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Nutritional Status Of Males' College Students And Its Relationship To Some Demographic Characteristics

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Abstract: The study was conducted to evaluate the relationship between nutritional status of males' college students and their some demographic characteristics. It included 88 students (18-24 years old) from those getting meals in the restaurant of Faculty of Agriculture Cairo University. Nutritional status and demographic characteristics assessment were based on questionnaires. Dietary intakes were collected through personal interview with each student using a 24 hour recall method. The obtained data were statistically analyzed. The study also included determinations of hemoglobin, glucose, total cholesterol and iron concentrations in the serum.

The results revealed that half of students belonged to medium social level and income. The percentages of students getting acceptable daily intakes of calories, calcium, iron and vitamin B_1 of RDAs recommendations were 47.1, 29.4, 41.2 and 29.4%. However, the intakes of 41.2, 58.8 and 35.3% of students exceeded protein, zinc and vitamin C RDAs. On the other hand, 29.4, 29.4 and 35.3% of students under study received unacceptable amounts of calcium, phosphorus and vitamin B_2 and 52.9, 41.2, 88.2, 35.3 and 70.6% got insufficient amount of cupper, magnesium, selenium, vitamin B2 and vitamin A RDAs.

Restaurants' meal exceeded students' needs for protein, zinc, sodium and potassium, being 107.61, 104.28, 110.58 and 103.93% of RDAs, respectively. The nutritive value of meal contributed to, 22.05, 81.43, 87.64, 25.00, 41.58 and 53.52% of RDAs for calcium, iron, phosphorus, cupper, magnesium and selenium, respectively. It also provided 30.89, 41.67, 15.38 and 8.90% of vitamins C, B_1, B_2 and A, in respective order.

Mean concentrations of hemoglobin (13.44g/dl), glucose (95.00mg/dl), total cholesterol (134.33mg/dl) and iron (128.20µg/l) values were within the normal values. Results demonstrated that significantly positively correlations between family income and some students' daily nutrients intakes, i.e. protein and fat. Social level was correlated with protein and carbohydrates intakes, while, family size was correlated to protein intake. Thus, it is recommended for college students to establish regular, good quality meals and consuming more vitamin and mineral nutrition's for optimal health conditions.

Keywords: Demographic characteristics - Nutritional status - University students – Hematological indices

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Introduction

Evaluation of the nutritional status of individuals and population groups proved to be an important tool in public health and a feasible indicator of living standards (Nurul and Ruzita, 2010).

Poor eating habits would be a major public health concern among young adults who experienced transition into university life (Nelson *et. al.*, 2008), during which, they have been exposed to stress and lack of time (Rubina *et. al.*, 2009). These factors would pose a barrier against adoption of healthy behaviors, such as poor eating habits and substance abuse (Nelson *et. al.*, 2008). Although these students' behaviors could be considered temporary, as part of university life, unhealthy habits picked up at this age might persist in older adult life (Silliman *et. al.*, 2004).

Forbes (1987) estimated that globally over 400 million were undernourished. In the past decade, WHO (2002) and FAO (2004) noted that 852 million people were undernourished worldwide with most (815 million) living in developing countries, confirming the increasing figure of undernourished people.

Improving the levels of education, has been associated with increasing income and social status (Ross and Wu, 1995). This associated increase in demographic status could affect health by influencing access to health care, quality of housing, work environment, lifestyle factors, i.e. nutrition and recreation, and social psychological factors, e.g. self-esteem and health awareness (Kozyrsky, *et. al.*, 2002).

Consuming at least 5 servings of fruits and vegetables would reduce the incidence of cancer by approximately 20% (World Cancer Research

Fund, American Institute for Cancer Research 1997). Increasing eating daily servings of fruits and vegetables >5 to 9 might significantly reduced the risk of diet related chronic diseases and certain lung diseases, gastrointestinal problems, obesity, and diabetes (Hyson, 2002).

