Journal of Home Economics
Volume 26, Number (1), 2016
http://homeEcon.menofia.edu.eg
Journal of Home Economics
ISSN 1110-2578

Assessment Of The Nutritional Status Of Liver Outpatient Visiting The Liver Institute Hospital At Shebin El-Kom, Menoufia

RedaHussien Mohamed Batt
Fellowship Menoufia University Hospital

Abstract

This work was conducted to evaluate the nutritional status of a group of Menoufia outpatients visiting the liver institute hospital at Shebin-El-kom which were chosen randomly from more or less old individual (20 subject; 50 to 70 years old; mean age 60.9 years). Socioeconomic, food habits and health status information obtained via personal interview, and food taken via 24 hours recall method, carried out for 3 days, one of them is the week holiday. Food intake analyzed using a computer program for analyzing ready to eat Egyptian foods.

In line with the fact that Menoufia characterized by high level of education, only four of the participants were illiterate. But unemployment amount to 30%. Most of outpatients (80%) lived in the rural, so 60% of them had relatively big families (more than 3 persons in family).

Although all participants were of liver disease, 75% of them do not follow a special diet. It was found that the just (25%) were diabetic. Forty percent of patients skipped meals, 15% of them do not take milk and 40% of patients taking tea, have the drink right after the meal. It was good that 95% of participants do not use salt, and all of them eat the meat boiled, but it seems faulty that consumption of green salad was low. As high as 30% of patients suffer from other ailment besides the liver disease, about 67% had genetic diseases, 50% of them exposed to foot edema, 45% had swelling in abdomen, 15% obese, 50% with anorexia, 60% suffer of dizziness and 5% suffer of shivering. Unfortunately, all of participants do not practice physical exercise, while being overweight (Mean BMI about 27).

Water intake may be low from the food, but was adequate when water from sources other than food added. Total calories taken by

outpatients (13.26 kcal/1kg.bw) was dramatically low, and should be raised to meet recommendations (35±6.45 kcal/1kg.bw).

Total protein of control diet was adequate (93.6 g/d) revealing the value 1.23 g/k. bw). While the intake was dramatically low (41.21 g/d) revealing the value of 0.544 g/d only, and 75.59% of the DRI- to keep the health of outpatients, therefor total protein intake should be raised. Total fat taken was only 45.78% that of the control meal, and this corrected if raising total calories intakes. Animal fat intake was considerably less than the animal of control meal, indicating good practice to avoid much intake of saturated fat. Carbohydrates was extremely low, thereby with the low protein and fat this caused the low t-calories intake.

Fibers should be raised even in the control meal (14.4 g/d), as well as in food taken by outpatients (5.36 g/d), while it is 30 g/d according to DRI recommendations.

The results of minerals & vitamins were improper since for both control meal and actual consumption by liver outpatients was found to be deficient for most of studied minerals and vitamins calling for correcting the control meal, and raise their intakes by outpatients; T. cholesterol intakes were lower than in both cases (control meal and DRI).

Essential amine acids were deficient in the diet of outpatients, being highest for DRI reference protein. The control diet showing best results. It is suggested that outpatients should be aware of protein quality and also the intake of protein which was lower (41.21 g/d) than both DRI recommendation (56 g/d) and the control diet (93.6 g/d). About one third the total fat should be saturated (45.78/3=15.26) while the intake was 1.74 only.

Due to low unsaturation and low levels of essential FA (omega 6 & omega 3 FA) compared to recommendations outpatients should pay much attention to the consumed fat by them.

Introduction

Assessment of the nutritional status should be carried out frequently as possible in view of the rapid increasing of food prices and decreasing of local currency power. This will affect the available proper good food, which is of the at most importance specially for sick subjects, in particular for outpatients, where no sufficient control is given to their

diet by health authorities. For hospitalized patients, the problem is less pressing since the hospital manages their meals.

Another problem faces the health of liver outpatients, which is the wrong diets available at home or from the market. A third problem is the skipping of meals by these patients.

Moderate to severe malnutrition is a common finding in patient, with liver cirrhosis. This is extremely significant, considering that malnutrition plays a role in pathogenesis of liver in injury and have profound negative impact on prognosis **(Danalgly, 2002)**.

According to **(yasnnkei and Yasng 2004)** trace elements such as iron, copper, zinc & manganese are constituents of many metalloproteins and metalloenzyme and act as cofactors of hepatic processes, On the other hand the prevalence of undernutrition depend upon the severity of liver insufficiency **(Verslype and Cassimdr 2011).**

This study was conducted to evaluate the nutritional status of liver outpatients visiting the liver institute at Shebin El-Kom. Evaluatio0n of the nutritive value of menu served in the Liver Institute Hospital was also in the scope of this investigation. This meal as well as the outpatients' food were also discussed in relation to the **(DRI 2002)** recommendations.

