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ABSTRACT

Background: Underweight is a term describing a human whose A total number of 40 patients visiting Internist Department of Kasr El – Ainy Hospital (a governmental hospital) in Cairo were selected for present study provided that they wore overweight or obese based on BMI. Female and male patients were at the ages of 45 - < 55 and 55 – 65 years. The weight and length of each participant measured, and BMI calculated. Data of present work collected with interviews using questionnaire composed of several forms. The 24 hours recall method used to record food intake, which was analyzed to obtain levels of nutrients. Serum biochemical and haematological analyses were also carried out.

Prevalence of diabetes mellitus (DM) was much greater for females than males and raised with age. At 55 – 65 years old 50 – 70 % were inflicted with high blood pressure, at this age group 50 % of males showed low efficiency of thyroid gland being possible a cause of obesity. This accompanied by low T.S.H. With increasing of age overweight, morbid and super obesity increased on account of class II obesity. TSF, AC and AMC increased also with the development of obesity. Total calories, protein, fat and carbohydrates intakes were higher than DRI. All studied biochemical analyses except uric acid and possibly HDL indicated health disorders. Haematological analyses confirmed the deteriorated health status of overweight and obese subjects of present work.

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INTRODUCTION

Obesity increases the likelihood of various diseases, particularly heart disease, type 2 diabetes, obstructive sleep apnea, certain types of cancer disorders of liver and kidneys functions and osteoarthritis (Haslam and James, 2009). Obesity is most commonly caused by a combination of excessive food energy intake, lack of physical activity, and genetic susceptibility (Adams and Murphy, 2000).

Dieting and physical exercise are the mainstays of treatment for obesity. It is important to improve diet quality by reducing the consumption of energy – dense foods such as those high in fat and sugars, and by increasing the intake of dietary fiber. To supplement this, or in case of failure, anti – obesity drugs may be taken to reduce appetite or inhibit fat absorption. In severe cases, surgery is performed or an intragastric balloon is placed to reduce stomach volume and / or bowel length, leading to earlier satiation and reduced ability to absorb nutrients from food (Sweeting, 2007).

This work was carried out to assess the nutritional and health status of males and females, 45 – 65 years old, visiting the Internist Department, Kasr El – Ainy Hospital, Cairo.

SUBJECTS AND METHODS

Sample:

A total sample of 40 members enrolled in this study, being 10 females & 10 males at the age of 45 - < 55 years, and 10 females & 10 males at the age of 55 – 65 years. Study sample included only overweight or obese subjects based on body mass index (BMI). Participants were the visitors of Internist Department, Kasr El – Ainy Hospital, Cairo.

Instrumentation:

The instrumentation of this study consisted of a structure interviewing questionnaire of different forms. Assessment of nutrient intake from food consumption data carried out at Faculty of Home Economics, Minufiya University (Shebin El – Kom) using the Counter Program for Nutrients of

Ready to Eat Egyptian Food Version 1, in the Unit of Statistics and Food Analysis.

To evaluate results of total Kcal, DRI (2007). Equation for estimated energy requirements (EER) used. To evaluate results of other macronutrients, minerals and vitamins tables of Dietary Reference Intake (DRI, 2007) were used.

Anthropometric measurements were carried out as described by Jelliffee (1966), while biochemical analysis carried out using methods as follows: Serum glucose (Tietz, 1976), serum glutamate pyruvate transaminase (GPT, ALT) (Srivastava et al., 2002), creatinine (Chary and Sharma (2004), urea (Henery et al., 1974), uric acid (Fossati et al., 1980), TC (White et al., 1970), TG (Fossati and Pricipe (1982), VLDL " TG/5 " (Srivastava et al., 2002), LDL " TC – [TG + HDL] " was calculated according to (Castelli, 1977), HDL (Richmond, 1973), Hemoglubin (Jacobs et al., 2001), thyroid stimulating hormone (Waada et al., 1983), hemoglobin parameters " HCT, WBC, MCV, RBC, MCH, MCHC, RDW, PLT, PCT, MPV, PDW, Lym, Mon and GRA " respectively complete blood picture determined in the Laboratory of the Specific Misr & El – Sudan Hospital, Ain Shams University, Cairo. Statistical analysis carried out using SPSS (1998), PC Statistical Software (Version 10, SPSS INC, Chicago, USA) in the Unit of Statistical and Food Analysis, Faculty of Home Economics, Minufiya University (Shebin El – Kom).

