced	5	7.4	
Total sample	68	100	

T= total

N.S= non-significant

Table (7): Educational level of supervisors

Educational level	T number	%	Significant differences
Low Education	0	0	(N.S)
Middle Education	8	11.8	
High Education	60	88.2	
Total number	68	100	

T= total

N.S= non-significant

Table (8): Supervisors average scores before and after implementing the guidance program

Points/marks	Mean ± standard deviation	Significant level
Before program being applied	97.34±10.73	0.0001
After program being applied	116.79±12.93	

Table (9): Illustrated the food awareness in the supervisors before and after applying the program

Phrases	Before the application	After the application	Significant level
	Mean ± standard deviation	Mean ± standard deviation	
Animals proteins is not important in renewing the cells	0.30± 1.89	0.51± 2.13	Statistically significant
Eating fibers reduces constipation	0.46± 1.17	0.89± 1.65	
Fish are a source of fatty acid-omega 3	0.62± 1.58	0.54± 2.68	
Animal foods are viewed as a source of vitamin (A)	0.52± 1.93	0.56± 2.62	
Shortage in vitamin (D) results in rickets	0.25± 1.0	0.63± 2.75	
The daily need of vitamin (C) is 40-45 milligram	0.25± 1.06	0.95± 2.24	
Anxiety and disorders result from shortage in vitamin (B6)	0.62± 1.37	0.85± 2.96	
Animal foods are free from folic acid	0.18± 1.96	0.40± 2.10	
Calcium helps in blood liquidation (hemophilia)	0.41± 1.79	0.84± 2.06	
Excess in Zink results in weak capacity for education	0.73± 1.75	0.86± 2.44	
excess in magnesium helps transfer of nerve stimuli	0.51± 2.75	0.74± 3.13	

فاعلية برامج التثقيف الغذائي لأمهات ومشرفات أطفال التوحد

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الملخص العربي

يعتبر نقص المفاهيم والمدرجات الغذائية والتغذية للأمهات من العوامل المؤثرة على الحالة الغذائية لأطفال التوحد، فيجب على الأمهات أن يكون لديها وعي بالوجبات الأساسية اليومية واختيار الأطعمة المناسبة لاحتياجات الطفل بما يتفق مع حالته الصحية. لذلك تم تقسيم عينة البحث إلى مجموعتين: حيث تضمنت المجموعة الأولى قبل تطبيق البرنامج 75 أم، بينما كان عدد المشرفات 68 مشرفة من ثلاثة مراكز في مدينتي القاهرة والمنصورة. أما المجموعة الثانية فكانت مكونة من 29 أم و29 مشرفة، بعد توزيع استمارات الاستبيان وتحديدها، والتي تضمنت البيانات العامة والممارسات والعادات الغذائية التي وضعت عند إطعام الطفل المصاب بالتوحد، والمسائل المتعلقة بالوعي الغذائي، وأظهرت النتائج بعد تصحيح إجاباتهن أن الدرجة تراوحت بين 12 إلى 21 درجة، بمتوسط 17.17 ± 2.28 ، وهو ما يعني أن المستوى القياسي كان متوسط، مما يؤكد الحاجة إلى مزيد من ورش العمل المتقدمة لرفع مستوى وعيهن بعد تطبيق ورشة العمل المقررة للبرنامج الملحق يظهر الاختبار بعد تصحيح إجاباتهن الدرجات حيث تراوحت درجاتهن بين 13 إلى 25 درجة، بمتوسط 18.04 ± 3.39 ، وهو ما يعني أن المستوى القياسي كان متوسطاً، خلصت الدراسة إلى أهمية برامج التعليم الإضافي ونشر برنامج الغذاء في جميع مراكز الإرشاد في جمهورية مصر العربية.

الكلمات الدالة: التوحد - برامج إرشادية - الوعي الغذائي - العادات الغذائية