Subjectsand Methods

Twenty old liver outpatients (50-70 years old) visiting the reception of the liver institute hospital at Shebin El-kom, Menoufia were randomly selected and recruited to fulfill the present work. Body weight of participants was 58-105 kg and height ranged 1.55 to 1.75 cm. Socio-economic health status and food habits information collected via questionnaire of three acts. Twenty-four hours recall method was used to collect the data about food consumption in 3 days, one of them is the week holiday. Also, the height was recorded to nearest 1cm and body weight to nearest 0.5kg, then body mass index calculated as kg/m^2 according to jellified (1966). T.S.F., AC & AMC were measured according to **Whitney, Eleanor and Rolfs, Shason (1993)**.

Nutrients contents of consumed food analyzed at Faculty of Home Economics using(computer) program for nutrients of ready to eat Egyptian foods, version 1 , in the Unit of Statistics and Food Analysis to evaluate the results of microelements minerals, vitamins, essential amino acids and essential fatty acids in the view of the recommendation of

Dietary Reference Intakes **(DRI, 2002)**. Both the consumed food by liver, outpatients and that of the control meal served to inpatients of Liver Institute Hospital were analyzed.

Data were analyzed using statistical program for social science (SPSS) version, 8. Quantitative data were expressed as mean ± standard deviation (SD).

Results And Discussion

A- Socio- economic results:

Data presented in table (1) show the socio-economic results of liver outpatients visiting the Live Institute Hospital of Shebin El-kommenoufia.

Table (1): Socio-economic status of liver outpatients visiting Liver Institute Hospital at Shebin El-kommenoufia

Variable	No.	% of total	**Variable**	No.	% of total
Age (years)			**Marital status**		
50-60	10	50	Single	-	-
60-70	10	50	Married	18	90
Total	20	100	Widowed	1	5
Educational Level			Divorced	1	5
Illiterate	2	10	**Total**	20	100
Primary school	5	25	**Work**		
Prep school	5	25	Manual	11	55
High school	3	15	Administrative	3	15
College	5	25	Commercial	1	5
Total	20	100	Unemployed	5	25
Living alone			**Total**	20	100
Yes	-	-	**Dwelling place**		
No	20	100	Rural	16	80
Total	20	100	Urban	4	20
Monthly income (L.E)			**Total**	20	100
<1000	3	15	**Family size persons**		
1000-1500	10	50	2	2	10
1500-2000	7	35	3	6	30
Total	20	100	4	9	45
			>4	3	15
			Total	20	100

Table 1: Socio-economic results

From results of Table (1) it is evident that all participants were mostly over 50 years of age, and equally divided on two groups; 50-60 years old (50%) and 60-70 years (50%)All of them were males.

All of participants were either married (90%), which are the majority, while 5% widowed, 5% divorced none single (not married before).

It Is clear (table 1) that the lowest proportion of participants were illiterate (10% of total sample), while primary school, preparatory school and university education were 25% each. Secondary school subjects were 15%. It is evident that illiterate subjects were not marked (10% only; this is characteristic for Menoufia Governorate, which among other Governorates, none of participants were just read and write.

As for the occupation, most of outpatients (55%) were manual works; 15% of them were in either administrative professions; only 5% of participation were in commercial and profession and one fourth of participants were unemployed.

None of the outpatients was living alone, and the majority of them (80%) were rural, while only 20% urban (Table 1).

Most of participants (50%) were of medium monthly income (1000- < 1500 Egyptian pounds), and more than one third the participants (35%) were of the relatively highest monthly income (1500-2000 Egyptian pounds), while the smallest proportion (15%) of total were of relatively low income group (< 1000 Egyptian pounds).

As most of participants were rural (80%), the majority of them (45%) showed relatively high family size (4 persons in the family), and 30% of total have 3 persons per family; this means that 75% of participants have 3-4 person per family. It seems that although Menoufia participants, were relatively mostly rural (80%), they were more or less civilized as they had only 4 and less persons per family (85% of total), regardless of that 10% of total only have 2 persons per family actually, 15% of total only had > 4 person in the family.

B- Food habits

It could be observed (Table 2) that all participants liked vegetables and fruits, while none disliked such foods.