Studying nutrition interventions aimed at improving dietary habits have shown that health believes specific food choice knowledge, and being ready to change positive predictors of healthy eating (Foerster *et. al.,* 1999). These dietary habits and attitudes that serve as predictors of healthy eating apply to the community college student population. College students' diets seemed to be typically low in fruits and vegetables (Evans *et. al.,* 2000), while high in fat, sodium, and added sugars (Anding *et. al.,* 2001).

In addition, iron deficiency appeared to be one of the biggest contributing factors to anemia. Spare iron could be stored in the liver. Iron might be lost from body in urine, feces, and dead skin cells and when loosing blood from the body (Hoffbrand *et. al.*, 2006).

Recently, Chin and Mohd, (2009) assured that there was a need to promote healthy eating habits among young adults to achieve a healthy nutritional status. Further, Gan *et al.* (2011) highlighted the presence of unhealthy eating behaviors and inadequate nutrient intake among university students.

Reports on male obesity and malnutrition are scanty. But, male under nutrition could result in infertility and reproductive problems along with reduced physical fitness and thus, cut productivity in the workplace (Sengupta & Sahoo 2013).

The aim of this study to evaluate the nutritional status of male students sample in the Faculty of Agriculture, Cairo University who were getting meals in Faculty' restaurant as affected by some demographic variables and food habits.

Materials and methods:

Study sample

A cross-sectional study was conducted on 88 male students who have been chosen from those getting meals at the Faculty of Agriculture' restaurant at Cairo University. Data collection was carried out by especially designed questionnaire sheet. Data were collected through personal interview with each student.

The questionnaire sheet included questions on demographic data, i.e. age, social level, family income, family size, students' rank in the family,

suffering from diseases and practicing exercise according to Sengupta & Sahoo (2013).

Family monthly income was categorized as: <1200 L.E. low, 1200-3000 L.E middle, and >3000 L.E. high.

Social level was assessed according to (Krieger, *et. al.*, 1997).

Ethical considerations were followed as approval letter from dean office was issued before starting the study.

Hemoglobin level in blood (Hb), glucose, cholesterol and iron were determined (Maton, 1993).

Nutritional assessment

Dietary survey following an interactive 24 hour recall method was carried out to gauge the typical day's actual food intakes. Subjects were asked for the quantity of food, method for food preparation and time of consumption. From these data, cooked and raw foods were used to assess the actual consumed foods (Sengupta and Sahoo, 2013).

Nutrients and their amounts included in the foods and beverages consumed by each adolescent during one day were used to calculate nutrients' intakes using food composition tables for Egyptian (National Nutrition Institute, 2006). The obtained results were evaluated considering recommended daily allowances (RDA) by age and gender and energy balance was used to ascertain their nutrition level, with negative values indicating deficient energy intake (FAO/WHO, 2007), vitamins and minerals according to FAO/WHO (2002).

Statistical analysis was conducted using the SPSS. Quantitative variables were analyzed using Student's-test, while chi-square and Fisher's exact tests were conducted for qualitative variables (categorical). All reported P values were made and compared to a significance level of 5%, and differences were considered statistically significant at $P < 0.05$ (SPSS, 2009).

Results and discussion

The characteristics of students under study, their health status and practicing exercise are shown in Table 1.

Table 1: Students' distribution according to their characteristics

Characteristics		N (n=88)	%
Age	18-20yr	29	33
	21-22yr	53	60.2
	23-24yr	6	6.8
Social level	Low	4	4.5
	Medium	50	56.8
	High	34	38.6
Family income	<1200 low	25	28.4
	1200-3000 medium	50	56.8
	>3000high	13	14.8
Family size (persons)	≤ 4	7	8.0
	5-7	59	67.0
	≥8	22	25.0
Students' rank in the family	1-2	40	45.4
	3-4	32	36.4
	5-6	10	11.4
	7-9	6	6.8
Suffering from diseases	Yes	26	29.5
	No	62	70.5
Practicing exercise	No	31	35.2
	Yes	57	64.8
Total		88	100

It could be noticed from Table (1) that the about two thirds of the sample (60.2% of males' students) aged 21-22 years. While, low percentage of them (6.8%) was 23-24 years old.

