EVALUATION OF NUTRITION AND HEALTH STATUS AMONG CHILDREN WITH DIABETES.

Mona E.M.Naga
Faculty Of Specific Education,
Home Economics Dept., Minufiy University .

EVALUATION OF NUTRITION AND HEALTH STATUS AMONG CHILDREN WITH DIABETES.

By
Mona E.M.Naga
Faculty Of Specific Education,
Home Economics Dept., Minufiy University .

ABSTRACT

Nutrition obviously plays an important part in the development of overweight and obesity among children with diabetes. The present study aimed to investigate nutritional status, body measurements, food pattern, fatty acids and risk of diabetes in children, A random sample of forty diabetic children, ranged between 7-13 years, were chosen from maternity and childhood at sugar institute. Results of present study revealed that boys were shorter with lower weight compared to girls. The most frequent symptoms was polyuria and polydipsia. Mean macronutrients intake for boys and girls were higher than 100% of DRI , except for calories, calcium, phosphorus, zinc iron and vitamin A, B_1, B_2, B_{12}, intakes of girls which were less than 100% . Also intake of vit D& B_6 were low for males. Mean percent of omega-6 FA (% of RNI) was higher in girls while omega-3 FA (% of RNI) was higher in boys. These results reflects the need for increased amount of the fiber intake, fruits, vegetables and legumes among these children and increasing milk and milk products in the diet and decreasing snack and fast foods. Increasing nutrition knowledge is also adviced.

EVALUATION OF NUTRITION AND HEALTH STATUS AMONG CHILDREN WITH DIABETES.

By
Mona E.M.Naga
Faculty Of Specific Education,
Home Economics Dept., Minufiy University .

Introduction

Nutrition recommendations are developed and implemented to meet treatment goals and desired outcomes for children with type 2 diabetes. It is essential that ongoing nutrition self-management education and care be provided for individuals with diabetes American diabetes affectation (ADA). Nutrition status should be evaluated for children with type **1** Diabetes mellitus (DM) as they are growing and they are usually underweight with malnutrition probably because of diabetes itself as a debilitation disease or because of associated celiac disease (**American Diabetes Association, 2000**).

One of the first steps in managin g type 1 DM is diet control. The diet treatment is based upon nutritional assessment and treatment goals. Diet recommendations should be made in view of the patient's eating habits and lifestyle. Diet management includes education about the timing, size, frequency, or composition of meals to avoid hypoglycemia or postprandial hyperglycemia. In these patients, the caloric distribution is important; a recommended distribution consists of 20% of daily calories for breakfast, 35% for lunch, 30% for dinner, and 15% for late evening snack. The minimum protein requirement for good nutrition is 0.9 g/kg/d (range = 1-1.5 g/kg/d), at intake should be limited to 30% or less of the total calories, and a low-cholesterol diet is recommended. Patients should consume sucrose in moderation and increase their fiber intake. In some cases, mid morning and mid afternoon snacks are important to avoid hypoglycemia. The role of diet in type1 is to provide adequate nutrition for proper growth, supplement nutrition deficiency secondary to diabetes and to help in metabolic control of diabetes namely hyperglycemia (**American Diabetes Association, 2001**). The present study aimed to assess dietary nutritional status in relation to

body measurements, and metabolic control among children with type1 diabetes

SUJECTS AND METHODS

Subjects:

A total number of 40 patients with type 1 diabetes mellitus for more than 3 years who were receiving their diabetic care at the diabetic unit in the outpatient department of sugar institute were recruited. They were divided into 2 groups: Group 1 for boys(n=20) and group 2 for girls (n= 20). The age of children range was 7-13 years. Exclusion criteria included type 2 diabetes , presence of acute illnesses, acute diabetic complications as diabetic ketoacidosis, chronic diabetic complications. Children diagnosed with celiac disease were excluded as well as children who were under special dietary restriction other than for diabetes or receiving any form of dietary supplementations.