Data of table (2) revealed that only one participant was vegetarian and 95% of them are omnivorous. None of outpatients consumes mutton to avoid taking much animal fat; they believed that rich fat mutton aggravates heptiontoxication. Most of participants (65% of total) eat chicken, since they believed that by separation and withdrawal of the skin. Much of the fat is avoided. Beef was taken by

only 30% of participants, being advised to choose the lean (not fatty) parts.

Table (2): food habits of Menoufia liver not patients visiting liver institute hospital at Shebin El-Kom.

Variable	No.	%Total	Number of meals	No.	%Total
Classification of taken (plant)			1	3	15
Vegetables	20	100	2	9	45
Fruits	20	100	3	8	40
Total	20	100	**Total**	20	100
Types of meat taken			**Skipped meal**		
Chicken	13	65	Breakfast	-	-
Beef	6	30	Dinner	2	10
Vegetarian	1	5	Lunch	7	35
Total	20	100	Breakfast and dinner	3	15
Therapeutic diet			None	8	40
Yes	5	25	**Total**	20	100
No	15	75	**Milk intake**		
Total	20	100	Yes	17	85
Fluids intake (rather water)			No	3	15
1 liter	8	40	**Total**	20	100
1.5 liters	8	40	**Tea intake**		
2 liters	4	20	Yes	5	25
Total	20	100	No	15	75
			Total	20	100
Tea concentration			**Tea intake after meal**		
Light	5	100	Yes	3	60
Heavy	0	0	No	2	40
Total	5	100	**Total**	5	100
Salt intake			**Vegetables cooking**		
Yes	1	5	Raw	1	5
No	19	95	Spiced	0	0
Total	20	100	Boiled	19	95
Meat intake			**Total**	20	100
Boiled	20	100	**Salt restriction**		
Fried	0	0	Yes (few)	20	100
Stewed	0	0	No	0	0
Total	20	100	**Total**	20	100
Spiced Restriction			**Types of protein**		
Yes (few)	20	100	Animal protein	19	95
No	0	0	Plant Protein	1	5
Total	20	100	**Total**	20	100

Table 2:Food Habits

From results of table (2) it may be noticed that 75 of participants do not follow a special diet nevertheless 25% of total (5 persons) followed a therapeutic diet there may be the liver outpatients inflicted with diabetes mellitus (table 3), being 5 participants (25% of total).

Participants taking 3 meals a day were 40% of total. At the same time participants omitted meals were 12, being 60% of total which is actually high. As high as 45% of participants skipped two meals, while 15% skipped one meal, anyhow skipping meals is not good for patients, in particular knowing that 15% of participants skipped both breakfast and dinner (lunch) together. A total percent of 10% skipped dinner (lunch) alone or supper (35%) alone.

Taking Fluids seems to be needed for certain patients but not for others; from results of Table (2) participants taking 1, 1.5 &2 liters of fluids (other than water) were 40, 40 & 20% of total respectively; restricted fluid seem to be recommended for liver cirrhosis **(whiteny, Eleanor N et al., 1991).**

Intake of milk was proper (85% of total), although for the rest (15% of total) awareness should be raised so as none will neglect the milk intake.

Tea intake was not practiced by 75% of participants, which is a good result. The rest 25% seems to be not at risk, since 100% of patients taking tea, use only a light tea drink however, it is undesirable that 60% of participants taking tea, drink tea right after a meal, which may be damaging for iron. Metabolism **(whitney, Eleanor and Rolfes, Sharon, 1993).**

Participant, may be praised since 95% of them do not use salt in food, this will reduce the Na intake which is harmful to health **(Whitney, Elearnor&Rolfes, Sharon 1993)** when using salt, they add a few amounts only (Table 2). Also, participants should be praised for taking the meat boiled (not fried or stewed), to avoid much fat in diet.

It is not a good practice that only 5% of participants take raw (uncooked) vegetables, apparently do not take green salad. The majority of outpatient, (95%) take the boiled vegetables, where water soluble vitamins as vitamin C may be subjected to some loss in boiling water, and due to the heat of cooking.

Spices restriction is practiced by all of the participants (100% of total), which is a good food habit for liver outpatients.

C-Health status

Data presented in table (3) show the health status of Menofia liver outpatients visiting liver institute hospital at Shebin El-Kom.Table (3): Healh status of Menoufia liver outpatients visiting liver institute Hospital at Shebin El-Kom.