It could be seen from data in Table 1 that more than half of the (56.8% of students) belonged to medium social level. However, about one third of adolescents' sample (38.6% of them) had high social level, while, the rest accounting to only 4.5% of them (very small minority) were living in low social level.

Concerning family income, it could be observed in the presented data (table 1) that the highest percentage of males' families had income (1200 L.E. - 3000 L.E.), being 56.8% .While, lowest percentage of families (14.8%) had income more than 3000 L.E. On the other hand, males'families with income < 1200 L.E. recorded 28.4 %.

Data in Table (1) also showed that the highest percentage of students (67%) had family size of 5-7 persons, followed by those who had big family size (more than 8 persons), representing one quarter of the sample (25%). However, the lowest percentage of students (8%) belonged to families having up to 4 persons.

Respecting students' rank in the family, it is clear that percentage of students who ranked (1-2) and (3-4) in their family reached 45.4% and 36.4 %, respectively. Meanwhile, low percentages of them (11.4% and 6.8%) ranked (5-6) and (7-9) in family, respectively (Table 1).

Regarding diseases, high percentage of students under study (70.5%) claimed that they were not suffering from any diseases.

Data pertaining students' distribution according to their practicing exercise in the same table (Table 1) showed that high percent of students (64.8%) used to practice exercise.

In this respect, Satia, *et. al.,* (2005) noted that the demographic level increased the importance given to the price of foods. Further, Joshi, *et. al.*, (2011) found highly significant association of maternal literacy, occupation, income and diet knowledge and child malnutrition. Economic status of the household found to be associated with the general health and development status of the family.

Similar findings were noted in Palestine by Abu Shanab, (2011) indicating that 37.5 % of the university students were not practicing in any physical activity.

The mean daily nutrients' intakes of students were calculated and presented in Table (2), compared with RDAs and the percentage illustrated in Figure (1).

The results in table (2) showed that mean nutrients intakes of fats and carbohydrates were 67.88 and 360.71 g, respectively. Data also showed that the intake of consumed protein reached 63.11g was lower than recommendation of RDA for protein in figure (1).

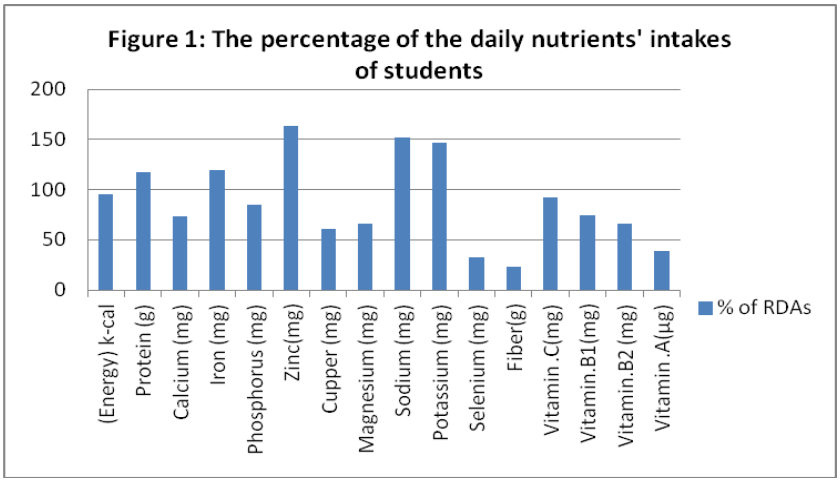
These results are in the same line with those obtained by Mohamed (2008) who declared that the mean daily intake of protein among Egyptian adolescents were higher than the recommended dietary allowances.

Data in the abovementioned Table (2) demonstrated that the mean students' intake was only 2404.4 calories, being lower than RDA for calories.

Concerning minerals, data in Table (2) showed that the students were receiving daily diets with excess amounts of potassium, zinc, sodium & iron, being 2922.39mg, 11.40mg, 3633.52mg and 16.72 mg, respectively compared with RDAs in Figure (1).