Methods:

Des caption of subjects:

1- **Demographic data** :Age, gender, degree of consanguinity, type of diabetes mellitus, number of the diabetics in the family and smoking among fathers.
2- **Socioeconomic data**: level of education, occupation of parents, school year, and family income.
3- **Biodemographic Status**
    a. The most frequent symptoms encountered by the children during the course of their illnesses.
    b. The cause of disease as believed by the child: Genetics, food induced, psychological state, viral induced, immunity related or unknown
    c. The change of the weight as noticed by the child:
    d. The history of regular exercise.
4- **Dietary history:**
    a. The daily food consumed, using 24 hour recall method.
    b. Food that they like, or dislike.
    c. Food intake when children feel hungry according to(WHO,1995).

Physical examination:

Anthropometric measurements:

Anthropometric measurements and percentile body mass index for age were performed for all children according to the method of**(Jellyfe, 1966).**

Biochemical analysis:

1. Hemoglobin level was determined as the method published by to **Waterman *et al.,*(1975).**

2. -Blood sugar level was determined by home blood glucose momiter.

Nutritional assesment:

Daily dietary consumption by each child was calculated using Food composition Tables **(Nutrition Institute, 1996).** Total fat (g), saturated fatty acid SFA (g) monounsaturated MFA (g) and polyunsaturated PFA (g) were calculated. The adequacy of diets with regard to dietary references Intake **(DRI, 2000) a**nd Recommended Dietary allowances **(RDA, 1989)** was calculated. Food frequency information were Analyzed according to **krauss and Mohan (1992).**

Statistical analysis

Of all data were performed by using computer program, Statistical Package Social Science **(SPSS, 1998).**

RESULTS AND DISCUSSION

Table (1) shows the mean age, weight, height and BMI for the studies groups. Means for age, weight and BMI were nearly equal in boys and girls patients, while the height was higher in girls than in boys significantly"

According to the BMI curves (for boys mean age was 8.5 ± 1.83, BMI was 22.03 ± 15.01, for girls, mean age was 8.7 ± 1.91, and BMI was 21.78 ± 13.75). This significant difference could be explained by the earlier growth spurt in girls. BMI for both boys and girls are higher than their 95 percentile . These results agreed with that of *Nafiu et al., (2007)*.

Data in table (2) shows the socio-economic status of patients. It is noticed that all the studied children were in the primary school, boys were clustered in the 3ʳᵈ year (30%) and girls in the fifth year (25%). It can be seen that 40% of fathers of boys children received education to the middle level, while those of girls children were nearly equal in their educational level. For mothers education level of boys children 25% received middle or secondary education, while, 35% of those of boys received middle education. History of smoking by fathers were detected in 45% of boys and 40% of girls children. High family income ($\geq$ 6000 SR monthly) is found in 60% among boys and 50% among girls.

Table (3) shows the most frequent presenting symptoms among boys children with type 1 diabetes which were polyurea, dry mouth, dizziness, hunger pains, sweating, and less frequently blurring of vision. Among the girl children, symptoms were polyurea, hunger pains, and less frequently sweating. dizziness, blurring, mouth & dryness . Polyurea is more in boys than girls (25% of boys and 15% in girls) . On the other hand, other non diabetes related common symptoms was sneeze (25% of boys and 30% in girls). These findings agreed with *Jasinskl et al .,(2003)* who stated that prevalence of dryness mouth, polydpsia and polyuria and agreed with *Rosenbauer et al., (2002)* who reported that polyuria was the most common symptom.

Data in table (4) shows the biodemographic status.weight loss was in 60% and 50% for boys and girls respectively white exercise appear in boys as 55% and 75% of girls were no excerceis. These results agreed with *Rosenbauer et al., (2002) and Jasinski et al., (2003).*

Data in table (5) shows the hemoglobin level and glucose level for studied samples.

It noticed that 60% & 50% of boys and girls patients respectively have moderate hemoglobin level (13-14 gm/dl). Also 75% & 85% for boys and girls patients respectively had uncontrolled fasting blood sugar level (>130 mg/dl). 70% & 60% of boys and girls, respectively had uncontrolled post prandial blood sugar levels ($\geq$160 mg/dl) and 65% & 55% respectively had > 200mg/dl random blood sugar.