Variable	No.	% of total	Variable	No.	% of total
Diseases rather in liver			**Exposed to liver coma**		
Yes	6	30	Yes	2	10
No	14	70	No	18	90
Total	20	100	**Total**	20	100
Types of diseases			**Bleeding from nose and gum**		
Diabetes mellitus	5	83	Yes	4	20
Hypertension	1	17	No	16	80
Total	6	100	**Total**	20	100
Genetic diseases			**Exposed to part edema**		
Yes	4	67	Yes	4	20
No	2	33	No	16	80
Total	6	100	**Total**	20	100
Drugs intake			**Abdomen swelling**		
Yes	19	95	Yes	9	45
No	1	5	No	11	55
Total	20	100	**Total**	20	100
Teeth health			**Suffer from obesity**		
Complete	15	75	Yes*	3	15
Deficient	5	25	No	17	85
Total	20	100	**Total**	20	100
Complain of anorexia			**Suffer from a lot of sweating**		
Yes	10	50	Yes	4	20
No	10	50	No	16	80
Total	20	100	**Total**	20	100
Suffer from dizziness			**Physical exercise**		
Yes	10	50	Yes	0	0
No	10	50	No	20	100
Total	20	100	**Total**	20	100
Shivering					
Yes	10	50			
No	10	50			
Total	20	100			

Table 3 Health Status

It is clear (Table 3) that 30% of inpatients were suffering from disease other than hepatitis; 83% of them was the diabetes mellitus, while 17% of participants were suffering of hypertension. Moreover 67 of mentioned diseases were genetic, while 33% not.

Most of Menoufia outpatients visiting the liver institute at Shebin El-Kom (95% of total) were taking drugs, while 5%of them were not.

Complete teeth recorded for 75% of participants, while 25% had deficient. 80% of total patients do not complain of bleeding neither from gum nor from nose. Nevertheless 20% of participants suffer from bleeding from nose and gum.

Half the number of participants (50%) exposed to foot edema and 45% of patients revealed abdomen swelling.

Obesity cases amounted to 15% of liver disease outpatients, while the majority (85%) were not. Half the number of participants complained from anorexia, 20% suffered from heavy sweating, while 50% of them suffered from dizziness; a similar proportion (50%) suffered of shivering.

None of liver outpatients practiced physical exercise (100%), calling for awareness rising their understanding, since physical, training practice is seed to alleviate the diseases.

D- Anthropometric measurements

Data of table (4) show the anthropometric measurements of liver outpatients visiting the liver institute hospital at Shebin El-kom. Table (4) anthropometric measurements of liver outpatients viriting the liver institute hospital at Shebin El-kom:

Measurement	Mean value
Height (m)	1.68±
Weight (kg)	75.70±
Body mass index (BMI)kg/m^2)	26.84±
Triceps skin fold thickness (T.S.F)(mm)	2.13±
Arm circumference (AC)(cm)	29.4±
Arm muscle circumference (AMC) (cm)	27.4±

Table 4:Anthropometric Measurements

From results of table (4) it is clear that liver outpatients revealed BMI value of 26.48kg/m^2. This means that these patients were overweight, (BMI) between 25 to 30 kg/m^2**(whitney, Eleanor and**

Rolfes, Sharon, 1993). This is the mean value although three outpatients suffered from obesity (Table 3). Using different limits of figures will reveal BMI of 34.09 and 44.95 Kg/m^2 which means obesity (≥30Kg/m^2).

Nevertheless, variables are actually great since for example the age was 52-70 years, weight 58- 108kg and length 1.55 to 1.78 m. Moreover, these patients are actually at variable advancement of the liver disease. while mean-values appear as if measured for overweight subjects (BMI 25.0-29.9 Kg/m^2). This Is true particularly knowing that the patient of 108 kg weight & 1.78m length, reveal BMI of 44.95 kg/m^2, being of severe obesity (evidently obese).

E- Nutritional evaluation

The results of table (5) show the macronutrients intakes by liver outpatients and their evaluation in relation to both the DRI recommendation and the meal of Liver Institute Hospital known as the control meal.

Table (5): evaluation of mean macronutrients intakes by liver outpatients in relation to DRI recommendation and the control meal offered by Liver Institute Hospital for liver inpatients.

Macronutrients	**Mean macro Nutrients intake**				
	References		**Actual daily Intake by Patients**	% of	
	DRI (2002)	**Control meal of Liver Institute Hospital**		**control meal**	**DRI**
Water (mg)	3700	1363.6	559.49	41.03	15.12
T. calories (Ccel)	2424.74*	2479.8	1003.83	40.48	41.40
Protein A (g)	-	63.2	29.29	46.35	-
Protein P (g)	-	30.7	11.92	38.83	-
Total protein (g)	56	93.6	41.21	44.03	73.59
Fat A (g)	-	72.2	29.43	46.58	-
Fat P (g)	-	10.4	4.49	43.17	-
Total fat (g)	74.09**	82.6	33.92	41.07	45.78
Carbohydrates (g)	383.48***	340.2	133.47	34.81	39.23
Fiber (g)	30	14.4	5.36	37.22	17.87
Ash (g)	-	8.5	3.45	40.59	-

Table٥: Nutritional Evaluation

* Calculated from DRI formula.

