



Nutrition and food consumption of Females in the Arab Republic of Egypt

Asmaa A.Gabr², Ramadan M Mahmoud², Khalla M. F².and Doaa H Elsabakhawi¹

1- National Institute of Nutrition, Cairo, Egypt

2- Food Sci. Dept. Fac. Agric. Ain Shams Univ., Cairo, Egypt

ABSTRACT

A cross sectional study was carried out on randomly selected Nutrition and food consumption of females aged 20 to 60 years, 200 females .from different regions of Cairo. Education status(P-value \leq 0.00), marital status of female(P-value \leq 0.00)and family size(P-value \leq 0.00)were greatly affected . where such parameter were greatly Affected .Showed a significant relationship with the age groups. Dietary intake was collected using food frequency of different types of food consumed by females . Energy food: the majority82.5%consumed sugar less than three times per daily, building food ,Legumes were consumed by48.5% three times or less daily. Protective food: the vast majority (43.7%) consumed fruit less than three times daily. Fats and sweets. Beverages, the majority (67.5%) consumed tea three times or less daily. The daily Energy and macronutrient intake of female .There is no significant difference age groups as affecting by most of their variables . Similar Protein energy ratio, Carbohydrate energy ratio ,fat energy ratio and fiber . The daily micronutrient intake of females shows significance between different age groups as affected by most of their variables .Regarding to Vitamin A, there is a significant effect between difference age groups. Each other Calcium, Potassium, Sodium and phosphorus had significant difference rather than that of other.

Keywords: Macronutrient; Micronutrient; Age; Demographic; Food consumption

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INTRODUCTION

Obesity is a habitual complaint with a multifactorial etiology including genetics, terrain, metabolism, life, and behavioral factors. A habitual complaint treatment model involving both life interventions and, when applicable, fresh medical curatives delivered by an interdisciplinary platoon including croakers , dietitians, exercise specialists, and gems therapists offer the stylish chance for effective obesity treatment. life factors similar as proper nutrition, regular physical exertion, and changes in eating actions should be coordinated by this platoon (**Rippemed et al,1998**).

This review addresses the ultramodern epidemic of obesity, the strong association. Good nutrition is important to maintain and ameliorate health status the body's protection against infection and thus helps female to stay healthy. Nutrition and food input are nearly related to

the nutritive status and health of an existent. Acceptable quantum of nutrients in the form of diurnal diet is essential for the conservation of health and good nutrition. Due to provident gap, there are huge differences in the diet pattern of the people of different socio-profitable status. the family's habit, terrain, the physical, the cerebral and the social setting which are related to the culture of a group determine food pattern. Also depends on the fiscal status of the family. In developing countries, lack of variation in their food input particularly protein, calorie and defensive foods, results in insufficiency conditions from malnutrition. Nutrition is one of the most important factors impacting the quality of mortal life. Nutritive status is an important health index to assess a country's health status and morbidity pattern. The frequency of obesity is adding in females. It's advanced among female than among men. health pitfalls similar as cardiovascular complaint, cancer, type- ii diabetes, osteoarthritis, and habitual order complaint increase frequency of habitual conditions adding , it's now extensively accepted that diet has an important part to play, as numerous of these conditions are affected by unhealthy salutary habits. a set of studies across cohorts set up that advanced diet quality(top quintile) was constantly associated with 20 – 48 reduced threat of death from all causes, cardiovascular complaint, and cancer when compared with the smallest quintile. **(Dias et al, 2006)**

This association was observed independent of known confounders. Given these difference, it's essential to examine salutary input in lesser detail. Doing so will help to establish the part of diet in habitual conditions, help in the development of targeted complaint forestallment enterprise, and ameliorate the effectiveness of public health recommendation. the complications of nutrient input and metabolism make the relationship between diet and health a multifaceted one to capture the multidimensionality of diet, studies of the overall diet examine the concerted effect of total salutary input. **(Turrini,2022)**

The aim of this study

Is to evaluate the dietary patterns and nutrient intake of females aged 20 to 60 years in Cairo, focusing on the influence of demographic factors such as age, education status, marital status, and family size. Assess the frequency of consumption of various food groups (energy, building, protective foods, fats, sweets, and beverages) among the target population. Macronutrient intake (protein, carbohydrates, fat, and fiber) and determine its consistency across different age groups. Micronutrient intake (vitamin A, calcium, potassium, sodium, and phosphorus) and identify significant differences influenced by age and other demographic variables. Relationships between demographic characteristics and dietary habits to identify patterns that could inform targeted nutritional interventions. the study aims to provide insights into dietary behaviors and nutritional adequacy, which can guide health policies and programs tailored to improve the nutritional status of women in Cairo.