Table (6) shows the type of the meal snacks, 85% of boys and 90% of girls consume snaks. Children were found to consume snacks when they felt hungry, not according to the dietary prescription by their dieticians. For

boys snacks were 40% chips, 20% chocolate, 15% sweets or jams and 10% ice cream; for girls showed 25% sweets, 20% chips or ice cream, or jams, and 15% chocolate.

In table (7) the number of daily meals results show that 50% of boys and 45% of girls have five meals daily, 75% of boys and 65% of girls eat breakfast, 55% of boys and 60% of girls consume dairy products daily of them and 15% of boys and 25% of girls consume dairy products twice daily. Thirty % of boys and 40% of girls consume legumes, 20% of boys and 35% of girls consume bran bread, 80% of boys and 65% of girls consume white bread, 65% of boys and 55% of girls consume red meat, and 100% of boys and 95% of girls consume chicken meat. Forty % and 65% of boys and 50% and 75% of girls consume fresh vegetables and fruits respectively.

Table (8): Mean ± SD Of Macronutrients Intake Of Children .

Data of table (8) shows the mean daily nutrients intake by diabetic children, compared to their DRI. Mean macronutrients for boys and girls were higher than 100% of DRI except for carbohydrates for both gender (87% boys and 95% girls) and calories (90%) for girls only. On the other hand, macronutrients intake for boys were higher than girls except for protein-Plant and fat-Plant. These results *agreed with **Kylberg et al., (1985).***

Mineral intake of boys was higher than 100% of DRI except for zinc (95%) that consumed at lower than 100% of DRI. While minerals intake of girls were lower than 100% of DRI except for sodium, potassium and magnesium which consumed at higher than 100% of DRI. Mean vitamins intake of boys were higher than 100% of DRI except vitamin D and B_6. While mean vitamins intake of girls were lower than 100% of DRI except vitamin C, niacin and folates. These results agreed with that of ***Patton et al., (2007)*** who reported that mean vitamin B12 and calcium intake were less than the dietary reference intake for girl children.

Table (10) shows the value of mean daily consumption of saturated, monoenoic, polyenoic and total unsaturated fatty acids, as percent, for the different sex groups. For boys C18:0, C14:0, C16:0 and C10:0 fatty acids with the highest percentage intake among other saturated fatty acids (21.77%, 20.49%,21.77 & 17.63%) respectively, which were for girls C10:0, C18:0 and C16:0 fatty acids had the highest percentage intake among other saturated fatty acids (19.42%, 19.42% and 16.39%)

respectively. In the present study C16:1 fatty acid had the highest percentage intake among other monounsaturated fatty Acids (50.84% and 35.58%) for boys and girls respectively. Also C18:2 fatty acids showed the highest percentage intake among other polyunsaturated fatty acids (69.66% and 83.28%) for boys and girls respectively, while C20:4 fatty acid had the lowest intake among other polyunsaturated fatty acids being Nil for gender.

Table (11) shows the mean daily intake of fatty acids fractions and their percentage of essential fat daily intake according to different sex groups. It is noticed that mean percentage of omega-6 FA (% of RNI) was 50.26% in girls which was higher than boys (26.58%), but percentages for boys and girls were less than 100% of RNI. While the percent of omega-3 FA% of RNI in boys was higher than in girls. T.unsat. FA/T.sat. FA and P/S in girls were higher than boys previously. ***Orton et al., (2007)*** cullied out a comparison between omega-3 and omega-6 polyunsaturated fatty acid intake as assessed by a food frequency in young children at risk for developing type 1 diabetes. (***Habib, 2005***) recorded that prevention of diabetic ketoacidosis and reduction of its frequency should be a goal in managing children with diabetes and medical information and general awareness can contribute to this.

Recommendations

This study advise, recommended increasing the intakes of fiber, legumes, fruits and vegetables And increasing milk and milk products in diet as and decreasing snack meals. It is recommended to increase intake of fiber, legumes, fruit and vegetables and also increase intake of milk and milk production in diet . In controly,It is recommended to decrease snack meals. Increasing nutritional knowledge as well awareness and medical in for motions for parents and children in particularly care be provided for individuals with diabetes.