** Calculated as 25-30 (275%) of T. calories.

*** Calculated by difference.

Date of Table (5) indicated that the water intake from food was actually low (559.49 g). According to **(Whitney, Elean et al., 1991)** in ascites fluids should be restricted to 1500 to 2000 ml/day, then increases as liver function, improves. Accordingly, the level in control meal (1363.0 ml) was slightly less than the 1500 ml (minimum allowed limit) (91%). The low level of food water (559.49 g) (41.03% of control & 15.12% of DRI) may be considered adequate when added to fluids intakes from other sources than food water (Table 2), being 1-2 liters a day.

Total calories of control sample were proper (2479.8 kcal), being near than that of DRI (2424.74 kcal; 102% of DRI). Nevertheless, the actual intake (1003.83 kcal) was dramatically less in comparison to the control diet (40.48%) and DRI (41.40%). Outpatients had 13.26 kcal/ kg body weight / day, while suggestions for liver disease patients **(whitney, Eleanor et al., 1991)** recommended 35 to 45 kcal/kgbw. The level given by the control diet was about 33 kcal/kgbw which is near the minimum recommended level (35 kcal / kg bw). Anyhow total calories of control meal may be slightly increased while that of the outpatients should be raised considerably.

Also, total protein intake was dramatically low being 0.544 g/kg bw., while recommendations **(whitney, Eleannor et al., 1991)** suggest 1-1.5 g/kg bw, and should be raised. The level suggested by DRI was 0.74 g/kg bw for healthy subjects; that of the control meal was adequate, which was 1.237 g/kg bw. Total patient intake in relation to DRI was 73.59%; meanwhile as compared to control diet was only 41.21% in both control meal & actual taken meal vegetable protein consumption was less than that of animal protein (by abput 2.5 times. This is not good, as **(whitney, Eleanor et al., 1991)** indicated that liver disease patients better tolerate vegetable than meat protein, perhaps because vegetable protein contains fewer amino acids that readily form ammonia, and fewer aromatic amino acid than do meats, in addition diets high in plant foods contain more fibers, which prevent constipation, these by

reducing the time available for the production and absorption of ammonia in the gut.

It could be noticed that the fat intake was low, being 41.07% of the control meal and 45.78% of the calculated DRI. Control meal showed somewhat higher fat 82.6 g/d in the meal compared to DRI (74.09 g/d). According to **(Whitney, Eleanor et al., 1991)** fat needs only to be restricted only if the cirrhotic person develops steatorrhea, a clear sign of malabsorption. According to total fat resulting consumption being 33.92 g/d should be raised, and these will aid in raising the low T.calories intake. Plant fat (Table 5) was considerably low in control and in actual daily food taken than the animal fat. This vegetables fat may be raised, since this means less saturated fat.

Carbohydrates intake was extremely low (34.81% that of the control meal and 39.23% of DRI this with the low protein and fat intakes are the reasons for the low total calories intake, it should be noted that control sample was more or less balanced showing adequate carbohydrates (about 89% of DRI) & adequate T.calories (102.27% of DRI) and total proteins (1.237g/kg b.w, while fell in the recommended range (1-1.5g/k, B.w).

The fibers of control meal 14.4 g/d) was half that of the DRI (30g/d), but it was extremely low for the actual diet (5.36 g/d). Due to importance of fibers in diet, they must be increased in the control meal itself (assigned to patients) as well as in food taken by liver outpatients.

F- minerals & vitamins:

Data of table (6) show the minerals vitamins &T.cholesterol of intake by liver outpatients and their evaluation in relation to both the DRI recommendations and the meal of Liver Institute Hospital known as the control meal assigned for inpatients.

Table (6): Evaluation of mean minerals and vitamins and T.cholesterol by liver outpatients in relation to DRI recommendations and the control meal offered by Liver Institute Hospital at Shebien El-Kom.

