



Journal of Home Economics

Volume 25, Number (2), 2015

<http://homeEcon.menofia.edu.eg>

**Journal of Home
Economics**

ISSN 1110-2578

Evaluation of nutritional status of diabetes in some hospitals, Cairo governorate, Egypt.

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Abstract

This study was conducted to evaluate the nutritional status of diabetes in some hospitals, Cairo governorate. One hundred patients were selected from visitors to the two hospitals of hospitals, Cairo Governorate and split the sample into (50) patients from the hospital one and (50) from the hospital two where the split sample within each hospital to (25) males and (25) females. It was the work of a comparative study between the hospital one and hospital two. It was another record data such as social and economical situation, Health status, eating habits related disease, assess the physical measurements of the patients included (height and weight were used in calculation the BMI), Some laboratory tests such as a kidney and liver functions and blood picture and using statistical analysis of the data analysis was conducted test the statistical significance of the differences between two hospitals. The results showed that the average intake of calories in the hospital two is greater than in hospital one were approaching the dietary recommendations by (94%) in hospital one and (97%) in hospital two. The average intake of protein in both hospitals more than dietary recommendations, while the average intake of fat in both hospitals was less than the dietary recommendations, but for intake of carbohydrates average intake in the hospital two larger than the average intake in the hospital one. Results showed that There is no shortage in the average intake of mineral but intake was much bigger than the dietary recommendations in both hospitals. Regarding the average cholesterol intake in hospital one higher than the average intake in hospital two. Statistical analysis shows a Great moral relationship between hospital one and hospital two for calcium, sodium, vitamin A, vitamin C and vitamin E, vitamin B1 and vitamin B2 ($P < 0.001$). And the among

morale relationship between hospital one and hospital two for (carbohydrates and niacin) ($P < 0.01$), and the moral relationship between both hospitals for (vitamin D) ($P < 0.05$).

Key Words:- Nutritional habits - Nutritional status - Diabetes patients.

Introduction

Diabetes was one of the first diseases described, (**Ripon et al., 2011**) with an Egyptian manuscript from 1500 years Before the Common Era (BCE) mentioning too great emptying, of the urine. The first described cases are believed to be of type I diabetes. Indian physicians around the same time identified the disease and classified it as "honey urine " , noting the urine would attract ants (**Ediator and Leonid, 2009**).

The term "diabetes" or " to pass through" was first used in 230 BCE by the Greek Apollonius of Memphis. The disease was considered as rare during the time of the Roman Empire, with Galen commenting he had only seen two cases during his career (**Ediator and Leonid, 2009**).

The classic symptoms of untreated diabetes are weightloss, polyuria (increased urination), polydipsia (increased thirst), and polyphagia (increased hunger). Symptoms may develop rapidly (weeks or months) in type 1 diabetes, while they usually develop much more slowly and may be subtle or absent in type 2 diabetes (**Cooke and Plotnick, 2008**).

The American Diabetes Association recommends a specific diet as part of medical nutrition therapy for secondary and tertiary prevention in patients with type 2 diabetes mellitus. This diet includes the consumption of fiber-rich foods (**ADA, 2008**).

People with diabetes can benefit from education about the disease and treatment, good nutrition to achieve a normal body weight, and exercise, with the goal of keeping both short-term and long-term blood glucose levels within acceptable bounds. In addition, given the associated higher risks of cardiovascular disease, lifestyle modifications are recommended to control blood pressure (**Adler et al., 2000**).

Aim of work

This work aimed to study the relation between diabetes mellitus and nutrition on some patients (100) in two hospitals.

- 1-Historical study about diabetes mellitus.
- 2-Assess the nutritional status of diabetes mellitus patients at hospitals.
- 3-Identification of relationship between education level and diabetes mellitus in patients under study.

- 4-Study the relationship between the social level ,economic level ,nutritional status and healthy of the patients.
- 5-Evaluation of food habits of diabetes mellitus patients.
- 6-Study the anthropometric of patients under study.
- 7-The suitable suggests to improve the nutritional status of sample patients.