Table (1): Mean ± SD of age, anthropometric measurements for boys and girls patients with type 1 diabetes.

Parameters \ Sex	Boys(n=20) Mean ± SD	Girls(n=20) Mean ± SD
Age (years)	8.5 ± 1.83	8.7±1.91
Weight (Kg)	27.1±5.68	28.1±7.22
Height (cm)	111.32±20.66	114.74±15.25*
BMI (Kg/m2)	22.03±15.01	21.78±13.75

*P< 0.05

Table (2): Frequency distribution of boys and girls patients according to socioeconomic status.

Social Economic Factor \ Groups	Boys (n=20) No	%	Girls (n=20) No	%
School Year				
Second	5	25	7	35
Third	6	30	3	15
Fourth	4	20	3	15
Fifth	2	10	5	25
Sixth	3	15	2	10
Levels of education of fathers				
Primary level	7	35	6	30
Middle level	8	40	7	35
Secondary level	5	25	7	35
Level of education of mothers				
Illiterate	4	20	2	10
Primary level	2	10	2	10
Middle level	5	25	7	35
Secondary level	5	25	4	20
College level	4	20	5	25
Smoking among fathers				
Yes	9	45	8	40
No	11	55	12	60
Family Income (SR)				
< 3000	3	15	3	15
3000 – 6000	5	25	7	35
> 6000	12	60	10	50

Table (3): The most frequent presenting symptomsamong children with type 1 diabetes .

Groups Symptoms	Boys(n=20)		Girls (n=20)	
	No	%	No	%
Dizziness	2	10	2	10
Blurring of vision	1	5	2	10
Polyurea	5	25	3	15
Dryness of mouth	3	15	2	10
Hunger Pains	2	10	3	15
Sweating	2	10	2	10
Other symptoms (Sneeze)	5	25	6	30

Table (4): Biodemographic status of children with type 1 diabetes.

groups Variables	Boys (n=20)		Girls (n=20)	
	No	%	No	%
History of Weight change				
Weight gain	6	30	7	35
Weight lost	12	60	11	55
Weight not changed	2	10	2	10
Exercise				
Yes	11	55	5	25
No	9	45	15	75

Table (5): Hemoglobinlevel (g/d I) and blood glucose level   (mg/100 ml) for study samples.

Groups / Parameters	Boys		Girls	
	No	**%**	**No**	**%**
Hemoglobin Level				
Low <12	5	25	6	30
Moderate 13-14	12	60	10	50
High > 14	3	15	4	20
Blood Sugar				
Fasting				
<70	3	15	2	10
70-130	2	10	1	5
> 130: uncontrolled	15	75	17	85
Post prandial				
< 160	6	30	8	40
> 160: uncontrolled	14	70	12	60
Random				
< 200	**7**	35	9	45
> 200	13	65	11	55

Table (6): The type of the meal snacks.

Groups / Food	Boys (n=20)		Girls (n=20)	
	No	%	No	%
Snack meal				
Yes	17	85	18	90
No	3	15	2	10
Chips	8	40	4	20
Chocolate	4	20	3	15
Ice Cream	2	10	4	20
Sweets	3	15	5	25
Jams	3	15	4	20

Table (7): Food behaviour for studies samples.

Groups Variables	Boys(n=20)		Girls (n=20)	
	No	%	No	%
Number of meals daily				
3	5	25	3	15
4	5	25	8	40
5	10	50	9	45
Breakfast eating				
Yes	15	75	13	65
No	5	25	7	35
Daily milk consumption				
Yes	11	55	12	60
No	9	45	8	40
Frequency of daily milk consumption				
1	8	40	7	35
2	3	15	5	25
Eating legumes				
Yes	6	30	8	40
No	14	70	12	60
Eating egg				
Yes	16	80	14	70
No	4	20	6	30
Eating red meat				
Yes	13	65	11	55
No	7	35	9	45
Eating chicken meat				
Yes	20	100	19	95
No	0	0	1	5
Eat fresh vegetables				
Yes	8	40	10	50
No	12	60	10	50
Eat Fresh Fruit				
Yes	13	65	15	75
No	7	35	5	25
Prefer bread				
Bran	4	20	7	35
White	16	80	13	65

Table (8): Mean ± SD of macronutrients intake of children.