Minerals & Vitamins	References		minerals and vitamins		
			Actual intake (24 hours food recall)	% of	
	DRI	Control meal of Liver Institute Hospital	Intake by outpatients	Control meal	DRI
Minerals:					
Ca (mg)	1000	651.7	254.72	39.09	25.47
P (mg)	700	1574	694.3	44.11	99.9
Fe- A (mg)		6.4	2.13	-	-
Fe- P (mg)		8.5	3.16	-	-
T. Fe (mg)	8	14.9	5.29	35.50	66.13
Na	1300	3479.6	1545.2	44.42	118.86
K	4700	3379.2	1091.77	32.31	23.23
Zn	11	12.7	5.22	41.10	47.46
Mg	420	465.7	167.22	35.91	39.81
Vitamins:					
A (mg)	900	967.2	279.33	28.88	31.04
C (mg)	90	28.4	113	297.89	125.56
D (µg)	15	3.8	15	394.74	100
E (mg)	15	18.7	3.48	18.61	23.2
B_1 (mg)	1.2	1.1	0.47	42.73	39.17
B_2 (mg)	1.3	2.4	0.87	36.25	66.92
Niacin (B_3) (mg)	16	26.9	13.09	48.66	81.81
B_6 (mg)	1.3	2.5	0.615	24.6	47.31
B_{12} (mg)	2.4	2.6	0.40	15.39	16.67
Folate mg	400	323.9	98.68	30.47	24.67
T. Cholesterol (mg)	$\leq$ 200	683.9	140.87	20.60	70.44

Table٦: Minerals & Vitamins

The results of Table (6) revealed regretted results. This because much of minerals and vitamins intakes were less than control meal including Ca, P, Fe, K, Zn, Mg, A, E, B1, B2, niacin, B6, B12 and folate. Intakes of these nutrients were also less than that of the DRI including Ca, Fe, K, Zn, Mg, A, E, B1, B2, niacin, B6, B12 and folate. Control diet itself when compared with DRI was low in Ca, K, E, B1, B2, niacin, B6, B12 and folate. Therefore, control diet should be corrected for deficient minerals & vitamin, and the actual intake by outpatients should be raised.

Intakes of C & D were more or less adequate; intake of Na (1545.2 mg/d) was less than that of control (3479.6 mg/d), but DRI was

also less than that of control diet so no need for raising Na intake particularly because as reported by to **(Whitney, Eleanor et al., 1991)** If ascites developed Na intake should be restricted to 1000-2000mg/d, and actual intake already fell in this range (1545.2 mg/d).

Total cholesterol was adequate 140.87 mg/d, being even less than the permissible amount $\leq$ 200 mg/d, showing no risk of hyper cholesterolemia this may be a good result of sinu T. cholesterol of outpatients less than control meal (683 gm/d) and allowance (≤200 mg).

Fat intake (Table 5) by liver inpatients (33.92 g/d) and T. cholesterol (140.87 mg) was less compared to the higher fat intake of the control meal (82.6 g/d and 683.9 mg) indicating evident relationship between two parameters especially considering that animal fat was evidently low for control (72.2 g) compared to outpatients' diet (29.43 g) (Table 5).

G- protein quality taken by liver outpatients:

The results of Table (7) show the protein evaluation of Menoufia liver outpatient visiting the Liver Institute Hospital at Shebin El-kom.

Table (7): Evaluation of mean essential amino acids (EAA) intakes by liver outpatients visiting Liver Institute Hospital at Shebin El-Kom in relation to DRI recommendations (reference protein) and the control meal served to inpatients.

Essential Amino Acid	References				EAA intakes from outpatients' food (24 hours/ cecell					
	DRI Reference protein		Control meal		Outpatients' food		% of DRI reference protein		% of control meal	
	g/100g protein (56 g)	g/100g food	g/100 g protein (93.69 g)	g/100 g meal	g/100g protein (41.21 g)	g/100 g food	g/100 g protein	g/100 g food	g/ 100 g protein	g/100 g meal
Isoleucine	2.5	1.4	4.36	4.08	1.88	0.78	75.2	55.7	43.1	19.1
Leucine	5.5	3.08	7.44	6.96	3.14	1.29	57.1	41.9	42.2	18.5
Lysine	5.1	2.86	6.51	6.09	2.92	1.20	57.3	42.0	44.9	19.7
Threonine	2.7	1.51	4.11	3.85	2.10	0.87	77.8	57.6	51.1	22.6
Tryptophan	0.7	0.39	1.24	1.16	0.51	0.21	72.9	53.9	41.1	18.1
Valine	3.2	1.79	5.51	5.16	2.23	0.92	19.7	51.4	40.5	17.8
Histidine	1.8	1.01	2.69	2.52	1.2	0.5	66.7	49.5	44.6	19.8
Methionine +Cystine	2.5	1.4	3.67	3.44	1.47	0.61	58.8	43.6	40.1	17.7
Phenylalnine+ Tyrosine	4.7	2.63	8.42	7.88	3.66	1.51	77.9	57.4	43.5	19.2

Table 5:Protein Quality

From results of table (7) it is clear that the food taken by liver outpatients is of poor quality. Best quality recorded for control meal of the Liver Institute Hospital (served to inpatients), followed by the DRI reference protein, then came the liver outpatients' food. In comparison with control meal and DRI reference protein, protein of liver outpatients was deficient in all of the EAA, leading to that patients are at health risk. These patients (Table 5) revealed lowest protein daily intake (41.21 g/100 g food) followed by DRI recommendation (56 g/d), while highest protein intake was from the liver institute Hospital control meal (93.6 g/d). such results call for much awareness for outpatients to improve the quality of protein, possibly by increasing the level of taken protein to the DRI level (56 g/d).

