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RELATION BETWEEN DIETARY INTAKE AND BREAST CANCER

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ABSTRACT

Nutrition and lifestyle may be largely responsible for the development of common cancer. This research aimed to study the relation-ship between food intake, consumption of specific amino acids and increased risk of cancer. One hundred (100) patients with breast cancer were chosen randomly at the National Cancer Institute-Cairo University- Egypt. Data were collected through an interview with breast cancer patients including socio-economics status, 24 hr dietary recall and anthropometric measurements were conducted. Results revealed deficiencies in calcium, vit.A, vit.C and vit.D for women with breast cancer. Results also revealed that the high quality of protein consumed by women with breast cancer was confirmed by calculation of EAAI, B.V. and PER which were higher for age group 25-50 years. Results also showed that percent of linoleic $C_{18:2}$ and linolenic $C_{18:3}$ fatty acids of total polyunsaturated fatty acids were 63.39% and 18.69% in the age group 25-50 years respectively. There were some different highly significant correlations between total protein, animal protein and plant protein with amino acids, also there were different highly significant correlation's between calories, total fat, animal fat, plant fat, cholesterol and fiber with fatty acids. Our data suggest that low breast cancer is associated with low intake of total fats (mainly constituted of monounsaturated lipids) and low intake of high fat snacks, sweet items and high intake of cereals, fruits and vegetables specially containing carotenoids and lycopene.

INTRODUCTION

Breast cancer is the most common cause of cancer death among women worldwide. Incidence rates are more high in developed countries, whereas rates in less developed countries and in Japan are low, but increasing, in the USA, eash year more than 180.000 women diagnosed with breast cancer. If current breast cancer rates remain constant a women born today has a one in ten chance of developing breast cancer (Genevieve *et al.*, 2001). Rates of breast cancer have increased more than fivefold around the world (Armstrong and Doll, 1975).

Nutrition and lifestyle may be largely responsible for the development of common cancers in western countries, as indicated by the large differences in breast cancer rates between countries, the striking changes in these rates among migration populations, and the rapid changes over time within countries (Gerber and Mylonas, 2003). Obesity, overweight and lifestyle- all common conditions in breast cancer patients- are likely to be associated with poor survival and poor quality of life in women with breast cancer. Diet related factors are thought to account for cancer in developed countries (Blackburn *et al.*, 2003). Early life exposures, including diet, have been implicated in the etiology of breast cancer (Frazier *et al.*, 2003).

This study was aimed to evaluate the relationship between food intake, specific amino acids and fatty acids, and increase risk of cancer.

MATERIALS AND METHODS

A: Materials

Sample size: A random sample of one hundred patients with breast cancer, age ranged between 18-66 years, were chosen from breast cancer patients at National Cancer Institute- Cairo University.

B. Methods

Data collection:

Information about daily dierary intake either in hospital or at home were collected during the study period through interviews using the 24- hour recall sheet. A questionnaire was used for collecting data about diet history of patients. Evaluation of food intake included assessments the meals served in both the hospital and at home.

Determination of daily nutrient intake:

Daily nutrient intake was obtained for three different days and nutritional values of consumend food were calculated using the Computer Program for Ready to Eat Egyptian Foods, Faculty of Home Economics, Minufiya University (Diet Analysis Program, 1995). Total fat (g), saturated fatty acids SFA (g), monounsaturated MFA (g) and polyunsaturated PFA (g) were calculated. The adequacy of diets with regard to Recommended Dietary Allowances (RDA, 1989) was calculated. Amino acids scores (A.A.S.%) were calculated as follow: A.A.S% = g/16 g N of test protein ÷ g/ 16g N of the FAO pattern. The pattern used was the FAO/WHO/UNU (1985) reference protein (RDA, 1989). The values of the EAA as g/100g sample were used to calculate the essential amino acids index (EAAI) and biological value (BV) of protein which were calculated in relation to egg protein. According to *Oser (1959)*, while Protein efficiency ratios (PER) were calculated according to *Alsmeyer et al., (1974)* using 3 equations.

PER_1 = -0.684 + 0.456 Leucine – 0.047 Proline.

PER_2 = -0.468 + 0.454 Leucine – 0.105 Tyrosine.

PER_3 = -1.816 + 0.435 Methionine + 0.78 Leucine + 0.211. Histidine – 0.944 Tyrosine.

Anthropometric measurements:

Anthropometric measurements according to *Jelliffe (1966)* included weight and height. Body mass index (BMI) was calculated {weight (Kg)/ height^2 (m)} and used to determine the nutritional status of women according to *Garrow, (1988)* who reported that BMI value 20-24.9 indicates desirable weight, 25-30 overweight and > 30 obesity (all as Kg/m^2). Statistical analysis has been achieved using IBM-P-C computer by SPSS, program *(SPSS, 1995)*.