Groups +Macro-Nutrients	Boys		Girls		Sig
	Mean ± SD	% of DRI	Mean ± SD	% of DRI	
Calories(K cal)#	2023.49 ± 461.5	101%	1785.95 ± 156.71	90%	***
Protein –Animal (g)	48.73 ± 25.26		32.44 ± 8.19		***
Protein –Plant (g)	19.76 ± 10.56		23.58 ±7.17		***
Total Protein(g)	71.89 ± 22.38	256%	53.44 ±3.4	151%	***
Fat – Animal (g)	60.31 ± 33.71		38.20 ± 9.53		***
Fat – Plant (g)	24.69 ± 13.29		30.78 ± 2.20		***
Total Fat(g)	85.0 ± 27.32		68.10 ± 4.75		***
Carbohydrate (g)	242.80 ± 41.70	87%	241.67 ± 47.61	95%	***
Fiber (g)	6.48 ± 4.74		4.03 ± 0.61		*
Cholesterol(mg)	292.8 ± 61.17		134.51 ± 12.58		Ns

#RDA: Recommended Dietary Allowances(1989).
DRI: Dietary Reference Intake (2002).   *p<0.05   ***p<0.001

Table (9): Mean ± SD of micronutrients intake of children.

Groups Micro-Nutrients	Boys(n=20)		Girls (n=20)	
	Mean ± SD	% of DRI	Mean ± SD	% of DRI
Minerals				
Calcium (mg)	1075.31 ± 287.93	134%	622.96 ± 105.85***	59%
Phosphorus (mg)	1152.77 ± 174.06	144%	848.32 ± 32.23***	83%
Sodium (mg)	1992.95 ± 1486.5	668%	2196.89 ± 198.7	529%
Potassium (mg)	2120.12 ± 588.96	133%	1874.09 ± 173.17	109%
Magnesium (mg)	298.23 ± 78.21	175%	230.37 ± 23.16***	126%
Iron –A (mg)	5.90 ± 29.81		2.91 ± 0.45	
Iron –P (mg)	6.37 ± 4.14		5.36 ± 0.90	
Total Iron (mg)	11.08 ± 3.48	110%	7.73 ± 0.53***	59%
Zinc (mg)	9.46 ± 2.21	95%	7.14 ± 1.66***	60%
Vitamins				
Vitamin-A (μ g)	1087.46 ± 348.88	155%	399.61 ± 64.79***	58%
Vitamin-D (μ g)	3.85 ± 2.75	39%	2.65 ± 1.26***	28%
Vitamin-E (mg)	11.09 ± 5.70	158.56%	7.55 ± 1.78***	95%
Vitamin-C (mg)	60.67 ± 27.74	134%	96.91 ± 60.64	158%
Vitamin-B_1 (mg)	1.36 ± 0.89	135%	0.79 ± 4.03***	75%
Vitamin-B_2 (mg)	1.83 ± 0.99	152%	0.74 ± 8.74***	59%
Niacin (mg)	20.81 ± 15.14	160%	16.06 ± 0.81	113%
Vitamin-B_6 (mg)	0.88 ± 0.18	63%	1.05 ± 0.24	79%
Vitamin-B_{12} (mg)	2.42 ± 1.17	173%	0.60 ± 0.34***	33%
Flate (μ g)	256.58 ± 48.19	256%	148.35 ± 8.04	125%

DRI: Dietary Reference Intake (2002).

Table (10): Mean ± SD of daily consumption (in g) of individual saturated and unsaturated fatty acids and their percentage of total FA for group according to different sex groups.