RESULTS AND DISCUSSION

1. Percent distribution of study sample according to ailments:

From results of tables (1 & 2) it is evident that prevalence of diabetes mellitus (DM) was much greater for females than males and raised with age; for the higher age nearly all participants (90 %) were diabetic. High blood pressure also increased with age; at 55 – 65 years old 50 – 70 % were affected by this disease. From deficiency anemia and kidney disorders were pronounced at the higher age (20 – 30 %) and (30 – 60 %) respectively. Low efficiency of thyroid gland was marked at the higher age, specially for males (50 %). It is known that low efficiency of thyroid gland (thyroidism) reduce

the secretion of leptin; leptin is responsible for suppression of appetite and enhancement of energy expenditure (possibly reducing obesity) (Barness et al., 2007).

Table (1): Percent distribution of obese females & males (45 - < 55 years) according to morbidity

Variables	Age 45 - < 55 years				P value
	Females (N= 10)		Males (N= 10)		
	No.	%	No.	%	
Diabetes mellitus					
Yes	6	60	1	10	0.008*
No	4	40	9	90	
Liver problems					
Yes	0	0	1	10	0.29 NS
No	10	100	9	90	
High blood pressure					
Yes	2	20	2	20	1.00 NS
No	8	80	8	80	
Iron deficiency anemia					
Yes	1	10	0	0	0.29 NS
No	9	90	10	100	
Kidney disorders					
Yes	1	10	0	0	0.29 NS
No	9	90	10	100	
High fat blood					
Yes	1	10	5	50	0.32*
No	9	90	5	50	

* Significant P < 0.05 ** High significant P < 0.01

*** Very high significant P < 0.001 NS: Nonsignificant

Table (2): Percent distribution of obese females & males (55 – 65 years) according to morbidity

Variables	Age 55 – 65 years				P value
	Females (N= 10)		Males (N= 10)		
	No.	%	No.	%	
Diabetes mellitus					
Yes	9	90	9	90	1.00 NS
No	1	10	1	10	
Liver problems					
Yes	2	20	0	0	0.29 NS
No	8	80	10	100	
High blood pressure					
Yes	5	50	7	70	1.00 NS
No	5	50	3	30	
Iron deficiency anemia					
Yes	2	20	3	30	0.62 NS
No	8	80	7	70	
Kidney disorders					
Yes	3	30	6	60	0.69 NS
No	7	70	4	40	
High fat blood					
Yes	6	60	5	50	0.035*
No	4	40	5	50	
Low efficiency of thyroid gland					
Yes	1	10	5	50	0.31 NS
No	9	90	5	50	
Ulcer					
Yes	1	10	0	0	1.00 NS
No	9	90	10	100	
Rheumatism					
Yes	1	10	1	10	1.00 NS
No	9	90	9	90	
Roughness of the joints					
Yes	1	10	1	10	1.00 NS
No	9	90	9	90	

* Significant P < 0.05 ** High significant P < 0.01

*** Very high significant P < 0.001 NS: Nonsignificant

2. Frequency distribution of sample among weight classification groups :

Results of tables (3 & 4) revealed that with increasing of age overweight, morbid obesity and super obesity increased on account of class II obesity. The total sample showed that overweight was at 40 % level while obesity 60 % being class I obesity 35 %, class II obesity 35 % & morbid obesity 15 %.

Table (3) : Frequency distribution of females among weight classification groups*

Parameters	45 - < 55 years (No. 10)		55 – 65 years (No. 10)		45 – 65 years (No. 20)	
	No.	% of group	No.	% of group	No.	% of group
Overweight	2	20	3	30	5	25
Class I obesity	----	----	----	----	----	----
Class II obesity	4	40	----	----	4	20
Morbid obesity	2	20	3	30	5	25
Supper obesity	2	20	4	40	6	30

*Classification based on BMI (kg/m2) level: < 18.5
Underweight; 12.5 – 24 g Normal; 25 – 29 g
Overweight; 30 – 34 g Class I obesity; 35 – 39 g
Class II obesity; 40 – 44 g
Morbid obesity; 45 – 50 g Supper obesity (Mokdad et al., 2004 and Imaz et al., 2008).

Table (4): Frequency distribution of males among weight classification groups*

Parameters	45 - < 55 years (No. 10)		55 – 65 years (No. 10)		45 – 65 years (No. 20)	
	No.	% of group	No.	% of group	No.	% of group
Overweight	4	40	4	40	8	40
Class I obesity	4	40	3	30	7	35
Class II obesity	2	20	----	----	2	10
Morbid obesity	----	----	3	30	3	15
Supper obesity	----	----	----	----	----	----

*Classification based on BMI (kg/m2) level: < 18.5

Underweight; 12.5 – 24 g Normal; 25 – 29 g
Overweight; 30 – 34 g Class I obesity; 35 – 39 g
Class II obesity; 40 – 44 g
Morbid obesity; 45 – 50 g Supper obesity (Mokdad et al., 2004 and Imaz et al., 2008).