Subject and methods

Subject :-

Sample size :

Identical sample of one hundred of patients were chosen from two hospital, 50 patients so patients within each hospital 25 male and 25 female at the group aged from 40 to 80 years old. They are shown as table.

Table (A) percentage distribution of two hospitals according to sample size.

sex	Hospital one		Hospital two	
	frequency	Per%	frequency	Per%
Male	25	50%	25	50%
female	25	50%	25	50%
Total	50	100%	50	100%

Methods

Socio-economical status :-

information about socio-economic status including age , sex , residence, educational status , social status , Employment status , work nature , monthly Income , food expenditure and medical expenditure were collected by questionnaire through interview.

Daily Dietary Date :-

Information of daily dietary intake food from hospital meals were collected during interviews using 24 hour recall sheet. Questionnaire was used to record food behavior and nutritional habits, effect of the food habits on the nutritional state, under standing for the relation between nutrition and the glucose level in blood and nutritional awareness in general.

Determination of Daily Nutrient In take Nutritional values of consumed food were calculated using computer Diet Analysis for Ready to eat Egyptian foods, faculty of home Economic menoufia university (unit of special nature).

The adequacy of diets with regard to the requirement of each patient according to kind of disease except minerals and vitamins were calculated according to RDA **FAO/WHO/UNV(1985)**. statistical analysis has been achieved using a computer by (Spss , 1995 – pc + for BTM) program.

Anthropometric measurements:

The anthropometric measurements included weight, height, triceps skin folds thickness, upper arm circumference and mid upper arm muscle circumference. The method used was according to (**Jelliffe , 1966**).

Body weight

Weight was measured using a spring type scale to the nearest 1.0Kg with minimum of the under clothing and without shoes.

Height measurement

Height was taken to the nearest 0.5cm using the vertical measuring rod for adults the subject stood on a flat floor of the scale with feet. Parallel and with heels buttocks, shoulders and back of head touching the border of the orbit in the same horizontal plane. The arms were hanging at the sides in the natural manner. The head piece was gently lowered crushing hair and making contact with the top of the head.

The Body mass Index (BMI)

Geoffrey (1995) method was applied for calculation of BMI as follows :

$$\text{BMI} = \frac{\text{Body Weight (Kg)}}{\text{Height}^2 \text{ (m}^2\text{)}}$$

Medical laboratory :-

It's content Renal and liver functions , Complete blood picture the determination red blood cells count (RBC) , white blood cells count (WBC) ,hemoglobin (HGB), and platelets count (PLT) were estimated according to the method described by **Dacie and Lewis,(1998)**and Random blood glucose then comparing with stander medical laboratory.

Statistical Analysis

IBM personal computer equipped with a programme of (SPSS) package was used to analyze the data .

Results and Discussion

The data table (1) indicates that means energy intake was 2018 ± 480.6 Kcal 94.7% of RDA and 2128.3 ± 328.8 Kcal 97% of RDA for hospital one and hospital two Respectively.

It could be noticed that, total protein intake was higher in hospital one than hospital two as the percentages was of RDA 176% and 172% for hospital one and hospital two respectively. This results disagree with **Evanoff et al.,(1987)** who mention that studies conducted in patients with diabetes have found a reduction in proteinuria to occur during protein restrictions of 40 to 60 g perday.

The result revealed that total fat intake was 86.93 ± 28.18 g for hospital one and 87.8 ± 14.99 g for hospital two. These date revealed small variations in total fat intake in both hospitals. This result disagree with **Hany,(1997)** who mentioned that diabetic patients at health insurance hospitals consumed 59.6 g/day of fat while disagree with **Shalaby, (1990)** who mention that 52 to 68% of diabetic patients consumed fat below their ideal requirements. It was reported by **Barrett-connor and orchard,(1985)** that restricting fat intake in the diet diabetic person is of utmost importance to help reduce the increased risk of cardiovascular disease cardiovascular disease and death is 3 to 6 times greater in diabetic individuals than in the general population.