As reported by **(whitney, Eleanor and Rolfes, Sharon, 1993)** to maintain positive nitrogen balance, liver patients need a diet with enough in high- quality protein for liver cells to generate, but not enough to aggravate ammonia buildup. The diet protein should provide 1 to 1.5 g protein per kilogram b.wt, this means that outpatients (mean B.W 75.7 kg) should have 75.7- 113.55 g/d of protein which is noticed for control meal, but not the outpatients' food (41.21 g/d) being the cause of poor EAA (Table 6).

H-Fatty acids composition of liver outpatients:

Data of table (8) show the fatty acid (FA) composition of liver outpatients in comparison with that of the Liver Institute Hospital meal served to inpatients.

Table (8): Evaluation of the fatty acid intake by (FA) liver outpatients visiting Liver Institute Hospital in relation to DRI recommendations and the control meal served to inpatients.

FA	DRI (g/d)	Control meal		Outpatients' food	
Saturated:					
Capric		0.80		0.28	
Lauric		0.20		0.09	
Myristic		1.40		0.49	
Palmitic		9.10		2.08	
Stearic		2.40		0.39	
Total		13.9		3.33	
Monounsaturated:					
Palmitoleic		0.70		0.11	
Oleic		7.50		0.98	
Total		8.2		1.09	
Polyunsaturated:		**g/d**	**% ofDRI**	**g/d**	**% ofDRI**
Linoleic	14	2.5	17.86	0.54	3.86
Linolenic	1.6	0.3	18.75	0.11	6.88
Total	15.6	2.8		0.65	
T. unsat. FA		11.0		1.74	

Table 6:Fatty Acids

From result of table (8) it is evident that liver control meal was more rich in mono-saturated FA compared to that of the outpatients' food (8.2 & 1.09 g/d respectively. Moreover, control meal had appreciable higher (2.8 g/d) polyunsaturated FA than that of the outpatients' food (0.65 g/d). Also, saturated FA showed the mentioned trend being higher for control than outpatients diets. This may be due simply to the higher fat content of control meal (82.6%) than outpatients diet (33.92%) (Table 5). This was also reflected on the nutritional value of both foods. Since essential FA followed the same above mentioned trend; omega -6 FA for liver control meal of Liver Institute Hospital (served to inpatients) was higher (17.86% of DRI) than that of the outpatients' food (3.86% of DRI). Similarly control meal indicated higher omega-3 FA level (18.75% of DRI) in comparison with that of the outpatients' food (6.88% of DRI). This also may be due to the low-fat content taken by the outpatient. It seems needed tat outpatients should pay more attention not only to the low level, but also to the nutritional value (level of omega 6 & omega 3 FA) of the consumed fat.

It should be noted that according to (Whitney, Eleanor et al., 1991) the proper proportions of Saturated FA: Monounsaturated FA: Polyunsaturated FA is about: 1:1:1 and percentages for both control & outpatients' fat were far away from the suggested ratio, which was 1:0.59:0.20 and 1:0.33:0.20 respectively.

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Journal of Home Economics, Volume 26, Number (1), 2016

تقييم الحالة الغذائية لمرضى الكبد المترددين فى مستشفى معهد الكبد بشبين الكوم منوفية

رضا حسين محمد بط
زميل بمستشفى الجامعة-شبين الكوم

الملخص :

تم انجاز هذا العمل من أجل تقييم الحالة الغذائية لمجموعة من المرضى المترددين على مستشفى معهد الكبد بشبين الكوم، والذين تم إختيارهم بطريقة عشوائية. هذه العينة مكونة من ٢٠ مريضاً من سن ٥٠-٧٠ عاماً، ومتوسط اعمارهم حوالى ٦٠.٩ عاماً. تم تجميع معلومات الحالة الإجتماعيةوالإقتصادية والصحية وروتين الغذاء من خلال المقابلات الشخصية. واستخدمت طريقة الإستدعاء لمعرفة الطعام المتناول لمدة ثلاثة أيام على مدار ٢٤ ساعة منهم يوم العطلة الأسبوعية. تم تحليل هذا الطعام المتناول بإستخدام برنامج بالكمبيوتر لتناول المأكولات المصرية.