Data of table (5) revealed with increasing of age TSF increased nonsignificantly for females and males. AC and AMC also increased which was significantly for females and nonsignificantly for males. This also confirmed the more development of overweight and obesity with age.

Table (5) : Some anthropometric measurement of females and male 45 - < 55 & 55 – 65 years of age

Parameters	Females		Males	
	45 - < 55 years	55 – 65 years	45 - < 55 years	55 – 65 years
TSF mm	3.42	3.50 NS	3.28	3.43 NS
AC cm	39.8	43.67*	39.6	40.33 NS
AMC cm	38.73	42.57*	38.57	39.25 NS

TSF

$$AMC = AC - (3.14 \frac{X}{10}).$$

* Significant at P < 0.05. NS: Nonsignificant at P < 0.05.

3. Macronutrients of food as estimated for participants:

Data of tables (6 & 7) revealed that intakes calories, protein, fat and carbohydrates by 45 - < 55 and 55 – 65 years were higher than DRI recommendation, except fat of younger males (98.67 % of DRI). For both age groups nonsignificant difference found between intakes of females and males. Meanwhile numerically total calories and carbohydrates were higher for females than males at both age groups. The higher total calories, protein, fat and carbohydrates (energy sources) that DRI may be the reason for overweight and obesity of study sample.

Table (6) : Macronutrients of food as estimated for 45 - < 55 years old participants

Variables	Females					Males					P value
	Mean + SD	Min	Max	DRI	% of DRI	Mean + SD	Min	Max	DRI	% of DRI	
Kcal	4065 + 874	3274	5664	2444.95	167.64	3723.90 + 984	2512	4728	2767.87	134.55	0.58 NS
Protein (g / day)	151.80 + 49.6	104.60	220	46	414.57	144.60 + 36.45	104.80	190.70	56	258.21	0.82 NS
Fat (g / day)	106.6 + 59.3	42.40	173.70	81.50	130.80	93.50 + 61.9	41.5	199.9	92.26	98.67	0.79 NS
Carbohy - drates (g / day)	633.00 + 126.2	502	804	381.86	165.77	576.00 + 152	362	712	428.36	34.47	0.59 NS

Table (7) : Macronutrients of food as estimated for 55 – 65 years old participants

Variables	Females					Males					P value
	Mean + SD	Min	Max	DRI	% of DRI	Mean + SD	Min	Max	DRI	% of DRI	
Kcal	3720.50 + 599	2747	43.04	2454.59	151.58	3597.00 + 807	2386	4530	2682.07	134.11	0.63 NS
Protein (g/day)	156.30 + 21.8	127.90	189.60	46	339.78	162.50 + 48.3	105.50	248.30	56	290.18	0.78 NS
Fat (g / day)	81.30 + 12.6	67.50	101.50	81.82	99.37	95.50 + 26.4	47.90	127.30	89.40	106.82	0.25 NS
Carbohy - drates (g / day)	590.90 + 130.2	393	733	383.54	154.07	576.00 + 147	297.80	690.70	413.37	126.26	0.38 NS

4. Minerals of food as estimated for participants:

The results of table (8) showed that intakes of Ca was lower while Fe and Na higher by both age groups compared to DRI. The low Ca intake is no proper for bones health, pronounced Fe increase may affect the function of liver, while high Na intake cause high blood pressure and other diseases (Whitney, Eleanor et al., 1991).

Table (8) : Minerals of food as estimated for 45 - < 55 and 55 - 65 years old participants

Variables	Females (45 - < 55)					Males (45 - < 55)					P value
	Mean + SD	Min	Max	DRI	% of DRI	Mean + SD	Min	Max	DRI	% of DRI	
Ca (mg / day)	1125 + 203	907	1364	1200	93.75	800.7 + 310	396.9	1151	1200	66.73	0.13 NS
Fe (mg / day)	14.3 + 2.7	11.6	17.2	8	178.75	12.9 + 4.0	10.1	18.9	8	161.25	0.60 NS
Na (mg / day)	2381 + 1239	743	3339	500	476.2	1830 + 1458	594.3	3935	500	118.86	0.57 NS
	Females (55 – 65)					Males (55 – 65)					
Ca (mg / day)	1021 + 34	562.2	1564	1200	85.08	1148 + 297	545	1561	1200	95.67	0.47 NS
Fe (mg / day)	13.9 + 3.7	10.1	19.3	8	173.75	13.5 + 3.8	10.9	21.9	8	168.75	0.85 NS
Na (mg / day	1419.9 + 30	992	1775	500	283.98	2248 + 1119	997	384	500	449.6	0.11 NS

5. Vitamins of food as estimated for participants:

Data of table (9) revealed that no deficiency was found for vitamins intakes by study sample. This was in line with the results of Abo – Tabl (2005). Nevertheless as reported by Whitney, Eleanor and Rolfes, Sharon (1993) except of B vitamins, C and other vitamins mat be undesirable for health.