RESULTS AND DISCUSSION

In the present study, the age range was from 18 to 66 years, and the high percentage was for < 25 years group, but the low percentage was for ≥ 5o years group. Potischman *et al.*, (2002) reported that risk of breast cancer for young women was unrelated to intakes of a variety of food groups, including red meats, dairy, high fat snacks and desserts or foods high in animal fat. Increased risk was observed for high intake of a food group

composed of sweet items, with high percent of calories from sweets and frequency of sweets intake. The results agreed also with Easton *et al.*, (1993), Ford and Ishop, (1994) and Ismial Mervat A. *et al.*, (2002) but disagreed with that reported by Ottman *et al.*, (1989).

1- Anthropometric measurements:

Table (1) shows the comparisom between mean & SD of anthropometric measurements of women with breast cancer according to age groups. Means for body weight, height and BMI were lower in women at age < 25 years than at 25-50 and ≥ 50 years, which was nearly equal for the last two groups.

Table(1):Comparison between Mean & SD of Anthropometric Measurements of Studied Samples According to Age Groups.

Age groups / Parameters	< 25 (N=57) Mean ± SD	25-50 (N= 28) Mean ± SD	≥ 50 (N=15) Mean ± SD
Weight (Kg)	61.33 ± 11.11	73.89 ± 13.49	74.07 ± 14.37
Height (cm)	158.05 ± 24.13	161.68 ± 19.23	161.07 ± 6.45
BMI (Kg/m^2)	24.74 ± 4.87	28.31 ± 5.18	28.59 ± 3.73

BMI: body mass index

Data of Table (2) show the percentage distribution of studied sample according to body mass index (kg/m^2); 56% of the studied sample at age <25 years were in the range BMI 20-24.9 (desirable weight), while 40% of the cases at age ≥ 50 years in the range BMI 25-30 (overweight), and 47.2% of the cases age 25-50 years in the range BMI >30 (obese). From the same table it was noticed that the relatively high percent of women with breast cancer at age 25-50 (47.2%) and ≥ 50 years (33.3%) old were obese. These results agree with the findings of Lahmann *et al.*, (2003) who stated that high BMI is a well - known risk factor for breast cancer.

Table (2): Percentage Distribution of Studied Sample According to Body Mass Index.

BMI / Age	20-24.9 (Desirable weight) No.	%	25-30 (Overweight) No.	%	>30 (Obese) No.	%	Total No.	%
< 25 years	32	56%	14	4.3%	11	19.5%	57	57%
25-50 years	5	17%	10	35.7%	13	47.2%	28	28%
≥ 50 years	4	27%	6	40%	5	33.3%	15	15%

2- Dietary intake:

Date of Tables (3 and 4) show the mean daily nutrients intake for breast cancer women for age groups < 25, 25-50 and ≥ 50 years, compared to (DR) daily requirements. Mean macronutrients intake for women in age < 25 were higher than 100% of (DR). On the other hand macro- nutrients intake of women with breast cancer in age groups 25-50 and ≥ 50 years were higher than (DR) in total protein and total fat, while calories and carbohydrates intakes were less than (DR) which were (1894.4 ± 573 and 1698.37 ± 362 Kcal) (98% and 89%) of (DR) respectively. These results agreed with the findings of Ismial Mervat A. *et al.*, (2002). Minerals intake of women with breast cancer aged <25 years were higher than 100% of RDA except for calcium which consumed at very low level than 100% of RDA, while minerals intake of breast cancer women aged 25-50 and ≥ 50 years were less than

100% of RDA except for phosphorus, sodium and magnesicon during aged 25-50, but sodium and magnesium for women aged 25-50 years, sodium and magnesium for women aged ≥ 50 years. Mean Vit. A, C and D were considerably less than 100% of RDA for women aged <25, 25-50 and ≥50 years; mean % of RDA Vit. A were (46.6% , 43.65% and 38.95%) respectively. While Vit.B_{12} intake were higher than 100% of RDA for women aged 25-50 years but less than 100% of RDA for women aged < 25 and ≥ 50 years.

Table (3): Mean and SD of Macro- Nutrients Intake and Its Percentage of Daily Requirements for Studied Samples According to different Age Groups.

Age (Years)	< 25 (N=57)		25-50 (N= 28)		≥ 50 (N=15)		Total (N=100)	
Macro-Nutrients	Mean ± SD	% of (DR)	Mean ± SD	% of (DR)	Mean ± SD	% of (DR)	Mean ±SD	%of (DR)
Calories (Kcal.)	2246 ± 261	122%	1894.4±573	98%	1698.37±362	89%	1946.2±398.7	103%
Total Protein (g)	82.50±31.72	186%	73.34±17.14	159%	67.71±13.71	147%	74.5±20.8	164%
Protein – A. (g)	30.61± 25.76		39.19±13.06		34.52±15.94		34.8±18.2	
Protein –P. (g)	51.89±83.25		34.15±12.60		33.19±16.09		39.7±37.2	
Total Fat (g)	58.48±28.48	115%	60.58±28.7	113%	53.27±16.09	101%	57.4±24.4	110%
Fat – A. (g)	26± 18		36.58±15		35.60±18.73		32.7±17.2	
Fat – P (g)	32.30±26.05		24±27.8		17.67±12.95		24.7±22 1	
Carbohydrate (g)	347.69±95.87	115%	264±86 91	83%	236.85±84.68	76%	282.8±89.1	91%
Cholesterol (mg)	338.10±313		282.07±204		237 61±240			

A: Animal B: Plant (DR): Daily Requirements.