MATERIALS AND METHODS

Categories of study:

This study was carried out on randomly selected nutrition and food consumption of 200 females aged 20 to 60 years. From different regions of Cairo, Egypt. Sampling was conducted through the medical convoy named (100 Days of Health) in Cairo governorate from Sept. to Oct 2023. These categories studied were classified according to the age group **(table: 1)**. A Predesigned and pretested 3-day food frequency questionnaire along with an

examination schedule for recording information was used by adopting the face-to-face interviews method.

Table (1). Classification of studying samples according to age.

Age group(y)	female	
	No.	%
20-29	21	10.5
30-39	67	33.5
40-49	61	30.5
50-60	35	17.5
>60	16	8

Demographic parameters

The questionnaire was designed as a way for collecting data,(Hamza et al,2018) Data were recorded through personal interview. The questionnaire data revolve around a Demographic information’s that includes several questions like age, education status, marital status, occupation , family size and economic status is shown in **table(2)**

Table (2).Demographic parameters used in study.

Variable	female	
	No.	%
Education		
Illiterate	39	19.5
Elementary	8	4
Preparatort	9	4.5
Intemediate	88	44
University degree	56	28
Occupation		
Working	25	12.5
Housewife	175	87.5
Family size		
<3	19	9.6
4-5	116	58.9
>5	62	31.5
Marital status		
Married		
Divorced	144	72
Widower	25	12.5
Single	24	12
	7	3.
Economic status		
Low	11	5.5
Middle	189	94.5
High	0	0

Food frequency questionnaire

Dietary intake was collected using a food frequency questionnaire .Detailed description of 50 types of food ,including eight type of energy food (bread balady , pan bread , rice, tubers ,bakery products ,sugar ,honey and jam. Eleven types of building food(red meat ,liver, poultry ,fish ,legumes, eggs ,milk, skimmed milk ,yoghurt , processed cheese and kareesh cheese),Six type of protective foods(green vegetables leaves ,green vegetables ,cooked vegetables ,fruits ,juice canned and juice fresh),Four type of fat and sweet(butter, corn oil , olive oil and oil hydrogenated and Three type of beverage, tea, coffee and carbonated drink.(**Rizwan et al,2021**)

Twenty four hour recall:

The amount of nutrients taken was calculated using the food analysis table and compared to the percentage of their intake with the recommend daily allows (RDA) was given by (**Smit et al, 2013**)

Statistical analysis

The difference among the mean and standard deviation was determined by ANOVA followed by Duncan’s multiple range test using the SPSS the package .The level of statistical significances was set at $P < 0.05$ according to (**Steel et al 1997**)

RESULTS AND DISCUSSION

Demographic characteristics

The collected demographic characteristics were given in **Table (3)**, such data are education status ($P\text{-value} \leq 0.00$), marital status of females ($P\text{-value} \leq 0.00$) and family size ($P\text{-value} \leq 0.00$) . Showed a significant relationship with female’s age. Occupation ($p\text{-value} \leq 0.168$) and economic status ($p\text{-value} \leq 0.432$) did not show any significance. (**Sen&Verma, 2016**).

Table (3): Demographic characteristics of females in relation to their age.

