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Assessment of Food Awareness for the Female Students in Taif University and Its Relationship with Intake of Nutritional Micronutrients.

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ABSTRACT

Family, peers, media, and environment influence the health habits, especially eating habits, of children. Research has shown that eating habits developed during childhood continue into adulthood. Thus, childhood influences should optimally have positive effects on the elementary school–aged child. These positive influences will help form a basis for good nutrition and physical activity habits to be followed throughout an individual's adolescent and adult life. Moreover, to facilitate dietary behavior changes, education is an effective beginning. Nutrition educators must consider certain factors to effectively reach children. They should carefully determine the purpose and goals of a nutrition education program. In addition, educators must determine the theory used to develop and deliver nutrition education topics.The results showed that female students in the third, the fifth and the seventh levels had normal intake in vitamin A ad C and some nutritional minerals as calcium and iron. The statistical analysis showed the significant difference was significant at the 1% level between the three levels for the consumption of vitamin C and iron and also 5% level between the three levels for the consumption of vitamin. A. No significant differences between the three levels for the consumption of calcium metal. The results showed the variations correlation between the intake vitamin A and C and some nutritional minerals as calcium and iron for the third level and nutritional awareness. These variations in the results may be caused poor knowledge about the nutritional awareness in the third level. Whereas the fifth and the seventh the variations in the results may be caused the medium and high knowledge about the nutritional awareness. From the obviously results it could be concluded that the students possessed medium knowledge about nutrition awareness, and also attitude towards nutrition and normal nutritional status. Moreover, the results indicate that female students' university may be at risk from deficiencies of some vitamins and minerals. May would benefit from a nutrition and health promotion program to reduce the tendency of overweight and obesity among female students to improve eating habits. Biochemical assessment may be needed to confirm that to reduce the low status and based on that supplementation, fortification or changing of eating habits can be considered.

Keywords: nutritionals, micronutrients, awareness.

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INTRODUCTION

Vitamin A in animal foods occurs as retinyl esters of fatty acids in association with membrane-bound cellular lipid and fat-containing storage cells. ProvitaminA carotenoids in foods of vegetable origin are also associated with cellular lipids but are embedded in complex cellular structures such as the cellulose-containing matrix of chloroplasts or the pigment-containing portion of chromoplasts. Normal digestive processes free vitamin A and carotenoids from food matrices, which is a more efficient process from animal than from vegetable tissues. Retinol and some carotenoids enter the intestinal mucosal brush border by diffusion in accord with the concentration gradient between the micelle and plasma membrane of enterocytes. Some carotenoids pass into the enterocyte and are solubilized into chylomicrons without further change whereas some of the provitamin A carotenoids are converted to retinol by a cleavage enzyme in the brush border[1]. Retinol is trapped intracellularly by re-esterification or binding to specific intracellular binding proteins. Retinyl esters and unconverted carotenoids together with other lipids are incorporated into chylomicrons, excreted into intestinal lymphatic channels, and delivered to the blood through the thoracic duct[2].

A common feature of vitamin C deficiency is anaemia. The antioxidant properties of vitamin C may stabilisefolate in food and in plasma, and increased excretion of oxidized folate derivatives in human scurvy was reported[3]**.**Vitamin C promotes absorption of soluble non-haem iron possibly by chelation or simply by maintaining the iron in the reduced (ferrous, Fe2+) form[4-5]**.** The effect can be achieved with the amounts of vitamin C mobtained in foods. However, the amount of dietary vitamin C required to increase iron absorption ranges from 25 mg upwards and depends largely on the amount of inhibitors, such as phytates and polyphenols, present in the meal[6].

During childhood and adolescence, vitamin D is important for calcium absorption and bone growth and accretion[7]. It is also plausible that calcium intake during adolescence and young adulthood affects skeletal growth and bone mineralization[8]**.**Thus, calcium and vitamin D both are essential nutrients for developing peak bone mass and bone health, and are associated with nutritional habit[9-10]**.**Results from different researches indicate that vitamin D deficiency is prevailing among adolescents and young adults[11-12]**.**However, it is to be acknowledged that not only calcium and vitamin D but also other nutrients are involved in bone health, i.e. phosphorous, potassium, magnesium, copper, zinc, vitamin C, vitamin K, B vitamins, phytoestrogens, nondigestible oligosaccharides (especially inulin-typefructans) etc.[13-14]**.**

Nutritional food components, minerals and vitamins are essential for better living and health. Several researches found no strong associations between nutritional knowledge and food intake[15-16]which put a notion that “being knowledgeable about diet and health is of little relevance to choice of food”[15-17]**.**But the opinion is not beyond criticism as studies suggest that nutrition knowledge has the potential to improve dietary quality[17-18]. Lack of nutrition knowledge influences adolescent’s food intake and behavior[17]**.** In our current study we have found that a considerable number of college going students of Bangladesh aged between 16-18 years have lack of knowledge of two essential nutrients; calcium and vitamin D.