Table 2: Mean & standard deviation of students' daily nutrients intakes

Nutrients	Mean ± standard deviation
Protein (g)	63.11±19.81
Fat(g)	67.88±42.22
Carbohydrate(g)	360.71±146.59
Energy (calories)	2404.45±1090.31
Calcium (mg)	732.96±437.17
Iron (mg)	16.72±5.95
Phosphorus (mg)	1013.89±567.33
Zinc(mg)	11.40±6.03
Cupper (mg)	1.22±0.83
Magnesium (mg)	172.34±106.40
Sodium (mg)	3633.52±1940.07
Potassium (mg)	2922.39±1155.13
Selenium (mg)	11.06±6.63
Fiber(g)	8.18±4.18
Vitamin .C(mg)	41.28±26.39
Vitamin.B_1(mg)	0.89±0.49
Vitamin.B_2 (mg)	0.86 ±0.63
Vitamin .A(µg)	233.78±185.34



The present data are in harmony with Dewidar (2007) who found that the students' diets in hostels at Minufiya University contained more sodium and zinc.

Similarly, El-Sayed (2002) reported that the daily intakes of sodium for female students at Alexandria and Minufiya Governorates were higher than RDAs. In this respect, Griffin *et. al.*, (2004) mentioned that the increase in zinc intake might be due to the high consumption of foods containing legumes, shellfish and beef.

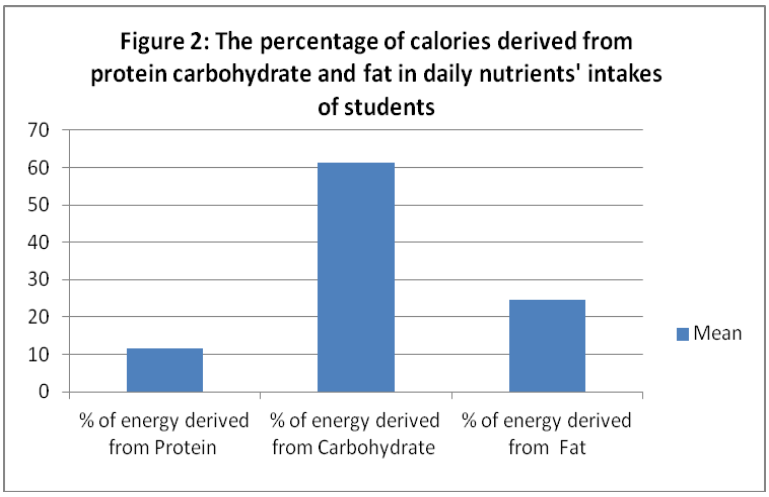
On the other hand, the intakes of calcium, magnesium, cupper, selenium and phosphorus recorded 732.96, 172.34, 1.22, 11.06 and 1013.89 mg, being lower percentages than minerals RDAs (figure 1).

Also the mean fiber intake (8.18 g) was far from that the recommendations.

Results in table (2) showed that the mean daily nutrient intakes showed insufficient amounts of vitamins (B_1, B_2, A & C) compared with vitamins of RDA as seen in figure (1)

In this respect, Lopez de Mishima (1999) noticed high prevalence of low vitamin A intake and plasma retinol levels in several groups of university students in Argentina.

Figure (2) demonstrated the percentage of calories derived from protein carbohydrate and fat in daily nutrients' intakes of students.



The results in figure (2) showed that the percentage of calories derived from protein, carbohydrate and fat accounted to 11.66%, 61.13% & 24.64% of total calories, respectively. According to recommendations, total calories should be derived from protein, carbohydrate and fat as a ratio of 10-15, 55-75 and 15-30, respectively (WHO 1990).

In Turkey, Yağmur (1995) and Şanlier and Arli (2000) explained that university students consumed energy and carbohydrates inadequately.

Students' distribution according to their daily nutrients' intakes are shown in table (3).

Data in Table (3), indicated that less than fifty percent (47.1%) were getting 75% - <100% of the RDA for calories. Among the students under study the same percentage (17.6%) recorded for those who were getting (50 % - < 75%) and (100 % - < 120%) of the recommended calories intakes. On the hand, a small percent of them (11.8%) were receiving more than recommendations (≥ 120%RDAs), while, 5.9% of students got less than 50% of their calories needs.