Parameter	Demographic character					P-value
	20-30(y)	30-40(y)	40-50(y)	50-60(y)	>60(y)	
	(n=21) No (%)	(n=67) No (%)	(n=61) No (%)	(n=35) No (%)	(n=16) No (%)	
Education						
Illiterate	0(0)	4(2)	13(6.5)	12(6)	10(5)	0.000**
Elementary	0(0)	0(0)	2(1)	4(2)	2(1)	
Preparatory	0(0)	2(1)	1(.5)	5(2.5)	1(0.5)	
Intermediate	10(5)	29(14.5)	35(17.5)	12(6)	2(1)	
University degree	11(5.5)	32(16)	10(5)	2(1)	1(0.5)	
Occupation						
Working	1(0.5)	10(5)	4(2)	6(3)	4(2)	0.168
Housewives	20(10)	57(28.5)	57(28.5)	29(14.5)	12(6)	
Marital status						
Married	19(9.5)	56(28)	46(23)	16(8)	7(3.5)	

Divorced	0(0)	8(4)	10(5)	3(1.5)	4(2)	0.000**
Widower	0(0)	1(.5)	3(1.5)	15(7.5)	5(2.5)	
Single	2(1)	2(1)	2(1)	1(0.5)	0(0)	
Family size						
≤3	5(2.5)	4(2)	3(1.5)	3(1.5)	4(2)	
4-5	14(7.1)	48(24.4)	36(18.3)	15(7.6)	3(1.5)	0.000**
>5	2(1)	15(7.6)	21(10.7)	15(7.6)	9(4.6)	
Economic status						
Low	0(0)	5(2.5)	2(1)	2(1)	2(1)	
Middle	21(10.5)	62(31.5)	59(29.5)	33(16.5)	14(7)	0.432

P-value ≤ 0.05 is significant

Food frequency questionnaire

Dietary intake consumed by female from different types of food , energy food(balady bread, pan bread ,rice ,tubers, bakery products, sugar, honey and jams) were the major types of food that followed in this study (**Table,4**) ,energy foods :the majority of (82.8%)consumed sugar less than three times daily . Balady bread was consumed by (80%) less than three times daily. Tubers were consumed by (61.4%) more than three times weekly .Bakery products were consumed by (56.1%) monthly.

Table (4): Frequency of consumption of energy food for females.

(Energy food)	Daily		Weekly		Monthly No (%)	Never No (%)
	>3	<3	>3	<3		
	No (%)	No (%)	No (%)	No (%)		
Balady bread	17(8.5)	160(80)	11(5.5)	10(5)	1(.5)	1(.5)
Pan Bread	1(.5)	17(8.5)	15(7.5)	67(33.5)	67(33.5)	33(16.5)
Rice, Macaroni	10(5)	132(66.3)	29(14.6)	21(10.6)	5(2.5)	2(1)
Tubers	4(2)	10(5.1)	31(15.7)	121(61.4)	26(13.2)	5(2.5)
Bakery products	0(0)	1(.5)	3(1.5)	23(11.6)	111(56.1)	60(30.3)
Sugar	17(8.6)	164(82.8)	9(4.5)	2(1)	4(2)	2(1)
Molasses, honey and jams	0(0)	4(2)	3(1.5)	59(29.5)	90(45)	44(22)

Regarding the building foods that are given in **Table(5)**, legumes were consumed by48.5% three times or less daily .Poultry was less weekly consumed by56.6three times .Meat was monthly consumed by almost 57.8% .

Table (5) .Frequence of consumption of building foods for females.

Building food	Daily		Weekly		Monthly	Never
	>3 No(%)	<3 No(%)	>3 No(%)	<3 No(%)	No(%)	No(%)
Red meat	0(0)	2(1)	14(7)	59(29.6)	115(57.8)	9(4.5)
Liver	0(0)	1(.5)	7(3.5)	47(23.5)	112(56)	33(16.5)
Poultry	1(.5)	5(2.5)	112(56.6)	67(33.8)	12(6.1)	1(.5)
Fish	0(0)	3(1.5)	16(8)	104(52.3)	74(37.2)	2(1)
Legumes	14(7)	97(48.5)	58(29)	21(10.5)	7(3.5)	3(1.5)
Eggs	17(8.5)	67(33.5)	84(42)	24(12)	5(2.5)	3(1.5)
Milk full cream	6(3)	67(33.5)	85(42.5)	21(10.5)	12(6)	9(4.5)
Skimmed milk	0(0)	2(1)	8(4.1)	16(8.1)	25(12.7)	146(74.1)
Yoghurt	2(1)	51(26.3)	74(38.1)	28(14.4)	15(7.7)	24(12.4)
Processed cheese	0(0)	7(3.5)	17(8.5)	35(17.5)	72(36)	69(34.5)
Kareesh cheese	8(4)	47(23.6)	59(29.6)	63(31.7)	13(6.5)	9(4.5)

Regarding the protective foods(vegetables and fruits) that are given in the **Table(6)**, the vast majority (43.7%)consumed was fruits less than three times daily .Green vegetable leaves were consumed three times or less weekly by66.8%of individuals and around 47.5% of individuals consumed the cooked vegetables monthly .Juice canned wasn't consumed by72.7%.