Table(4):Mean ± SD of Micro- Nutrients Intake and Its Percentage of (RDA) for Studied Samples According to Different Age Groups.

Age (Years)	< 25 (N=57)		25-50 (N= 28)		≥ 50 (N=15)	
Micro-Nutrients	Mean ± SD	% of RDA	Mean ± SD	% of RDA	Mean ± SD	% of RDA
1- Minerals						
Calcium (mg)	524.10±218	44.32±22%	531.82±262	47.52±22%	547.73±172.14	45 62±14 37%
Phosphorus (mg)	1415.67±473	121.03±41%	1200.92±432	103.15±31%	1124.52±281	67.05±22%
Sodium (mg)	2543.25±893	507±179%	2503 05±999	501 61±19%	2187 27±583	437.59±116%
Potassium (mg)	2336.62±64	334 65%	1936.65±88	96.87±44%	1728.31±795	90.88±42%
Total Iron (mg)	18.91±6.42	132.82±53%	14.07±5.53	93.07±34.92%	12.97±5 28	86.45±35 19%
Animal Iron (mg)	4.52±4.33		4 69±2.45		4.15±2.13	
Plant Iron (mg)	16.86±19.65		9.28±4.84		8.85±5.87	
Zinc (mg)	14.91±3.99	119.39±32%	11.69±3.62	97.35±30.09%	10.45±2.47	87 12±20 52%
Magnesium (mg)	523.13±153	177.67±47%	363.22±147	129.72±52%	319 80±153	114.31±54 87 %
2- Vitamins						
Vitamin – A (ug)	401.88± 422	46.6±43%	349.20±221	43.65±27%	311.64±157	38.95±19 73%
Vitamin – C (mg)	33.40±41	55.33±89%	23.65±27	39.40±45%	30 08±47	50.15±79%
Vitamin – O (ug)	3.43±9.58	25.29±43%	1.25±1.88	12.96±18.67%	0.79±0.88	7.90±8 76%
Vitamin – E (mg)	18.61±22.0	191.75±158%	15.18±14	189.55±185%	10.44±6.48	130.47±80%
Vitamin – B_1 (mg)	1.43±0.39	116.49±34%	1.14±0.39	101.02±39%	1 44±1 84	87 65±26.59%
Vitamin – B_2 (mg)	4.51±8.03	249.28±89%	11.90±50	184.45±69%	26.24±93	163.21±60%
Niacin (mg)	15.98±8.16	100.51±45%	35.17±107	98.70±47%	45.33±119	94.07±35%
Vitamin – B_6 (mg)	1.74±0.59	104.56±36%	1 69±1.71	85.59±80%	1.30±0.78	76 98±52%
Vitamin – B_{12} (ug)	3.70±4.37	15.70±6%	2.32±1.24	114.11±84%	1.94±0.97	93.13±52%
Folate (ug)	401.40±181	238.5±216%	217.25±115	123 82±60%	228.28±181	123.21±60%

RDA: Recommended Dietary Allowances (1989).

Finally in the present study the mean intake of many macro and micro nutrients were nearly higher than 100% (of DR and RDA) with diffecienies in calcium, Vit.A, Vit.C and Vit.D. These results agreed with the finding of Jakovljevic *et al.*, (2002) and Malin *et al.*, (2003).

3- Protein quality and essential amino acids intakes:

Data of Table (5) show the essential amino acids (EAA) and quality of consumed protein for women with breast cancer of different age groups. It is evident that most amino acids scores (A.A.S.) were higher for women aged ≥50 years than both the women aged <25 or ≥50 years old. The high quality of protein consumed by women aged ≥50 years old was confirmed by calculation of EAAI and BV, while PERs calculated 3 equations (PER, 1,2,3) were higher for women aged 25-50 years.

Finally both the biological and nutritional values for protein consumed by all groups was of high quality (BV more that 70%) taking into consideration the fact that no deficiency in any of the EAA was recorded.