Table (9) : Vitamins of food as estimated for 45 - < 55 and 55 - 65 years old participants

Variables	Females (45 - < 55)					Males (45 - < 55)					P value
	Mean + SD	Min	Max	DRI	% of DRI	Mean + SD	Min	Max	DRI	% of DRI	
B1 (mg / day	2.5 + 1.2	1.4	3.7	1.1	227.27	1.9 + 0.5	1.5	2.7	1.2	158.33	0.47 NS
B2 (mg / day)	2.9 + 1.4	1.3	4.6	1.1	263.64	2.7 + 1.2	1.02	5.5	1.3	207.69	0.79 NS
Niacin (mg / day)	42.7 + 23.1	16	71.9	14	305	32.8 + 15.2	17.3	51.1	16	205	0.50 NS
A (µ RE)	1661 + 294	491	2191	700	237.29	2014 + 850	1317	3247	900	223.78	0.57 NS
C (mg / day)	138.7 + 24.1	116	166	75	184.93	98.3 + 48.4	33.8	150.6	90	109.22	0.19 NS
	Females (55 – 65)					Males (55 – 65)					
B1 (mg / day	2.0 + 0.53	1.5	2.7	1.1	181.82	2.2 + 0.65	1.2	3.2	1.2	183.33	0.69 NS
B2 (mg / day)	2.8 + 0.86	2.1	4.3	1.1	254.55	5.0 + 3.6	2.1	11.0	1.3	384.61	0.17 NS
Niacin (mg / day)	33.5 + 7.3	20.9	42.9	14	239.29	33.7 + 11.1	17.3	54.2	16	210.63	0.96 NS
A (µ RE)	1882 + 632	1088	2770	700	268.86	2028 + 429.3	1450	2624	900	225.33	0.61 NS
C (mg / day)	129.1 + 49.5	44.9	191.5	75	172.1	104.9 + 46.5	43.8	193.2	90	116.56	0.37 NS

6. Serum analysis:

Results of table (10) indicated that except for uric acid and possibly HDL all other values for serum parameters showed health disorders which revealed by deviation from the range for normal, affected mean or Max and even sometimes the Min, confirming the deteriorated health of study sample which were overweight to obese including morbid and sample obesity. T.S.H. (1.9 + 6.11) which was described by medical report for study as " Low " (giving no range for normal). According to Barness et al., (2007) hypothyrodism (low T.S.H.) reduces the leptin hormone secretion (from that tissues), which results in increase of food intake and decreased of energy expenditure leading accordingly to overweight and obesity. This was also reported by Rosen et al., (1993) and Flier (2004).

Table (10) : Biochemical analyses data of study sample (N = 40)

Variable	*Mean + SD*	*Min*	*Max*	*Range*
Fasting serum glucose (FBS) (mg / dl)	*182.89 + 69.50*	*93*	*313*	*70 – 110*
Serum glucose after 2 hours of meal (PPBS) (mg / dl)	*255.28 + 105.52*	*101*	*441*	*140 – 180*
Serum GPT (U / L)	*29.33 + 12.98*	*12*	*55*	*19 – 52*
Serum creatinine (mg / dl)	*0.87 + 0.20*	*0.5*	*1.5*	*0.7 – 1.2*
Urea (mg / dl)	*54.00 + 3.5*	*22*	*70*	*15 – 35*
Uric acid (mg / dl)	*4.6 + 0.9*	*35*	*7.6*	*3.5 – 8.5*
Total cholesterol (TC) (mg / dl)	*196.56 + 41.20*	*125*	*269*	*Up to 200*
Triglycerides (TG) (mg / dl)	*144.44 + 62.65*	*57*	*308*	*Up to 150*
High density lipoprotein cholesterol (HDL) (mg / dl)	*45.44 + 32.0*	*32*	*57*	*39 – 96*
Low density lipoprotein cholesterol (LDL) (mg / dl)	*121.62 + 59.52*	*69*	*184*	*0 – 160*
Thyroid stimulating hormone (T.S.H.) (U / U / ml)	*1.9 + 6.11*	*0.5*	*3.69*	*-----*

7. Haematological analysis:

Data of table (11) revealed the possible deteriorated of overweight and obese subjects of present study. This was indicated by low Min hemoglobin and hematocrit leading to possible risk of anemia which inflicted 20 % of females and 30 % of males at 55 – 65 age years old (Table 2). Disorders were found also for Min, Mix values, or sometime for both (as for MCV, MPV and Mon). Moreover immunity cells a LYMM (low than Min) and monocytes (low Min and higher Max) were not indicative for good health.