Table 3: Students' distribution according to their daily nutrients' intakes

Characteristics	<50% unsafe	50-<75% unacceptable	75-<100% acceptable	100-<120% adequate	≥120% over consumption
Energy (calories)	5.9	17.6	47.1	17.6	11.8
Protein(gm)	0	17.6	11.8	29.4	41.2
Calcium (mg)	23.5	29.4	29.4	11.8	5.9
Iron(mg)	0	0	41.2	23.5	35.3
Phosphorus(mg)	17.6	29.4	23.5	11.8	17.6
Zinc (mg)	0	0	17.6	23.5	58.8
Cupper (mg)	52.9	11.8	5.9	23.5	5.9
Magnesium(mg)	41.2	23.5	23.5	5.9	5.9
Sodium (mg)	0	11.8	11.8	23.5	52.9
Potassium(mg)	0	5.9	5.9	17.6	70.6
Selenium (mg)	88.2	5.9	5.9	0	0
Vitamin C(mg)	29.4	11.8	5.9	17.6	35.3
Vitamin B_1(mg)	23.5	23.5	29.4	11.8	11.8
Vitamin B_2(mg)	35.3	35.3	11.8	5.9	11.8
Vitamin A(µg)	70.6	17.6	11.8	0	0

Concerning protein intake, it could be noticed from table (3) that the highest percent of investigated students under (41.2%) got more protein than RDA. Meanwhile, 29.4% and 11.8% of students received adequate and acceptable protein requirements, respectively. On the contrary, 17.6% of students received unacceptable protein intakes (50 %-< 75% RDA's of protein).

Regarding iron, it could be noticed from data in Table (3) that reasonable percentage of students (41.2%) received 75 % - < 100% of RDA for iron, and less than one fourth of subjects under study (23.5%) got adequate iron needs (100%- <120%). However, iron intakes of about one third of the sample (35.3% of students) exceeded their needs.

Data in table (3) also illustrated that about one fourth and 5.9% of studied samples received 75 % - < 100% of phosphorus and cupper, respectively, while 17.6% & 5.9 of them got more than their needs for the above mentioned minerals, respectively.

Concerning zinc intakes, it could be noticed that more than half of the students received more than 120% of RDA for zinc. However, the percentages of them who got 75%-100% and 100 %-< 120% of RAD for zinc were 17.6% - 23.5%, respectively.

Regarding selenium intakes, it could be noticed that none of the students got more than their requirements of selenium (<100%).

Meanwhile, the majority of them (88.2%) received less than half of their needs for selenium.

Data pertaining the students' distribution according to their daily intakes of vitamins (Table 3) showed that high percent of students under study (70.6%) got less than 50% of RDA of vitamin A. Only 17.6% of students received (50%- <75%) of vitamins A requirements. However, only 11.8% of them consumed acceptable intakes of vitamin A (75% -100% of RDA).

With regard to vitamin C, very low percentage of students under study received 75% - <100% of RDA for vitamin C., being 5.9%. However, the percentage of students who received over 120% of RDA of it reached about one third of the sample (35.3%).

From Table (3), it could be observed that the percentages of students who received less than 50% and 50 % - < 75% of RDA for vitamin B1 were similar (23.5%). The male students getting less than 50% and 50 % - < 75% of RDA for vitamin B2 showed the same percentage (35.3%). However, 11.8 % of students under study received over 120% of RDAs of both vitamins (B_1&B_2).

Similarly, Galore, *et. al.,* (1993) noticed that university students tended to select fast food due to its palatability, availability and convenience and thus not following healthy eating habits, as diet was high in fat and low in fruits and vegetables.