Universities and colleges represent the final opportunity for nutrition education of a large number of students[19]**.**It was previously found that the undergraduate pharmacy students of Bangladesh lack adequate knowledge about essential nutrients, minerals, vitamins etc. though they have a long academic record of studying in biological science[20]**.**Our findings in this current study is in agreement with the findings of previous one [20]that most of the students came to know about the importance of the nutritional components from academic sources (either from their teachers or from textbooks). As a result, it is not possible to criticize the education system itself for the knowledge gap. But we do believe that family should be more active and more informative regarding nutrition education as only 8.8% and 8.2% of our study participants from urban and rural colleges respectively responded that they first informed of the essentiality of calcium and/or vitamin D from their parents, family members or relatives.

According to many studies themost results of the students do not like milk (50.9% for urban students and 38.3% for rural students). Poor eating habit is common in adolescents. At adolescent age boys’ and girls’ frequency of moving away from home increases and they acquire more autonomy[19-21-22]**.**This behavioral change led to poor eating habit and may limit dietary consumption of fibers, calcium, vitamin C and folate. However, there are some differences in dietary intake between urban and rural populations. Generally rural adults have higher intake of vegetables, dairy fats and oils[23]**.**

This study was carried out to assessment of nutritional status of the categories for any real indicator of health problems resulting from the increase or decrease in the various nutrients society. Therefore, this study aims to assess one aspect of the nutritional status of a class of students from Saudi society by estimating amounts of the vitamins A and D and some minerals (iron and calcium) by the students of the Faculty of Designs and Home Economics, Department of Food and Nutrition as an indicator of the current health status or future for these students.

MATERIALS AND METHODS

Methods

Time limits

Data were collected during the sixty days (two month) of the first semester 2015. It was in the morning during the presence of the students at the College and was based on the data the students collect the respondents considered true source to obtain the necessary data.

Spatial boundaries

This research was conducted in Taif on students of Faculty of Designs and Home Economics, Nutrition and Food Science Department at Taif University of the different levels (second, third and fourth).

The research sample

Sample selection was used the random method may be caused all the original respondents are registered in the lists of the three teams of study in Nutrition and Food Science Department, they are of each 100 female students from the levels at the third, the fifth and the seventh.

The personal method was used to interview when collecting the information from respondents for taking the form for data diet of 24-hour food and history, as well as the collection of dietary habits and questions about food awareness data and was a general question in their studies in the nutritional which considering in the Food and nutrition Department.

Data collection and statically analysis

After obtaining the required data, the researcher was analyzed the various nutrient materials which contained the energy, protein, fat and carbohydrates, depending on the chemical analysis of the Arab food tables, and then arranged. The data were analyzed using statistical analysis of the SPSS statistical package to get to know the average of each of the energy and materials produced in the daily food of students. T-test (t-test) with using SPSS statistical package has two-way at the level of significance of 5% was considered the difference between any two means a statistically significant and normal value when the (P-value) less than this figure.

RESULTS AND DISCESSION

Data were collected during the sixty days (two month) and the results are analyzed by Food Balance program. The results were then compared to the average intakes of food recommendations allowable and measured as follows: If the food intake of less than 60% of food was food consumption inadequate, if the intake of food from 60% to 89% described to as the average consumption, if the intake of food from 90% to 110% described to that normal consumption and finally if the intake of food is more than 110% described to as a plus consumption.

Effect of vitamin A intake on the status health for female students

Vitamins are organic (carbon-containing) substances required in small amounts to regulate various processes within living cells. Humans need 13 vitamins; of these, four are fat-soluble (A, D, E, and K), and nine

are water-soluble (C and the B-complex vitamins thiamin, riboflavin, niacin, vitamin B-6, folate, vitamin B-12, biotin, and pantothenic acid).