It could be noticed that in hospital two the mean carbohydrate intake was higher than hospital one 229.44 ± 45.16 g and 206.3 ± 49.29 g for hospital two and hospital one respectively. There was significant differences ($P < 0.01$) between carbohydrate in take in two hospital .

The mean fiber higher in hospital one than hospital two representing 25.96 ± 24.88 g and 20.56 ± 7.49 g respectively. This result disagree with **American Diabetes Association ,(1990)** mentioned that an intake of 40g fiber/day and agree with **(American Diabetes Association,1986)** mention that recommends a daily intake of 25-35 g dietary fiber not exceeding 50 g/day and this result disagree with **Hany,(1997)** who mention that diabetic patients at health insurance hospital consumed fiber higher than private hospitals the values were 14.1 and 7,2g respectively. Many patients on high fiber, high carbohydrate diets are able to reduce the amount of insulin required daily and some on lower doses eventually eliminated (**Anderson and Word. 1979**).

Table (1) Comparison between mean and SD macro nutrients In take for diabetes patients in two hospitals compared to recommended dietary allowance (% of RDA).

Macro nutrients	Hospital one	Hospital two	Test.T
	SD±Mean	SD±Mean	
Calories kcal	480.7±20.18	328.18±2128.3	1.340
% RDA Calories	20.80±94.74	22.78±97.12	0.489
Protein A gm	17.44±09.70	8.70±71.80	0.772
Protein P gm	23.03±38.70	11.77±33.77	1.338
Total protein gm	27.78±98.0	10.08±94.91	0.980
RDA% Total protein	04.47±177.4	39.20±172.77	0.384
Fat A gm	20.74±08.91	11.38±71.79	0.782
P gm Fat	22.77±28.02	10.2±27	0.073
Total fat gm	28.18±87.93	14.99±87.80	0.193
Carbohydrate gm	49.29±20.73	40.17±229.44	**2.447
Fiber gm	24.88±20.97	7.49±20.07	1.470

** = ($P < 0.01$)

Table (2) shows the mean minerals intake in two hospital compared to (RDA). The mean calcium intake and phosphorus were higher in hospital two than hospital one , as the values were 1118.73 ± 189.05 mg and 1738.11 ± 308.72 mg respectively in hospital two , while in hospital one the values were 897.8 ± 263.48 mg and 1732.08 ± 598.8 mg respectively. There was significant difference between Hospital one and hospital two for calcium ($P < 0.001$).

It could notice that hospital one RDA was 112 and 216% for calcium and phosphorus respectively. For hospital two was (139%) and (218%) for calcium and phosphorus respectively. There was significant difference between two hospital for RDA calcium ($P < 0.001$).

Also meant total Iron was higher than RDA in two hospital , as the mean total iron in take were 15.83 ± 5.67 mg and 17.39 ± 3.56 mg for hospital one and hospital two representing 156.45 and 65% for hospital one and hospital two respectively.

As for mean in take of minerals in hospital one were 3040.77 ± 718.3 mg , $3833,74 \pm 1803.8$ mg , 13.77 ± 6.11 mg and 463.53 ± 241.4 mg for sodium , potassium , zinc and magnesium respectively. The (RDA) in hospital one 608%, 208%, 102% and 148% for sodium , potassium , zinc and magnesium respectively. This result disagreed with

(American Diabetes Association1986) mention that sodium should be restricted to 1000mg/1000 kcal. Not to exceed 3000mg/d , to minimize symptoms of hypertension.

In hospital two were 3781.62 ± 664 mg, 3762 ± 726 mg, 13.56 ± 2.6 and 428.9 ± 98.1 for sodium , potassium, zinc and magnesium respectively. The RDA% in hospital two 755%, 219%, 102% and 139% for sodium , potassium , zinc and magnesium respectively. There was significant difference between two hospital for sodium and RDA sodium ($P < 0.00$)

Table (2) Comparison between mean and SD minerals nutrients in take for diabetes patients in two hospitals compared to recommended dietary allowance (% of RDA).