Black *et. al.,* (2008) suggested that an increase in the risk of micronutrient deficiencies and malnutrition among the students. Thus there is need to encourage university students to consume diversified meals. Food consumption would be influenced by socio-economic, cultural, health status and accessibility. In this respect, the intake of energy and nutritional elements below the 67% of the recommended value in adolescents is considered as inadequate intake, an intake between 67-133% is considered as adequate intake and an intake above the 133% is considered as excessive intake (Rolfes and Whitney 2013). During the year 2010 all University of Zimbabwe students were not in campus residence which could have been a contributing factor as they were less likely to access healthy meals.

The low levels of physical activity, sedentary habits, high protein and sugar intakes, low fiber consumption, and frequent snacking contribute to the high prevalence of overweight and obesity. The consumption of food which is considered important to prevent chronic diseases such as fruits and vegetables is relatively low. This may be due to lack of nutritional awareness among university students, Therefore, educational programs which encourage increased consumption of fruits and vegetables and increased physical activity are recommended for a good health as well as preventive strategy for university students (Abu Shanab, 2011).

In Kolkata, Sengupta, (2014) reported nutritional status of fifty age matched young adults, as found in dietary survey. It has been found that young Calcuttans were lacking in energy intake, but they consumed more fat than the RDA. They lacked sufficient protein in their diet, but, more fat consumption was observed in interactive 24 h recall method, as mentioned earlier. They also suffered from deficient in iron, vitamin A and vitamin C in diet. Vitamin C, which is beneficial for endurance and better physical performance, was also found to be inadequate in the diet of the students. Conversely, dietary intake of Vitamin B1 (thiamin) and Vitamin B_2 (riboflavin) were found to be sufficient in boys who may be correlated to their better physical fitness level, because these vitamins play a major role in maintaining muscle strength and endurance.

Calories provided from fat, carbohydrates and proteins as percentage of total calories were estimated and presented in Table (4).

Table 4: Students' distribution according to calories provided from Protein, Carbohydrate and Fat as percentages of total calories

Characteristics		%
Protein energy ratio status	<10%	35.3
	10-<15%	41.2
	≥15%	23.5
Total		100
Carbohydrate energy ratio status	<55%	23.5
	50-<70%	58.8
	≥70%	17.6
Total		100
Fat energy ratio status	<20%	29.4
	20-30%	41.2
	≥30%	29.4
Total		100

Data pertaining distribution of students according to their daily energy intakes from energy yielding nutrients (table 4) showed that high percentages of students under study (41.2 %) received 10% and less than 15% of calories from protein. Meanwhile, the percentages of the above mentioned students who got less than 10% of calories from protein were (35.3%). However, 23.5% of the students received more than 15% of calories from protein.

Among the students calories intake from carbohydrates, the highest percent (58.8%) was noticed for those who were receiving 55% -70% of calories. While, the students who got less than 55% of calories from

carbohydrates represented 23.5%. A small percent of students (17.6%) had high percent from carbohydrates (70%).

Data revealed that less than fifty percent of students got 20% -30% of calories from fat .While ,the percentages of students who got less than 20% and 30% of calories from fat were similar (29.4%).

In this concern, Baysal, (2009) recommended that for a healthy and balanced nutrition 55-60% of diet energy should come from carbohydrates, 15-20% from protein and 25-30% from fats.

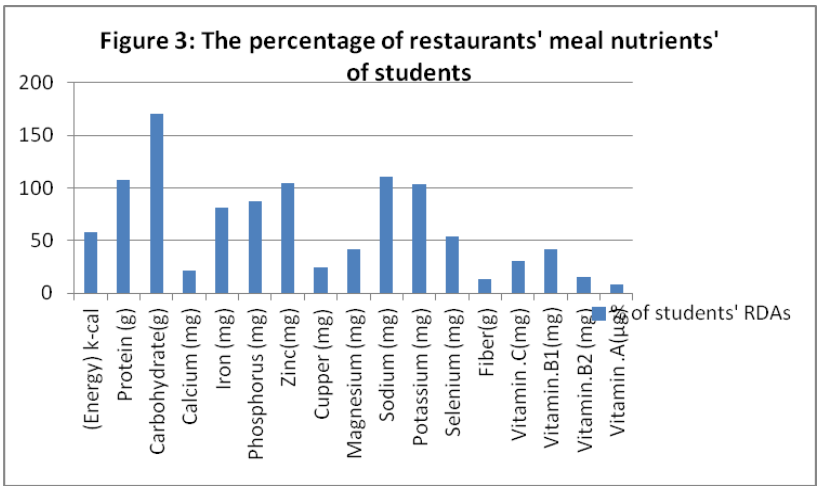
However, Hanning *et. al.*, (2007) showed that the rate of total energy coming from protein (15%) and fat (31%) was higher and the rate coming from carbohydrates (54%) was lower compared to their study in the study that included 315 male adolescents and 346 female adolescents. Kilinç & Çağdaş (2012) found that the rate of energy coming from carbohydrates was high, while the rate of energy coming from protein was low, and protein consumption was found to be lower and fat consumption was found to be similar.