Groups Fatty Acids	Boys (n=20) Mean ± SD	% T.sat	Girls (n=20) Mean ± SD	% T.sat
Saturated fatty acids				
$C_{10:0}$	11.28 ± 0.64	18.70%	9.66 ± 0.45	25.29%
$C_{12:0}$	10.42 ± 0.21	17.28%	4.26 ± 0.25	11.15%
$C_{12:0}$	12.36 ± 1.34	20.49%	5.67 ± 1.19	14.84%
$C_{16:0}$	10.63 ± 0.37	17.63%	6.26 ± 0.13	16.39%
$C_{18:0}$	13.13 ± 1.46	21.77%	7.42 ± 0.69	19.42%
$C_{24:0}$	2.49 ± 0.35	4.13%	4.93 ± 0.17	12.91%
Total	60.31 ± 3.13	100%	38.20 ± 2.01	100%
Monounsaturated fatty acids		% of T. Mono		% of T. Mono
C16:1	10.34 ± 4.75	50.84%	8.19 ± 4.29	35.58%
C18:1	7.43 ± 3.21	36.53%	7.59 ± 0.46	32.97%
C20:1	0.33 ± 0.35	1.62%	4.24 ± 1.34	18.42%
C22:1	2.24 ± 1.23	11.01%	3.00 ± 0.10	13.03%
Total	20.34 ± 4.20	100%	23.02 ± 4.30	100%
Polyunsaturated fatty acids		% of T. Poly		% of T. Poly
C18:2	3.03 ± 3.34	69.66%	5.73 ± 1.35	83.28%
C18:3	1.32 ± 0.18	30.34%	1.15 ± 0.83	16.72%
C20:4	000 ± 000	0.0%	0.00 ± 0.00	0.0%
Total	4.35 ± 2.33	100%	6.88 ± 2.64	100%

Table (11): Mean ± SD of fatty acids (g) and percentage of essential FA intake of (RNI) according todifferent sex groups.

Groups Fatty Acids	Boys (n=20) Mean ± SD	D.I	Girls (n=20) Mean ± SD	D.I
Omega-6 FA (RNI=11.43)	3.03 ± 3.34	26.58%	5.73 ± 1.35	50.26%
Omega-3 FA (RNI=1.9)	1.32 ± 0.18	69.47%	1.15 ± 0.83	60.53%
T.unsat FA/T.sat.	0.41		0.78	
P/S	0.072		0.180	

P/S: T. Ployunsat. FA/T. sat . FA.

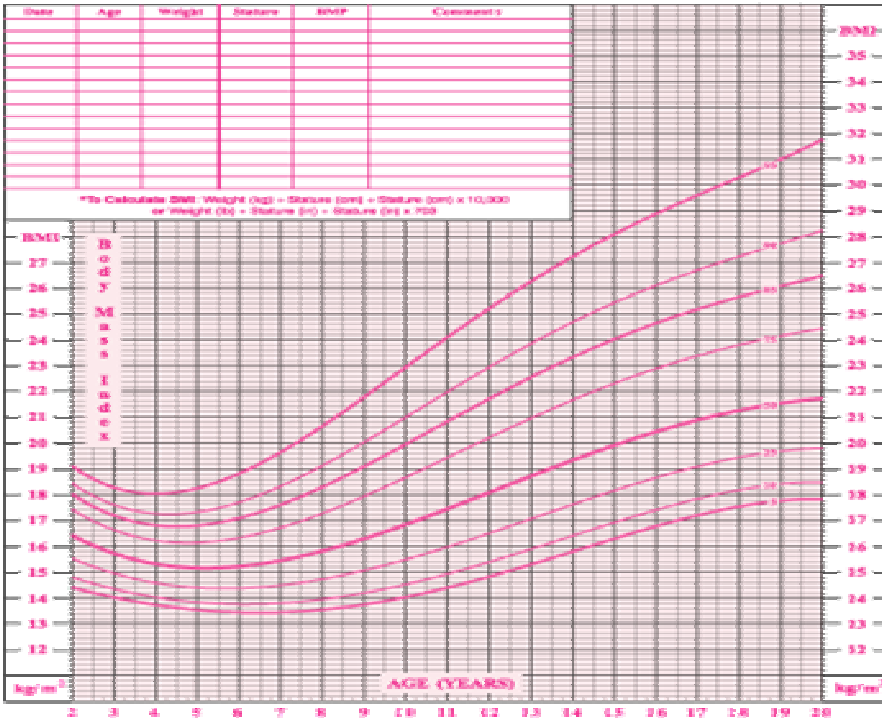DI: Dietary Intake RNI: Recommended Nutrient Intake