4- Dietary fat:

Table (6) shows the mean daily intake of fatty acids fractions and their percentages of the total fat daily intakes according to different age fractions groups. For age group < 25 year mean ± SD of total saturated fatty acids were 25.43± 2.54 with percent 43.5% from total fat, while the mean ± SD of total sturated fatty acid were 31.43± (with percent 52%) and 29.25± 2.64 (with percent 55%) for women aged 25-50 and ≥ 50 years respectively, it is noticed that the total saturated fatty acids intake were higher in group 25-50 and ≥ 50 years than group aged < 25 years. For total monousaturated fatty acids, the mean ± SD was 14.01±3.66, 15.75±3.47 and 14.18±2.9 in age groups <25, <25-50and ≥ 50 years respectively; the mean ± SD value of polyunsaturrated fatty acids were 18.13± 5.58, 12.95±3.6 and 9.55±2.30 g in age groups < 25, 25-50 and ≥ 50 years respectively, while the mean value of total unsaturated fatty acid were 32.14±4.62, 28.70±3.53 and 23.73± 2.69 with percent 54.96%, 47.7% and 44.55% of total fat respectively. It is noticed the proximate values for percent total saturated and unsaturated fatty acid intake fractions, being at equal shares nearly (50%). Mean while the perecnt of omega-6- FA (% of RNI) was 122% in age group < 25 years which was higher than in age groups 25-50 and ≥ 50 years, but percent in age group ≥50 was considerably less than 100% of RNI (63.6%). Also the percent of omega-3- FA % of RNI in age group <25 was higher than that in age groups 25-50 and ≥ 50 years. P/s (and T. unsat. FA/ T. sat. FA) in age groups < 25 years was higher than that recorded in age groups 25-50 and ≥50 years. Dwyer, (1997) reported that there is insufficient evidence to conclude that specific fatty acids are associated with cancer development in humans. However, Simopoulos, (2002), reported that the lower omega-6 / omega-3 ratio in women with breast cancer was associated with decreased risk.

Table (7) shows the value of mean daily consumption of saturated, monoenoic, polyenoic and total unsaturated fatty acids, as presented for the different age groups for age group 25-50 years myristic $C_{14\ 0}$, palmitic $C_{16\ 0}$ and stearic $C_{18:0}$ fatty acids had the highest intake among other saturated fatty acids (2.29±1.49, 14.76± 8.48 and 8.25± 4.24%) which was higher than for age groups <25 and ≥50, while capric $C_{10:0}$, arachidic $C_{20:0}$ and lignoceric $C_{24:0}$ fatty acids had the lowest intakes anong other saturated fatty acids.

Table (5): Protein Quality and Value of Protein Intake for Studied Samples According to Different Age Groups.

Age groups / Amino Acid	RDA g/day	FAO/WHO/UNU 1985 9/16/9/N	< 25 (N=57)				25-50 (N= 28)				≥ 50 (N=15)			
			Mean intake g/day	%of RDA	gm/ 16g MN	A.A.S. %	Mean intake g/day	%of RDA	gm/ 16g MN	A.A.S. %	Mean intake gm/day	%of RDA	gm/ 16g MN	A.A.S. %
Isoleueine	0 650	1.3	3.43	527	4.15	319	2.99	460	4.08	313	6.62	1018	9.77	751
Leucine	0.950	1.9	5.77	607	6.99	367	6.50	684	8.86	466	4.74	498	7.00	368
Lysine	0.800	1 6	4.65	581	5.63	351	4.01	501	5.47	341	4.04	505	5.96	372
Methionine			1.76		2.13		0.74		1.00		1.43		2.11	
Cystine			1.27		1.54		3.69		5.03		0.88		1.29	
Phynylalanine			4.28		5.18		3.48		4.75		3.42		5.05	
Tyrosine			3.99		4.83		2.68		3.66		4.25		6.27	
Threonine	0.450	0.9	3.19	708	3.86	428	2.86	635	3.90	433	2.65	588	3.91	434
Tryptophan	0.350	0.5	1 39	397	1.68	336	0.89	254	1.21	242	0.82	234	1.21	242
Valine	0.650	1 3	4.59	706	5.56	427	4.13	635	5.63	433	3.79	583	5.59	430
Arginine			5.42		6.57		3.89		5.31		5.66		8.36	
Histidine	0.800	1 6	2 15	268	2 61	163	1.93	241	2.63	164	1.81	226	2.67	166
Alanine			3.89		4.72		3.18		4.34		2.95		4.36	
Aspartic			6.62		8.02		5.59		7.63		4.67		6.89	
Glutamic			1.84		2 23		2.24		3.05		1.45		2.14	
Glycine			3.40		4.12		2.82		3.85		4.89		7.22	
Proline			7.30		8.84		6.08		8.29		4 89		7.22	
Serine			4.47		5.42		3.35		0.46		3.11		4.54	
Methionine + Cystine	0 850	1.7	3.03	356	3.67	215	4.43	521	6.04	355	2.31	271	3.41	200
Phenylalanine . Tyrosine	0.950	1.9	8 27	870	10.02	527	6.16	648	8.40	494	7.69	807	11.32	595
EAAI*				83.08					85.09				89.56	
BV*				78.82					81.02				85.89	
PER 1**				2.09					2.96				2.17	
2				2.19					3.17				2.05	
3				2.97					4.45				2.34	

*Oser (1959)

** Alsmeyer et al., (1974).

Table (6): Mean and SD. of Fatty Acids and Percentage of Essential FA Intake (of RNI) According to Different Age Groups.