Frequent snacking and eating fast food can adversely affect students' health status, given the abundance of energy-dense and high-fat ingredients they contain. The Healthy people 2010 objectives focused on nutrition and obesity prevention (Healthy People 2010).

The nutritive value of restaurants' meal was presented in table (5).

Table 5: Nutritive value of restaurant meal

Nutrients	Quantity
(Energy) k-cal	1471.10
Protein (g)	58.10
Fat(g)	39.40
Carbohydrate(g)	221.10
Calcium (mg)	220.50
Iron (mg)	11.40
Phosphorus (mg)	701.10
Zinc(mg)	7.30
Cupper (mg)	0.50
Magnesium (mg)	108.10
Sodium (mg)	2654.10
Potassium (mg)	2078.60
Selenium (mg)	18.20
Fiber(g)	4.70
Vitamin .C(mg)	13.90
Vitamin.B_1(mg)	0.50
Vitamin.B_2 (mg)	0.20
Vitamin .A(µg)	53.40



Data indicated that the percentages of consumed protein from restaurant' meal reached 107.61% of RDA for protein. Regarding, minerals data in table (5) and figure (3) showed that restaurants' meal provided 22.05, 81.43, 87.64, 25.00, 41.58 and 53.52% of RDAs for calcium, Iron, phosphorus, cupper, magnesium and selenium, respectively. On the contrary, zinc, sodium and potassium contents of the meal exceeded students' needs, being 104.28, 110.58 and103.93% of RDAs.

From the results in Table 5, it could be noticed that the restaurants meal provided 30.89, 41.67, 15.38 and 8.90mg of vitamins C, B1, B2 and A, respectively.

Table (6) Correlation coefficients between calories delivered from fat, protein, and carbohydrates of total daily calories and family income, demographic levels, and family size

Nutrients	Family income	Social levels	Family size
Protein	0.879*	0.595*	0.036*
Carbohydrates	0.622	1.096*	0.492
Fat	0.163*	0.718	0.106

* Significantly at P< 0.05

The results in Table (6) showed that family income significantly positively correlated with protein and fat intakes. Results also showed significant correlation between social levels and protein and carbohydrates intakes. There was also correlation between family size and protein intake. This might be ascribed that the most of students' families were either at low or medium social level and tended to receive their calories from carbohydrates for their cheap prices. However, big size families of 5-7

persons, and those having medium and low income tended to receive their calories from plant protein.

The blood samples of the students were chemically analyzed for hemoglobin, glucose, total cholesterol and iron as presented in table (7).

Table 7: Some hematological indices of students under study

Hematological indices	Mean ± standard deviation
HB (gm/dl)	13.44±1.45
Glucose(mg/dl)	95.00±18.28
Cholesterol(mg/dl)	134.33±55.80
Iron (µg/l)	128.20±34.39

Hemoglobin, Glucose, Total cholesterol and iron values were within the normal values according to Dacie and Lewis (2006).

The comparison of blood cholesterol between different community groups indicated that generally young adults exhibited a lower cholesterol level in the blood as a result of the different physical activity level, lifestyle and food habits of the Aborigine (Ng, *et. al.*,1995).

Significant correlation was noticed between iron deficiency and iron deficiency anemia with inadequate meat intake and impaired exercise capacity (Al-Sayes, 2011).