Table (6).Frequence of consumption of protective foods for females

Protective food	Daily		Weekly		Monthly	Never
	>3 No(%)	<3 No(%)	>3 No(%)	<3 No(%)	No(%)	No(%)
Green vegetable leaves	11(5.5)	32(16.1)	133(66.8)	14(7)	3(1.5)	6(3)
Green vegetables	16(8)	32(16)	35(17.5)	109(54.5)	3(1.5)	5(2.5)
Cooked vegetables	3(1.5)	4(2)	37(18.4)	56(28.3)	94(47.5)	4(2)
Fruits	0(0)	87(43.7)	93(46.7)	10(5)	7(3.5)	2(1)
Juice canned	0(0)	1(.5)	3(1.5)	21(10.6)	29(14.6)	144(72.7)
Juice fresh	2(1)	15(7.5)	55(27.6)	80(40.2)	32(16.1)	15(7.5)

Regarding the fats and sweets that are given in **Table(7)**,Corn oil was consumed by87.4% three times or less daily .Olive oil was consumed by22.3%three times or less weekly. Around 40.7% of individuals consumed sweets monthly.

Table (7): Frequency of consumption of fats and sweets for females.

Fats and Sweets	Daily		Weekly		Monthly No(%)	Never No(%)
	>3	<3	>3	<3		
	No(%)	No(%)	No(%)	No(%)		
Butter	0(0)	55(27.9)	9(4.6)	27(13.7)	47(23.9)	59(29.9)
Corn oil	17(8.5)	174(87.4)	2(1)	0(0)	4(2)	2(1)
Olive oil	1(5)	16(8.3)	18(9.3)	43(22.3)	53(27.5)	62(32.1)
Oil hydrogenated	4(2)	101(51.3)	11(5.6)	17(8.6)	11(5.6)	53(26.9)
Sweets	0(0)	5(2.5)	8(4)	56(28.1)	81(40.7)	49(24.6)

Regarding the beverages that are given in **Table(8)**,The majority 67.5%consumed was tea three times or less daily ,While coffee was consumed by about 28.4%three times or less weekly .Carbonated drinks were monthly consumed by 33.8%of individuals.(Mrigen *et al* ,2015)

Table (8).Frequency of consumption of beverages for female.

Beverages	Daily		Weekly		Monthly No(%)	Never No(%)
	>3	<3	>3	<3		
	No(%)	No(%)	No(%)	No(%)		
Carbonated soft drinks	0(0))	8(4.1)	33(16.9)	66(33.8)	48(24.6)	40(20.5)
Coffee	8(4.2)	28(14.7)	54(28.4)	35(18.4)	39(20.5)	26(13.7)
Tea	20(10.3)	131(67.5)	10(5.2)	16(8.2)	12(6.2)	5(2.6)

Twenty four-hour recalls

Table(9), statistically the daily energy and macronutrient intake of females living in Cairo .There is indicates significant difference between age groups as affected by most of their variables .Regarding to fiber no significant difference was found between age groups. Protein energy ratio, carbohydrate energy ratio and fat energy ratio are not significantly between different age group. Energy and fat were significant different between age group. Protein was also found between (20-29 year) as well as(30-39year)and finding was found significant between(40-49year)or(50-60year)and(>60year).Cholesterol but such insignificance was between (30-39year)and(40-49year) and finding was found significant between(20-29year)or(50-60year)and(>60year).Carbohydrate no significance between (30-39year)and(40-49year) and similar finding was found significance between (20-29year)or(50-60year)and(>60year).