Age	< 25 (N=57)		25-50 (N= 28)		≥ 50 (N=15)		Total (N=100)	
Fatty Acid	Mean ± SD	% of Total Fat D.I	Mean ± SD	% of Total Fat D.I	Mean ± SD	% of Total Fat D.I	Mean ±SD	%of Total Fat D.I
Total Saturated Fatty acid	25.43±2.54	43.5%	31.43±2.77	52%	29.25±2.64	55%	28.7±2.65	50%
Total monounsaturated Fatty acid	14.01±3.66	23.95%	15.75±3.47	26%	14.18±2.90	26.62%	4.65±3.34	25.5%
Total polyunsaturated fatty acid	18 13±5.58	31.00%	12.95±3.60	20.6%	9.55±2.30	17.93%	13.54±3.82	23.6%
Total unsaturated fatty acid	32 14±4.62	54.96%	28.70±3 53	47.4%	23.73±2.6	44.55%	28.19±3.6	49.1%
Omega-6 FA (RNI=11)	13.4±6.17	RNI=122%	10.53±3.88	RNI=95.7%	7.02±3.17	RNI=63.6%	10.31±4.4	93.7%
Omega-3 FA (RNI=1.83)	4.73±4.41	RNI=258%	2.42±3.06	RNI=132%	2.53±2.83	RNI=138%	3 22±3.43	RNI=176%
Omega. 6/Omega-3	2 8		4.35		2.8		3.2	
T.Unsat. FA/ T.Sat FA	1.29		0.91		0.81		0.98	
P/S*	0.71		0.41		0.33		0 47	

P/S= T. Polyunsat. FA/ T. Sat. FA.

Table (7): Mean and SD. of Daily Consumption of Saturated and Unsaturated Fatty Acids and Their Percentage of Total FA group According to Different Age Groups.

Age	< 25 (N=57)		25-50 (N= 28)		≥ 50 (N=15)		Total (N=100)	
Fatty Acid Saturated	**Mean ± SD**	**% of T. Sat**	**Mean ± SD**	**% of T. Sat**	**Mean ± SD**	**% of T. Sat**	**Mean ±SD**	**% of T. Sat**
Capric $C_{10:0}$	0.84±1.57	3.3%	0.79±1.01	2.51%	1.17±1.59	4.00%	0.93±1.39	3.24
Lauric $C_{12:0}$	2.5±2.97	9.83%	2.07±2.64	6.51%	1.95±2.88	6.67%	2.17±2.8	7.56
Myristic $C_{14:0}$	2.14±2.37	8.42%	2.29±1.49	7.3%	2.06±1.64	7.05%	2.16±1.8	7.53
Palmitic $C_{16:0}$	11.43±6.73	44.95%	14 76±8.48	46.96%	12.54±5.35	42.87%	12.91±6.8	44.98
Stearic $C_{18:0}$	6.84±4.66	26.9%	8.25±4.24	26.25%	7.55±3.98	25.81%	7.55±4.2	26.31
Arachidic $C_{20:0}$	0.61±0.79	2.4%	1.01±1.34	3.21%	0.84±1.29	2.87%	0.82±1.14	2.86
Behenic $C_{22:0}$	0.82±0.26	3.22%	0.85±0.82	2.7%	1.70±2.55	5.81%	1.12±1.2	3.90
Lignoceric $C_{24:0}$	0.25±0.95	0.98	1.41±2.17	4.48%	1.44±1.86	4.86%	1.04±1.6	3.62
Total	25.43±2.54	100%	31.43±2.77	100%	29.25±2.64	100%	28.70±2.6	100
Monounsaturated Fatty acid	**Mean ± SD**	**% of T. Mono.**	**Mean ± SD**	**% of T. Mono.**	**Mean ± SD**	**% of T. Mono.**	**Mean ±SD**	**% of T. Mono.**
Polmitoleic $C_{16:1}$	2.75±3 03	19.63%	1.97±2.09	12.51%	1.68±1.43	11.85%	2.13±2.18	14.55%
Oleic $C_{18:1}$	7.81±70	55.75%	12.05±8.23	76.51%	10.58±7.25	74.61%	10.14±7.4	69.26%
Eicosennoic $C_{20:1}$	2.39±2.77	17.06%	1.09±1.69	6.92%	1.37±1.58	9.66%	1.62±2.01	11.07%
Erucic $C_{22:1}$	1.06±1.85	7.56%	0.64±1.87	4.06%	0.55±1.35	3.88%	0.75±1.7	5.12%
Total	14.01±3.66	100%	15.75±3.47	100%	14.18±2.90	100%	14.64±3.3	100%
Polyunsaturated Fatty acid	**Mean ± SD**	**% of T. Poly.**	**Mean ± SD**	**% of T. Poly.**	**Mean ± SD**	**% of T. Poly.**	**Mean ±SD**	**% of T. Poly.**
Linoleic $C_{18:2}$	10.48±9.4	57.80%	8.21±6.51	63.39%	5.57±2.26	58.32	8.08±6.1	59.68%
Linolenic $C_{18:3}$	4.73±4.41	26.09%	2.42±3.06	18.69%	2.53±2.83	26.49%	3.23±3.4	23.86%
Arachidonic $C_{20:4}$	2.92±2.93	16.11%	2.32±1.24	17.92%	1.45±1.82	15.18	2.23±1.9	16.46%
Total	18.13±5.58	100%	12.95±3.6	100%	9.55±2.30	100%	13.54±3.8	100%