Table (20) : Haematological analyses data of study sample (N = 40)

Variable	*Mean + SD*	*Min*	*Max*	*Range*
Hemoglobin (Hb) (g / dl)	*12.84 + 2.4*	*8.9*	*17.0*	*11 – 17*
Hematocrit (HCT) (%)	*36.1 + 4.2*	*28.1*	*40.7*	*35 – 51*
White blood cells (WBC) (103 / mm3, 103 ml)	*5.2 + 1.3*	*3.1*	*6.8*	*4.5 – 11*
Mean corpuscular volume (MCV) (fL)	*79.0 + 2.0*	*38*	*122*	*80 – 100*
Red blood cells (RBC) (106 / mm3, 106 ml)	*4.79 + 0.9*	*4.2*	*5.5*	*4.3 – 5.7*
Mean corpuscular hemoglobin (MCH)	*27.5 + 1.1*	*24.3*	*33.1*	*26 – 34*
Mean corpuscular hemoglobin concentration (MCHC) (g / dl)	*34.8 + 2.3*	*25.1*	*45*	*31 – 37*
Red blood cell distribution width (RDW) (%)	*13.4 + 1.8*	*8.5*	*20.3*	*11.8 – 15*
Platelets (106 / mm3, 106 ml)	*234 + 5.6*	*110*	*376*	*150 – 450*
Platelet crit volume (PCT) (%)	*0.222 + 0.04*	*0.15*	*0.31*	*0.19 – 0.36*
Mean platelet volume (MPV) (fL)	*9.1 + 0.8*	*4.2*	*15.1*	*7.4 – 10.9*
Platelet diminution width (PDW) (%)	*16.3 + 2.0*	*11.5*	*22.2*	*15.5 – 17.1*
Lymphocytes (Lym) (%)	*1.4 + 0.09*	*1.0*	*2.0*	*1.3 – 2.9*
Monocytes (Mon) (%)	*5.7 + 0.3*	*1.4*	*12*	*1.7 – 9.3*
Granulocytes (GRA) (%)	*67.7 + 0.5*	*68*	*68.2*	*42.2 – 75.2*

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تقييم الحالة الغذائية لمجموعة من المصابين بالسمنة فى ارتباط مع التأثيرات الصحية

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الملخص العربى

ويهدف هذا العمل إلى تقيم تأثير الجوز واللوز والأعشاب خمان؛ بلسان وبذور العرعر ألبيدو الجريب وخليط الجميع بنسبه(٥٪) على الفئران المصابة بمرض الكلى وأجريت هذه الدراسة علي عدد ٣٥ فأر ابيض بالغ يتراوح وزن كل منها ١٥٠- ١٦٠ جرام. حيث تم تقسيمهم إلى ٧ مجموعات بكل مجموعة ٥ فئران ،أحد هذه المجموعات تمثل المجموعة الضابطة السالبة الطبيعية ،أما باقى المجموعات فقد تم إصابتها عن طريق الحقن بالجنتاميسين لمده ٦ أيام بجرعة ١٠ملجم/كجم/يوم.تم تغذية جميع المجموعات على غذاء أساسي وقدم لها الماء طول فترة التجربة. استمرت التجربة لمدة ٤أسابيع وفى النهاية تم جمع عينات البول لكل فأر لمدة ٢٤ساعة وقياس حجمه وتم تقدير (الكرياتينين – اليوريا – حمض البوليك – البروتين – الصوديوم – البوتاسيوم). تم وزن الفئران وتجميع عينات الدم بعد صيام ١٢ ساعة ثم فصل السيرم لتقدير (الكرياتينين- اليوريا – حمض البوليك – دهون الدم – الصوديوم – البوتاسيوم – GPT- GOT -ALP).هذا بالإضافة الى استخراج الأعضاء الداخلية (الكبد - الكلى – القلب – الطحال – الرئة) ووزنها لكل فأر وتم حفظ الكبد والكلى فى الفورمالين ١٠٪ لإجراء الفحوص الهستوباثولوجية.وفى النهاية تحليل جميع البيانات إحصائيا وجدولتها.

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