تماشياً مع تميز محافظة المنوفية بمستوى عالى من التعليم، كان فقط أربعة منهم اميين. ولكن كان حوالى ٣٠% من المرضى من العاطلين و ٨٠% يعيشوا فى الريف لذلك كان ٦٠% منهم لديهم عائلات كبيرة نسبياً (أكبر من ٣ أشخاص). بالرغم من أن كل المرضى مصابين بمرض الكبد إلا أن ٧٥% منهم لا يتبعون أى نظام غذائى. يوجد ٢٠% من المشاركين مرضى بالسكر و ٤٠% منهم لا يأكلون الوجبات ثلاث وجبات و ١٥% من المشاركين لا يشربون الحليب و ٤٠% يشربون الشاى كمشروب أساسى بعد الوجبة الرئسية.

كان من الجيد ان ٩٥% من المشاركين لا يستخدمون الملح وجميعهم يأكلون اللحم مسلوق و لكن استهلاكهم من السلطة الخضراء كان قليل، و بما يعادل ٣٠% من من المشاركين يعانون من أمراض أخرى بجانب مرض الكبد حيث ٦٧% يعانون من أمراض وراثية. يوجد حوالى ٥٠% من المشاركين يتعرضون للتورم وانتفاخ البطن و حوالى ١٥% بالسمنة المفرطة و ٥٠% بفقدان الشهية و ٦٠% يصابوا بالدوار و ٥% منهم يعانون من الإرتعاش.ولسوء الحظ لا يوجد أحد منهم يؤدى أى من التمرينات البدنية. معدل إستهلاك الماء من الغذاء يعتبر قليل ولكن يعتبر كافى نسبب وجود مصادر ماء أخرى من الطعام المضاف. مجمل السعرات الحرارية التى يستفاد منها المريض كانت 13.26 kcal/1Kg ويجب ان يرتفع حتى يصل الى الكمية المطلوبة 35-45Kcal/1Kg.

كمية البروتين للنظام الغذائى السليم كانت كافية 96.69 g/d تظهر بقيمة 1.23g/dفى حين أن معدل الإمتصاص يعتبر قليلاً جداً 41.21 g/d وتظهر بقيمة 0.544 g/d فقط وتمثل ٧٥.٥٩% من DRI. للمحافظة على صحة المرضى المترددين فإنه يجب رفع معدل الكمية المأخوذة من البروتين الكلى. كانت كمية الدهون المأخوذة حوالى 45.78% من الوجبة الموجهة. فإذا تم زيادة كمة الدهون فسوف يساعد فى السعرات الحرارية المأخوذة. كمية الدهون الحيوانية المأخوذة أقل من الكمية الموجودة فى الوجبة الموجهة مما يشير إلى تجنب الإستهلاك الزائد من الدهون المشبعة. معدل إمتصاص الكربوهيدرات يعتبر قليل جداً وبالتالى مع قلة كمية البروتين والدهون بسبب امتصاص سعرات حرارية أقل.

يجب رفع كمية الألياف حتى فى الوجبة الموجهة 14.4 g/d بالإضافة إلى أن الطعام المأخوذ من المرضى كان حوالى 5.36g/dوالتى يجب ان تكون 30 g/d طبقاً لتوصيات الDRI. نتائج المعادن والفيتامينات أشارت إلى أن الوجبات الموجهة والإستهلاكالحقيقى بواسطة المرضى غير كفء فى كل انواع المعادن والفيتامينات مما يشير إلى ضرورة تصحيح هذة النسبة فى الوجبة الموجهة. نسبة الأحماض الأمينية الأساسية كانت غير كافية فى وجبات المرضى علماً بأن الأعلى كان فى مراجع ال DRI. أظهرت الوجبة الموجهة أفضل النتائج. من الأفضل للمرضى أن يكونوا على دراية بأن كمية البروتين وجودته والتىهى41.21 g/d اقل من مراجع ال DRI (56 g/d)والوجبة الموجهة (93.6 g/d). لابد ان تكون نسب الدهون المشبعة حوالى الثلث (١٥.٢٦) على الرغم من ان النسبة الموجودة تقدر ب (١.٧٤) فقط. لابد للمرضى ان ينتبهوا إلى كمية الدهون المستهلكة بسبب الإنخفاض الحاد فى مستويات الدهون الغير مشبعة والأحماض الدهنية الأساسية مثل (omega 6 & omega 3 FA).