References

1. **American Diabetes Association (2000):** Nutrition Recommendation and Principles for People With Diabetes Mellitus. Diabetes Care. 23 Suppl 1s43-6.
2. **American Diabetes Association (2001)**: Clinical Practice Recommendations. Diabetes Care, 24 (Suppl) 1:S1-133.
3. **DRI (2002):** Dietary Reference Intake for Energy, Carbohydrate, Fiber, Fat, Fatty Acid, Cholesterol, Protein and Amino Acids. Institute to Medicine, T.O.M. This Report May Be Accessed Via www.nap.edu.
4. **Habib Hs(2005):** Frequency and clinical characteristic of ketoacidosis at onset of childhood type 1 diabetes mellitus in Northwest Saudi Arabia . Saudi Med .J, 26(12):1936-9.
5. **Jasinski, D; Pilecki O; Robak-Kontna, K and Zbikowska-Bojko M(2003):** Analysis Of Type 1 Diabetes Mellitus Symptoms at Admission to Hospital. Endokrynol. Diabetol. Chor. Prezemiany. Materii. Wieku. Rozw, 9(2):83-7.
6. **Jelliffe, D B (1966):** The Assessment Of Nutritional Status Of Community, World Health Organization,Geneva,74-76.
7. **Krauss, M.V. and Mohan, H .K.(1992):** Food Nutrition Diet Therapy. SW .B. Saunders, Philadelphia.
8. **Kylberg,**E**: ; Ewald U; Tuvemot and Gebre. Medhin, M.(1985):** Dietry Intake in Swedish Diabetic Children. Acta Paediatr. Scand Suppl., 320-32 (7).
9. **Larsson, HE; lynch K; Lernmark B; Hansson G; Lernmark A; and Ivarsson SA (2007):** Relationship Between Increased Relative Birthweight and Infections During Pregnancy In Children With a High-Risk Diabetes HLA Genotype. Diabetologia. Apr 40.
10. **Nafiu, O. O, Reynolds PI, Bamgbade, O.A; Tremper, K.K; Welch, K and Kasa – Vubu, J.z(2007):** Childhood body mass index and perioperative complications. Pediatric Anaesth., 17 (5):426-30.
11. **Nutrition Institute (1996):** Food Composition Tables, Row, Processed, Prepared.
12. **Orton, H.D; Szabo, N.J; Clare-Salzler, M. and Norris, J.M .(2007):** Comparison Between omega-3 and omega-6 polyunsaturated fatty acid intakes as assessed by a food frequency questionnaire and erythrocyte membrane fatty acid composition in young children . Apr 180.
13. **Patton, S.R; Dolan, L.M and Powers, S.W.(2007):** Dietary adherence and associated glycemic control in families of young children with type 1diabetes. J. Am. Diet. Assoc., 107(1):46-52.
14. **RDA(1989):**Recommended Dietary Allowances,10th Edition, National Academy of Sciences Press, Washington.

15. **Rosenbauer J; Icks A and Giani G(2002):** Clinical characteristics and predictors of severe ketoacidosis at onset of T ype 1 diabetes mellitus in children in a North Rhine Westphalia Region. Jpediatar. Endocrinol. Metab., 15(8): 1137-45.

16. **SPSS (1998):** Statistical Package for Social Social Science, Computer Software, Ver.10.SPSS.Company. London.UK.

17. **Waterman, C.S.; Atkinos, E.E .; Wilkins ,B. ; Fisher, C.L. and Kimsey ,S.L.(1975):** Improve measurement of erythrocyte volume distribution by aperture-countersignal analysis, Clin Chem.,21:1201-1211.