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الحالة التغذوية لطلاب الجامعات وعلاقتها ببعض الخصائص الديموغرافية

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أجريت الدراسة لتقييم العلاقة بين الحالة التغذوية لعينة من طلاب الجامعة وبعض الخصائص الديموغرافية. وشملت الدراسة ٨٨ طالبا (١٨-٢٤ عاما) من الطلاب اللذين يتناولون وجبات في مطعم كلية الزراعة جامعة القاهرة. وتم الحصول على البيانات الخاصة بالحالة التغذوية والخصائص الديموغرافية باستخدام استمارة استبيان. تم جمع البيانات الغذائية من خلال المقابلة الشخصية مع كل طالب باستخدام طريقة استرجاع ٢٤ ساعة. وقد تم تحليل البيانات التي تم الحصول عليها إحصائيا. شملت الدراسة أيضا تقدير تركيزات الهيموغلوبين والجلوكوز والكوليسترول الكلي والحديد في مصل الدم.

وبينت النتائج أن نصف طلاب ينتمون إلى المستوى الاجتماعي والدخل المتوسط . وكانت النسبة المئوية للطلاب للحاصلين على المتناول اليومي من السعرات الحرارية والكالسيوم والحديد وفيتامين ب$_1$ مقبولة حيث مثلت 47.1 ، 29.4 ، 41.2 , ٢٩.٤٪ من التوصيات، بينما الماخوذ من البروتين والزنك وفيتامين ج تجاوزت الاحتياجات من ٤١.٢ ، ٥٨.٨ و ٣٥.٣٪ من الطلاب, من ناحية أخرى، ٢٩.٤، ٢٩.٤ و ٣٥.٣٪ من الطلاب قيد الدراسة تناولت كميات غير مقبولة من الكالسيوم والفوسفور وفيتامين ب٢ و ٥٢.٩، ٤١.٢، ٨٨.٢، ٣٥.٣ و ٧٠.٦٪ حصلت كميات غير كافية من النحاس والمغنيسيوم والسيلينيوم وفيتامين ب٢ وفيتامين أ .

وجبة المطعم تجاوزت احتياجات الطلاب من البروتين والزنك والصوديوم والبوتاسيوم، حيث اعطت ١٠٧.٦١، ١٠٤.٢٨، ١١٠.٥٨ و١٠٣.٩٣% من RDAs على التوالي. وساهمت القيمة الغذائية من وجبة المطعم ٢٢.٠٥، ٨١.٤٣، ٨٧.٦٤، ٢٥.٠٠، ٤١.٥٨ و ٥٣.٥٢٪ من RDAs للكالسيوم والحديد والفوسفور والنحاس، المغنيسيوم والسيلينيوم، على التوالي. كما قدمت ايضا ٣٠.٨٩، ٤١.٦٧، ١٥.٣٨ و ٨.٩٠٪ من الفيتامينات ج، ب١، ب٢ وأ، على التوالي.

وكان متوسط التركيزات من الهيموجلوبين (١٣.٤٤ جرام/ ديسيلتر) والجلوكوز (٩٥.٠٠ ملجرام/ ديسيلتر)، الكولسترول الكلي (١٣٤.٣٣ ملجرام/ ديسيلتر) والحديد (١٢٨.٢٠ميكروجرام / لتر) والتي كانت في حدود القيم الطبيعية. وأظهرت النتائج وجود ارتباطا إيجابيا بين دخل الأسرة والمتناول اليومي من المغذيات (البروتين والدهون). كما ارتبط المستوى الاجتماعي مع المتناول اليومي من البروتين والكربوهيدرات، بينما ارتبط حجم الأسرة مع البروتين. وبالتالي، يوصى لطلاب الجامعات تناول وجبات ذات نوعية جيدة واستهلاك المزيد من الفيتامينات والتغذية المعدنية من اجل صحة جيدة.

الكلمات الدالة: الخصائص الديموغرافية – الحالة الغذائية - طلاب الجامعة- مؤشرات الدم