Minerals	Hospital one	Hospital two	Test.T
	SD±Mean	SD±Mean	
Calsium mg	273.48±197.8	189.00±1118.73	*** 4.817
% RDA Calsium	32.92±112.23	23.73±139.84	*** 4.817
Phosphorus mg	098.8±1732.08	308.72±1738.11	0.073
% Phosphorus RDA	74.87±217.49	39.00±218.13	0.137
Iron A mg	1.73±7.07	1.07±7.77	1.010
Iron P mg	0.40±8.77	3.34±10.72	* 2.032
Total Iron mg	0.77±10.83	3.07±17.39	1.740
% RDA Total Iron	08.03±107.40	37.04±170	0.884
Sodium mg	718.3±304.77	774±3781.72	*** 0.300
%RDA Sodium	143.77±708.10	132.77±700.92	*** 0.341
Potassium mg	180.38±3833.74	727±3772	0.271
%RDA Potassium	110.71±208.07	93.20±219.13	0.003
Zinc mg	7.11±13.77	2.71±13.07	0.209
% Zinc RDA	48.10±102.99	27.17±102.20	0.090
Magnesium mg	241.4±473.03	98.1±428.9	0.938
% Magnesium RDA	82.00±148.8	40.77±139.9	0.787

* = ($P < 0.05$) ** = ($P < 0.01$) *** = ($P < 0.001$)

The data of Table (3) indicates that the mean in take of vitamins which was higher in hospital two than hospital one. It could be noticed that the RDA for hospital two was higher than hospital one. The mean values RDA were 105% vit. A , 453% vit.c , 44% vit.D , 368% vit. E, 113% vit.B1 , and 184% vit. B2 for hospital two , while values for hospital one 83% vit.A , 134% vit.c , 37% vit.D, 159 vit.E 88% vit.B1 , and 154% vit.B2. There was significant Difference between two hospital for vit.A , RDA Vit.Avit.c , RDA. Vit.c , Vit .D , RDA vit.D , Vit.E ,

RDA. Vit.E, vit.B1 , RDA vit.B1 , vit. B2 and RDA vit.B2 (P<0.001) and (P<0.05).

As for mean niacin ,vit B6 and vit B12 for hospital two higher than hospital one. The mean RDA in hospital two were 152% Niacin , 100% vit. B6 and 150% vit. B12 higher than for hospital one 140% Niacin , 92% vit. B6 and 134% vitB12. there was significant difference between two hospital for Niacine (P<0.01).

Also mean folat was higher in hospital two than hospital one as the mean 303.26 ± 106.88 mg for hospital one and 323 ± 92.15 mg for hospital two. The mean RDA for hospital two (170%) higher than hospital one (160%).

As for mean cholesterol intake , it was also higher in hospital one than hospital two 465.22 ± 158.35 mg and 461.87± 72.84 respectively, This result disagreed with (**American Diabetes Association1986**) mention that cholesterol should be restricted to 300mg/d to reduce cardiovascular risk and disagreed with (ADA.2008a) mention that cholesterol intake should be less than 200 to 300 mg daily.

Table (3) Comparison between mean and SD vitamins in take for diabetes patients in two hospitals compared to recommended dietary allowance (% of RDA).