In the present study oleic $C_{18:1}$ fatty acid had the highest intake among other monounsaturated fatty acids with mean± SD (7.81± 70, 12.05± 8.23 and 10.58±7.25) in age groups < 25, 25-50 and > 50 years respectively, nevertheless the mean± SD of daily consumption of polyunsaturated fatty acid and their percentage according to age group for all studied sample. (linoleic $C_{18:2}$ fatty acid, and linolenic $C_{18:3}$ fatty acid) had the highest intake among other polyunsaturated fatty acid., while arachidonic $C_{20:4}$ fatty acid had the lowest intake among other polyunsaturated fatty acids. These results agreed with Jakovljevic *et al.*, (2002) who staded that high consumption of a specific fatty acid (i.e., linoleic acid) was associated with more than threefold greater cancer risk. Tavani *et al.*, (2003) recorded the role of n-3 polyunsaturated fatty acid (PUFA) intake in the etiology of cancer and the highest quintile of n-3 PUFA compared to the lowest one were 0.8 for breast cancer. Also Voorrips *et al.*, (2002) found that conjugated linoleic acid (CLA) intake showed positive relation with breast cancer incidence. And significant inverse associations with monounsaturated and *cis* unsaturated fatty acids, whereas total fat and energy intake of CLA- containing food groups were not related to breast cancer incidence. De-Stefani *et al.*, (1998), however, reported that polyunsaturated fat and linoleic acid was associated with significantly reduced risk of cancer. In the present study subjects with breast concer at the age <25 years (N=57) and ≥50 years (N=15), being 72% of total sample had low *n-6/n-3* ratio (2.8), compared with women at 25-50 years of age (only 28% of total sample) hed high ratio (4.35). Simonsen *et al.*, (1998) who reported a strong inverse association between oleic FA and breast cancer in the Spanish center. The majority of sample (<25 years old) showed lower $C_{18:1}$ intake.

5- Correlation between anthropometric measurements and some of nutrients intake for breast concer of patients:

From results of Table (8) different correlation were found between all variables (nearly for all age groups). It could be noticed that their was very highly significant correlation between weight with both niacin and folate, and height with Vit.B_{12}, and BMI with Vit.B_2 in age group < 25 year.

Concerning anthropometric measurements the BMI correlated significantly negative with, zinc and Vit.B_{12} in age group (25-50) years. Also height significantly negative with Vit.E in age group ≥ 50 years. It is noticed that from this table the all anthropometric measurements were correlated negatively with nutrients intakes in age group ≥ 50 years.

In addition, the results of Table (9) indicated a relation between amino acids and calories, total protein, animal protein and plant protein intakes by patients. There were a very highly significant correlation in the age group <25 year between total protein with all amino acids except threonine, tryptohan, arginie, proline and serine. Also animal protein showed very high significant correlation with all amino acids except threonine, tryptophan, arginine and proline, but correlated negatively with serine, while there was very high significant correlation between plant protein with lysine, methionine and cystine, but there was highly significant correlation between calories with valine.

Table (8) : Correlation Between Anthropometric Measurements and Some of Nutrients Intake by Patients.

Nutrients / PARAMETERS	Calories	Protein	Fat	Carbohy-drate	Calcium	Iron	Zinc	Vit.A	Vit. C	Vit. D	Vit. E	Vit. B_1	Vit.B_2	Vit. B_6	Vit. B_{12}	Niacin	Folate
(<25 years)																	
Weight																**0.433	**0.403
Height		-0.002	-0.032							-0.002	-0.057			-0 129	**-0.365		
BMI	-0.074	-0 151	-0.152		-0 073	-0.151	-0.122	-0.002	-0.221	*-0.284	-0.122	-0.140	**-0.344	-0.073	-0.145	-0.113	-0.206
(25-50years)																	
Weight					-0.052				-0.056	-0.156	-0.008		-0.57	-0.093	-0.093	-0.045	-0.061
Height			-0.086												-0.67		
BMI	-0.217	-0.372	-0.052		-0.0227	-0.228	*-0.388	-0.294		-0.186		-0.341	-0.176	-0.099	*-389	-0.135	-0.124
(≥50 years)																	
Weight	-0.166	-0 01				-0.185	-0.062	-0.139	-0.159	-0.046	-0.268	-0.014		-0 162	-0.177		-0.226
Height	-0.355	-0 0.56	-0 026		-0.183	-0.236	-0.191	-0.149	-0.262	-0.081	*-0.106	-0.51	-0.046	-0.219	-0.012	-0.042	-0.191
BMI	-0.092				-0.257	-0.232	-0.008	-0.126	-0.062				-0.251	-0.126		-0 249	-0.089

Table(9):Correlation between Amino Acids and Calories, Total Protein, Animal Protein and Plant Protein Intake by Patients.