Table (9) .Statistical analysis of macronutrient of females according to age

Macronutrients	Age group				
	20-29year	30-39year	40-49year	50-60year	>60year
	No=21	No=67	No=61	No=35	No=16
Energy	2400.9±816.2a	2200.89±705.75c	2349.8±791.8b	1877.5±621.7e	2026.3±993.7d
Protein	84.6±27.5b	84.19±26.1b	98.9±95.4a	78.7±27.7d	82.8±26.5c
Fat	96.6±65.8a	77.8±40.6c	90.8±46.6b	63.9±31.3d	90.2±82.5b
Cholesterol	242±209.07c	268.07±274.3b	322.9±429.7a	260.1±256.2b	325.5±285.9a
Carbohydrate	298.07±72.9a	288.5±80.3b	292.1±99.6b	246.2±84.7c	219.3±74.4d
Fiber	7.8±2.9a	7.3±2.8a	7.8±2.9a	7.3±3.5a	7.5±3.1a
Pro. energy ratio	14.3±2.5a	15.5±3.1a	16.6±10.6a	17.09±5a	17.5±4.05a
Carb. energy ratio	52.06±11.1a	53.5±8.02a	50.5±10.1a	52.9±9.2a	46.1±12.03b
Fat energy ratio	33.6±11.5a	30.5±7.9a	33.7±9.1a	29.9±7.9a	36.1±12.9a

* Data are Mean ±SD, Means with the same letter in the same row are not significantly different p<0.05

The daily micronutrient intake of females living in Cairo was statistically indicated in **Table (10)**, there is significance between different age groups as affected by most of the variables. Vitamin A had significant effect between difference age group. Each other a calcium, potassium, sodium and phosphorus was significant difference rather than that of other. Riboflavin, zinc ,iron and selenium no significant effect between difference age group .Thiamine no significant between (20-29year)or(40-49year)and(>60year)and found between (30-39year)as well as(40-50year).Vitamin C no significant between(20-29year)or(30-39year)and(40-49year).Magnesium no significant difference was found between (30-39year)or(40-49year)and(50-60year) .(Majem et al,2009)

Table (10) .Statistical analysis of micronutrients of females according to age

Macronutrients	Age group				
	20-29year	30-39year	40-49year	50-60year	>60year
	No=21	No=67	No=61	No=35	No=16
Vitamin A, µg	351.5±269.1c	342.6±268.8d	403.9±332.1a	372.7±307.1b	316.2±259.2e
Vitamin C, µg	43.1±23.7b	41.8±24.6b	45.4±25.8b	56.7±32.7a	50.7±28.9a
Thiamin, µg	1.06±.394a	.991±.440b	1.043±.503a	.943±.448b	1.06±.528a
Riboflavin, µg	1.25±.72a	1.433±1.12a	1.41±1.22a	1.21±.736a	1.78±1.84a
Calcium, µg	781.1±276.3e	797.5±351.3d	847.4±440.7b	812.1±367.9c	924.9±543.1a
Phosphorus, µg	1099.6±375.1b	1093±423.3c	1082.5±454.8d	1048±404.2e	1156.6±431.9a
Iron, µg	17.5±4.9a	16.2±6.3a	17.4±9.06a	15.8±7.1a	16.3±6.3a

Zinc, µg	5.8±1.9a	5.9±2.5a	5.8±2.4a	5.7±2.3a	6.5±2.8a
Magnesium, µg	149.3±51.9a	140.8±52.5b	137.7±63.1b	143.1±52.7b	150.9±67.7a
Sodium, µg	3211.1±1501b	3201.9±1377.3c	3506.5±1663.8a	2471.8±1373d	2469±667.5e
Potassium, µg	2520.6±685.2a	2293.5±808.1c	2466.1±909.2b	2219.9±746.8e	2290.5±667.5d
Selenium,µg	14.4±6.5a	16.1±7.9a	14.8±6.5a	15.6±6.9a	15.2±8.8a

* Data are mean ±SD, Means with the same letter in the same row are not significantly different $p < 0.05$.

CONCLUSION

This study based on random sample (200) of Egyptian females. Education status, marital status and family size significantly affect the age groups. Another investigated parameters such as occupation and economic status did not show any significant effect. So, it could be concluded that only education status are greatly affected a female according age group. Energy and Fat were statistically significant with the age of the female. Vitamin A, Calcium, Phosphorus and Sodium were greatly affected a female according age group..

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