Vitamins	Hospital one	Hospital two	Test.T
	SD±Mean	SD±Mean	
Vitamin A µg	243.8±73.7	177.9±93.14	4.844***
RDA Vit A %	29.18±83.11	20.12±10.71	4.132***
mgVitamin C	09.80±8.01	117.18±272.3	10.379***
RDA Vit C %	99.79±134.17	194±403.0	10.349***
Vitamin D mg	0.98±1.87	0.82±2.21	1.939*
D RDA Vit %	19.76±37.00	17.47±44.30	1.993*
Vitamin E mg	0.14±1.4	10.73±32.71	11.197***
RDA Vit E %	70.30±109.18	127.87±378.30	10.373***
Vitamin B1 mg	0.217±0.984	0.27±1.30	7.072***
RDA Vit B1 %	22.42±88.82	27.84±113.07	0.000***
Vitamin B2 mg	0.07±2.03	0.44±2.47	4.377***
RDA Vit B2 %	47.23±104.49	44.04±184.83	3.342***
Niacin mg	7.47±2.13	4.40±22.03	2.109**
RDA Niacin%	44.84±140.07	30.38±102.73	1.007
VitaminB6 mg	0.727±1.77	0.38±1.77	1.070
RDA Vit B6 %	37.79±92.17	27.02±100.77	1.320
Vitamin B12 µg	1.39±2.78	0.79±3.01	1.419
RDA vit B 12%	79.70±134.30	39.77±100.27	1.407
Folat µg	107.88±303.26	92.10±323	0.992
RDA Folat %	09.40±170.80	01.78±170.97	0.907
Cholesterol mg	108.30±158.35	72.84±72.84	0.137

* = (P < 0.05) ** = (P < 0.01) *** = (P < 0.001)

Referance

- Adler , A.I.; Stratton , L.M.; Neil, H.A.;; Yudkin, J.S.;Mathews, D.R.; Cell, C.A.; Wright, A. D.; Turner, R.C. and Holman, R.R.(2000):** Association of systolic blood pressure with macrovaclar and microvascular complication of type 2 diabetes –prospective observational study. *BMJ*,34; 412-419.
- American Diabetes Association (1986):**Nutritional recommendation and principles for individuals with diabetes mellitus.*Diabetes care*; 10:126-32.
- American Diabetes Association (1990):**Position statement nutritional recommendations and principles for in dividuals with diabetes mellitus . *Diabetes care*. 108: 1716-1731.
- American Diabetes Association (2008):** Position of the American Diabetes Association: Health implications of dietary fiber. *Journal of the American Diabetes Association*. 108: 1716-1731.
- Anderson.J.W.and Word,K.(1979):**High carbohydrate high fiber diets for insulin –treated men with diabetes mellitus. *AM.J.Clin.Nutr*,32:2312
- Barett-Connor.E.,andOrchard,T.(1985):**Diabetes and heart disease.InHarris,M.I,andMannanR.F.:Diabetes in American National Diabetes Data Group publication No. 85- 1468. Bethesda, Md.:U.S.Department of Agriculture.
- Cooke, D.W. and Plotnick, L. (2008):** Type 1 diabetes mellitus in pediatrics". *Pediatr Rev*, 29 (11): 374–384.
- Dacie, A. and Lewis, J.(1998):** Practical Hematology . Churchill livingstone . New york
- Ediator, and Leonid, P. (2009):** Principles of diabetes mellitus. New York: Spring, 9:3-6.
- Evanoff,G.V.,Thompson.C.S.et al.(1987):**The effect of dietary protein restriction on the progression diabetic nephropathy *Arch Intern Med* 147:492.
- FAO/WHO/UNV (1985):**Energy protein Requirements, Report of joint FAO/WHO/UNV.Export of Consolation, World Health Organization.

Gellife, D.B. (1966): Assessment of nutritional status of community. Wld. Hlth. Org. Mono Ser.53.

Geoffrey, p.w. (1995): Nutrition A Health Promotion Approach. 1st.ed, Edward Arnold PLC. London Sydney Auckland.

Hany, H.M. (1997): A comparative study Between Governmental and private Hospitals In Cairo city In Relation To Different Aspects of the nutritional care And Their correlation with food consumption of the patients In Those Hospitals. M.Sc. Thesis Nutrition and food science, faculty of Home Economic, menoufia university.

Ripoll, A.S.; Brian, C.; Leutholtz, S. and Tgnacio, A. F. (2011) : Exercise and disease management. BO Ca Raton CRC Press, 2: 25-29.

Shalaby, E.S. (1990): "Assessment of the food service Department and Nutritional analysis of food consumed By patients In The Department of Internal medicine In Tanta University Hospital. ph.D. Tuersis faculty of medicine " Tanta University .