18. **WHO (1995)** Physical status:The use and interpretation of anthropometry Report of a WHO Expert Committee.Geneva,World Health Organization, (Technical Report series No.854);368-369.
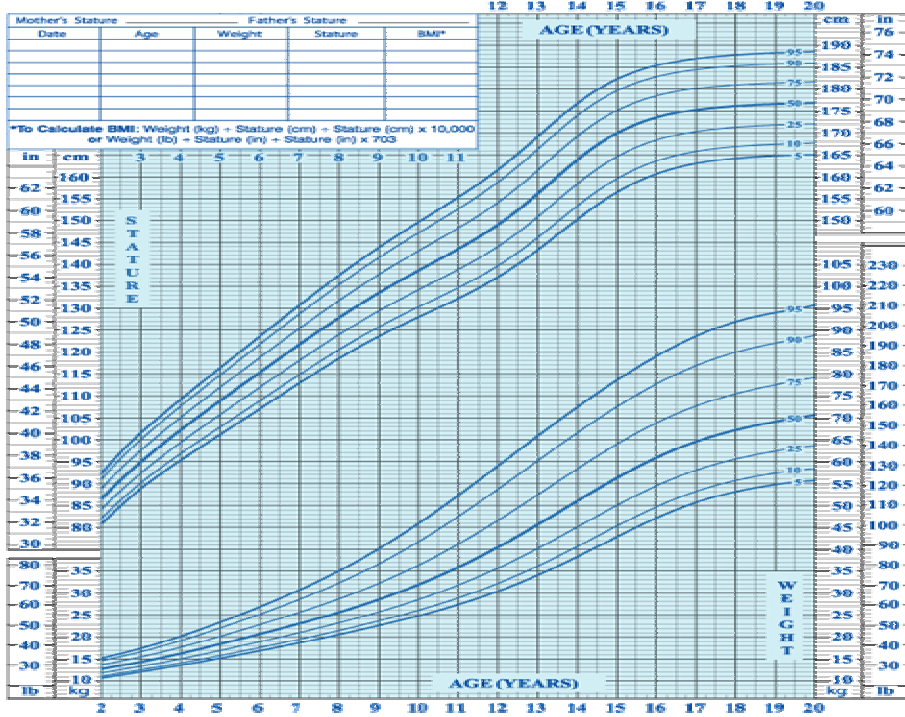
SOURCE: Developed by the National Center For Health Statistics in Collaboration With the National Center for Chronic Disease prevention and Health promotion (2000).

SOURCE: Developed by the National Center For Health Statistics in Collaboration With the National Center for Chronic Disease prevention and Health promotion (2000).

تقييم الحالة الغذائية والصحية عند الأطفال المصابين بالداء السكرى

د/ منى ابراهيم محمد نجا

قسم الاقتصاد المنزلى _ كلية التربية النوعية _ جامعة المنوفية

تلعب التغذية دورا مهم في التحكم في الوزن ومعالجة السمنة والسكري عند الأطفال في سن المدرسة. وتهدف هذه الدراسة إلي تقييم الحالة الغذائية والمقاييس الجسمية والنظام الغذائي لعينة من النوع الأول والذين تم اختيارهم من معهد السكروبلغ عددهم (٤٠) مريض تتراوح أعمارهم بين٧ – ١٣ سنة . حيث تم تقدير المتناول من الغذاء والمقاييس الجسمية وبعض التحاليل المعملية التي شملت نسبة الهيموجلوبين ومستوي السكر في الدم . وقد أشارت النتائج أن متوسط الوزن والطول كان مرتفعا عند الإناث .وان غزارة البول والعطش الشديد من أكثر الأعراض الذي يعاني منه الجنسين من الأطفال. والمتناول من العناصر الغذائية أعلي من الاحتياجات بالنسبة للجنسين ماعدا السعرات والكالسيوم و الفوسفور والحديد والزنك وفيتامين أ B_1, D, B_2, B_{12} كان أقل من الاحتياجات عند الإناث . بينما وجد ارتفاع أوميجا– ٦ عند الإناث و أميجا – ٣ عند الذكور. وتوصي الدراسة بزيادة المتناول من الألياف المتواجدة في الفاكهة والخضروات والبقول وزيادة المتناول من الألبان ومنتجاتها في الوجبة والإقلال من تناول الوجبات الخفيفة والسريعة وزيادة الوعي الغذائي والصحي للأطفال وأمهاتهم.