Amino acid PARAMETERS	LeuC-ine	Lysine	Methio-nine	Cystine	Phenyl-alanine	Tyros-ine	Threon-ine	Tryptophan	Valine	Argin-ine	Histid-ine	Alanine	Aspartic	Glutamic	Glycine	Proline	Serine
(<25 years)																	
Calories				* 0.285					*0.279								
Total Protein		**0.470	**0.452	**0.907	**0.841	**0.5207			**0.816		**0.817	**0.878	**0.806	**0.748	**0.893		
Animal Protein		**0.458	**0.410	**0.741	**0.741	**0.651			**0.769		**0.807	**0.888	**0.836	**0.630	**0.832		-0 029
Plant Protein		**0.785	**0.812	**0.741		-0.034		-0.053	-0.014	-0.91	-0.012	-0.225	-0.021				
(25-50years)																	
Calories			-0 121	-0.172	*0.405	**0.506		**0.543	**0.547	**0.528	**0.547	**0.549	**0.624		**0.534		**0.542
Total Protein		**0 564	-0.097	-0 238	**0.705	**0.794		**0.779	**0.887	**0.839	**0.819	**0.747	**0.822		**0.819		**0.865
Animal Protein		**0 497	-0.001		**0.514	*0.462		*.0402		**0.625	**0.573	*0.382	**0.514		**0.574	**0.575	
Plant Protein			-0.129		*0.418	**0.595		**0.637	**0.573	**0.489	**0.522	**0.617	**0.585		**0.516		**0.578
(≥50 years)																	
Calories						-0.281		*0.546		-0.078			-0.222	*0.548			
Total Protein		*0 529	**0.665		**0.753			**0.800	**0.712		**0.721	**0.703	-0.088	**0 702			*0.611
Animal Protein		**0 899	**0 834								**0.698	*0.560					
Plant Protein		-0.439	-0 259	-0.014		-0.158				-0.357	-0.077		-0.396		-0 139		

As for the age group (25-50years) there were very highly significant correlation between calories, total protein, animal protein and plant protein with nearly all amino acids except the negative relation between calories and total protein with methionine. AS for the age group ≥50 years there were significant correlation between calories with tryptopan and glutamic acid, while their were very highly significant correlation between total protein and most amino acids, also animal protein very highly significantly correlated with lysine, methionine and histidine and significantly correlated with alanine. But there were negative relations between plant protein and nearly all amino acids.

Data of Table (10) demonstrates the relationship between saturated and unsaturated fatty acids, some nutrients intake and BMI. Results illustrated for age group <25 years revealed a highly significant correlation between calories with oleic acid, also animal fat with nearly all fatty acids except it correlated negatively with eicosennoic, euric and linolenic. While there were higly signicant correlation between total fat and all fatty acids, also between plant fat and cholesterol, and nearly all fatty acids except the negative correlation between plant fat with capric, lauric, stearic and lignoceric acids, and negative correlation between cholesterol with eicosennoic and erucic acids. As for there were highly significant correlation between fiber with capric acid. But there were negative correlation between BMI with most fatty acids. Regarding the age group 25-50 years there were highly significant correlation among calories with palmitic acid, palmitoleic and oleic acid, but correlated negatively with lauric acid. Also there were highly significant correlation among animal fat with oleic, linoleic, linoleic and linoleic acids. While, plant fat and total fat correlated with all fatty acids except negative correlation with capric acid. As for the age group 25-50 years there were negative significant correlation between fiber and lauric acid, but there were negative correlations between cholesterol and MBI with some fatty acids. Concerning the age group > 50 there were highly significant correlation among calories with linoleic acids and linolenic and significant correlation with erucic acid. Also there are many other correlation among animal fat, plant fats, total fat, cholesterol, fiber and BMI on one side and many FA intake from the other side.

Recommendations

Focused attention should be taken into consideration as regards controlling weight by regular physical activity and avoidance of excessive energy intake from all sources; increasing plant food intake consuming a variety of whole grains, vegetables, and fruits; and decreasing red meat intake and total fat intake. Increasing fat intake from vegetable sources and consumption olive oil or other sources of monounsaturated fatty acid pattern. Decreasing the low intake of high fat snacks, sweet food items and increasing the intake of cereals, fruits and vegetables specially that rich in carotenoids and lycopene.

Table (10): Correlation Between Saturated & Unsaturated Fatty Acid and Calories, Total, Fat, Animal Fat, Plant Fat, Cholesterol, Fiber and BMI of Patients.