Recommendations

- 1- It is required that diabetic patients on therapeutic diet receive instructions and that is to educate food and knows the right quality food for his health.
- 2- Practice exercise for diabetic patients.
- 3- Try to reduce weight for those who suffer from obesity.
- 4- Distribution of meals per day to three meals and snacks between meals.
- 5- Follow diet selected based by nutritionists.
- 6- Reduce the intake of fatty foods.
- 7- Reducing the amount of protein intake and increase the amount of fiber in food.
- 8- Reduce the intake of salt in food to reduce sodium intake as well as reduce the amount of minerals.
- 9- Increase the intake of vitamin D in food and reduce the cholesterol.

تقييم الحالة الغذائية لمرضى السكر فى بعض مستشفيات محافظة القاهره – مصر

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تهدف هذه الدراسه الى تقييم الحالة الغذائية لمرضى السكر فى بعض مستشفيات محافظة القاهره ولقد تمت الدراسه على 100 مريض تم اختيارهم من المترددين على 2 مستشفى وانقسمت العينه الى 50 مريض من المستشفى الاولى و 50 من المستشفى الثانيه حيث انقسمت العينه داخل كل مستشفى الى 25 ذكور و 25 اناث . وتم عمل دراسه مقارنة بين المستشفى الاولى والمستشفى الثانيه . ولقد تم تسجيل محتويات الوجبه من العناصر الغذائيه لكل مريض عن طريق إستماره إسترجاع 24 ساعه لمده 3 ايام واخذ متوسط الاستهلاك وتم حساب القيمه الغذائيه لكل وجبه غذائيه بإستخدام جداول تحليل الاطعمه وقد تم حساب القيمه الغذائيه للوجبات المستهلكه فعلا من قبل المرضى ومقارنتها بالإحتياجات الغذائيه فى المستشفيات الواقعه تحت الدراسه. وتم تسجيل بيانات اخرى مثل الحاله الاجتماعيه والإقتصاديه, الحاله الصحيه, العادات الغذائيه ذات العلاقه بالمرض, تقييم المقاييس الجسميه للمرضى وشملت الطول والوزن وتم حساب BMI واستخدم التحليل الاحصائى لتحليل البيانات وتم إجراء اختبار (T.test) لإختبار الدلاله الإحصائيه للفروق بين المستشفيات وتم عمل المقارنات بين المستشفيات اظهرت النتائج ان متوسط الماخوز من السعرات فى المستشفى الثانيه اكبر من المستشفى الاولى , مع العلم ان هذه القيم كانت تقترب من الإحتياجات الغذائيه بنسبه 94% فى المستشفى الاولى و 97% فى المستشفى الثانيه. متوسط الماخوز من البروتين فى كلتا المستشفيات اكثر من الإحتياجات الغذائيه , اما متوسط الماخوز من الدهون فى كلتا المستشفيات كان اقل من الإحتياجات الغذائيه, أما بالنسبه للماخوز من الكربوهيدرات فكان متوسط الماخوز فى المستشفى الثانيه اكبر من متوسط الماخوز فى المستشفى الاولى ووضحت النتائج عدم وجود نقص فى الماخوز من الاملاح المعدنيه فى كلا المستشفيات حيث كان الماخوز اكثر من الإحتياجات الغذائيه , وفيما يتعلق بالكوليسترول متوسط الماخوز فى المستشفى الاولى اعلى من متوسط الماخوز فى المستشفى لثانيه . بالتحليل الإحصائى تبين وجود علاقه معنويه كبيره بين المستشفى الاولى والمستشفى الثانيه بالنسبه لكل من الكالسيوم والصوديوم وفيتامين أ وفيتامين سى وفيتامين ب 1 وفيتامين ب 2 , ($P<0.001$) وعلاقه معنويه كبيره بين كلتا المستشفيات بالنسبه لكل من الكربوهيدرات والنياسين , ($P<0.01$) وعلاقه معنويه بين كلتا المستشفيات بالنسبه ل فيتامين د ($P<0.05$) .

كلمات كاشفه :- مرض السكر - الحاله الغذائيه – العادات الغذائيه .