Fatty acid Parameters	Butyric	Caproic	Caprylic	Capric	Lauric	Myristic	Palmitic	Stearic	Lignoeeric	Palmitolic	Olele	Eicosennoic	Erucic	Linolenic	Linoleic
(<25 years)															
Calories									-0.019		**0.385	-0 014			-0.066
Animal fat	**0.397	**.365		**0.560	**0.548	**0.488	**0 487				**0.369	-0.160	-0.136		-0.094
Plant fat		*0.050		-0 188	-0.127		**0.522	-0.030	-0.044	**0.527	**0.544	**0.647	**0.625	**0.815	
Total fat	*0.271				*0.273	*0 285	**0.781	*0.316		**0 6138	**0.736	**0.476	**0.476	**0.733	
Cholesterol	**0.506	**0.412		*0.322	**0.383	**0.463	**0 435			**0.374	**0.608	-0.042	-0.035		
Fiber	*0.325	*0.276	-0.041				*0 107								-0.038
BMI	-0 151			-0.071	-0.095			-0 041		-0.022		-0.148			
(25-50 years)															
Calories				0 070	-0 120		**0.656			**.787	**0.733				
Animal fat					*0.404						**0.595			**0.803	**0.481
Plant fat				-0.112			**0.761			**0.776	**0.553	*0.393			
Total fat	**0 667		*0.425	-0 086			**0 869			**.894	**0.843	**0.833	*0.394	**0.837	**0.837
Cholesterol			**0.481				-0 155	-0.011		-0.070		**0.653		**0.879	**0.539
Fiber			-0.177	-0.176	*-0.418	-0 268	-0 007	-0.163				-0.257			-0.228
BMI	-0.103	-0.070	-0.298	-0.177					-0 014		-0.073	-0 122			
(>50 years)															
Calories				-0.229	-0.463	-0.227		-0.314		-0.253	-0.162		*0.558	**0.649	**0.649
Animal fat	-0 020					-0.396	**0.784	*0 550		**0.762	**0.757	-0.438	-0.269	-0.206	**-0.801
Plant fat	0 598	-0 76		-0.364	-0.25		-0.069	-0.511		-0.249	-0.213	**0.742	*0.542	**0.784	*0.630
Total fat			*0.600	-0 044	-0.154	-0 027	**0 864			**0.695	**0.720				-0.427
Cholesterol	-0.147	-0 080	-0.088		-0.052	-0 280		**0 683	-0.192			*-0527	-0.252	-0.086	*-0.608
Fiber		-0.276	-0.114	-0 394			-0.345	-0 425		*-0 577	*-0.55		-0.154	-0.005	*0.614
BMI						-0.145	-0.004		-0 105		-0.050			-0.083	-0.018

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العلاقة بين المتناول من الغذاء والإصابة بسرطان الثدي

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التغذية والنمط المعيشي من أهم أسباب الإصابة بالسرطانات الشائعة. الغرض من هـذا البحث دارسة العلاقة بين المأخوذ والمستهلك من الطعام وخاصة الأحماض الأمينية والأحمـاض الدهنية وزيادة نسبة الإصابة بسرطان الثدي .

من أجل هذا تم اختيار عينة غذائية قوامها (١٠٠) حالة من مرضـي سـرطان الثـدي بالمعهد القومي للأورام بالقاهرة ، وتم إجراء مقابلة شخصية مع الحالات لتحديد السن والمقـاييس الجسمية (الوزن – الطول – مؤشر كتلة الجسم) ، وتم دراسة المتناول من الغذاء عـن طريـق استمارة استرجاع ٢٤ ساعة السابقة للبحث .

أوضحت النتائج النقص الشديد في المتناول من الكالسيوم وفيتـامين A وفيتـامينC وفيتامين D ، كما أوضحت النتائج الجودة العالية للبروتين من خلال حساب PER 1,2,3, (نسبة فعالية البروتين)، EAAI, (دليل الأحماض الأمينية الأساسية) , B.V (القيمة البيولوجية للبروتين) التي كانت عالية في المرض اللاتي يتراوح أعمارهم من ٢٥-٥٠ سنة . كما أوضحـت النتـائج زيادة نسبة المتناول من الحمض الدهني لنيوليك $C_{18:2}$ ، لينولينك $C_{18:3}$ مقارنة بنسبة المتنـاول من الأحماض الدهنية العديدة غير المشبعة كما أوضحت النتائج وجود علاقات معنوية عالية بيـن المتناول من البروتين الكلي والبروتين الحيواني والبروتين النباتي والاحمـاض الأمينيـة ، أيضـا وجود علاقات معنوية عالية بين المتناول من الطاقة والدهون الكلية والدهـن الحيوانـي والدهـن النباتي والكولسترول والألياف والأحماض الدهنية المشبعة وغير المشبعة ، وعلي ضوء ذلك تقترح الدراسة من أجل انخفاض نسبة الإصابة بسرطان الثدي انخفاض نسبة الدهون الكلية في الغذاء فيما عدا الأحماض الدهنية الأحادية في عدم التشبع وانخفاض نسبة الدهون العالية في الوجبات السريعة وأنوع الحلوي المختلفة وزيادة المتناول من الحبوب والفاكهة والخضراوات وخاصة المحتوية علي كاروتينويدات – وليكوبين .