Table (1) showed that the level of vitamin A intake for the third and the fifth levels at the status medium was 434 and 41%, respectively. While in the normal status were 52% for the seventh levels. From the results, it could be noticed that the majority of the students their consumption of vitamin A in the medium status was 39.3%, followed by the normal consumption of vitamin A 35.6%. Therefore, it may be say that the nutritional status of students of the intake vitamin A mostly medium. It turned out after conducting statistical transactions; the significant differences were significant at the 5% level between the three levels for the consumption of vitamin A.

Although vitamin A status cannot be assessed from dietary intake alone, dietary intake assessment can provide evidence of risk of an inadequate status. However, quantitative collection of dietary information is fraught with measurement problems. These problems arise both from obtaining representative quantitative dietary histories from individuals, communities, or both, and from interpreting these data while accounting for differences in bioavailability, preparation losses, and variations in food composition data among population groups[24]. This is especially difficult in populations consuming most of their dietary vitamin A from provitamin carotenoid sources. Simplified guidelines have been developed recently in an effort to improve the collection of reliable dietary intake information from individuals and communities[25].

Table (1): Shows the percentage intake of vitamin A and its sufficiency of the international recommendations for female students are allowed in each level of the three educational levels of Nutrition and Food Science Department.

Vitamin A content		Levels			Total
		Third	Fifth	Seventh	
Not enough	Number	26	13	4	43
Less than 60%	%	%26	%13	%4	14.3%
Medium	Number	43	41	34	118
From 60 to 89%	%	%43	%41	%34	39.3%
Normal	Number	17	38	52	107
From 90 to 110%	%	%17	%38	%52	35.6%
High	Number	14	8	10	32
More than 110%	%	%14	%8	%10	10.6%
Total		100	100	100	300
Fisher test 14.289 r 0.026 significant at 5%					

Effect of vitamin C intake on the status health for female students

Table (2) showed that the level of vitamin C intake for the fifth and the seventh levels at the status normal was 48 and 42%, respectively. While the highest status the third levels were 56%. Moreover, the all status showed that the results were normal than the international recommendations allowed 39.3%, at the total of three levels followed by the highest status for the total three levels were 36.0%. It turned out after conducting statistical transactions; significant differences at 1% were between the three levels differences for the consumption of vitamin C.

Many studies describing a positive association between vitamin C consumption and health status are frequently reported, but intervention studies do not support the observations. Low plasma concentrations are reported in patients with diabetes[26]and infections[27]and in smokers[28],but the relative contribution of diet and stress to these situations is uncertain. Epidemiologic studies indicate that diets with high vitamin C content have been associated with lower cancer risk, especially for cancers of the oral cavity, oesophagus, stomach, colon, and lung[29-30].However, there appears to be no effect of consumption of vitamin C supplements on the development of colorectal adenoma and stomach cancer[30-31]and data on the effect of vitamin C supplementation on coronary heart disease and cataract development are conflicting[32-33].Currently there is no consistent evidence from population studies that heart disease, cancers, or cataract development is specifically associated with vitamin C status. This of course does not preclude the possibility that other components in vitamin C – rich fruits and vegetables provide health benefits, but it is not yet possible to separate such an effect from other factors such as lifestyle patterns of people who have a high vitamin C intake.

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Table (2): Shows the percentage intake of vitamin C and its sufficiency of the international recommendations for female students are allowed in each level of the three educational levels of Nutrition and Food Science Department.

Vitamin C content		Levels			Total
		Third	Fifth	Seventh	
Not enough	Number	4	2	4	10
Less than 60%	%	%4	%2	%4	%3.3
Medium	Number	12	20	32	64
From 60 to 89%	%	%12	%20	%32	%21.3
Normal	Number	28	48	42	118
From 90 to 110%	%	%28	%48	%42	%39.3
High	Number	56	30	22	108
More than 110%	%	%56	%30	%22	%36
Total		100	100	100	300
Fisher test 16.586 r 0.004 significant at 1%					

Effect of calcium metal intake on the status health for female students

Minerals are inorganic (non-carbon-containing) elements you need in relatively small amounts to help regulate body functions, aid in the growth and maintenance of body tissues, and help release energy. There are about 17 essential minerals. The major minerals, those that the body needs in amounts exceeding 100 milligrams per day, include calcium, phosphorus, magnesium, sodium, potassium, and chloride. The essential trace minerals, which you need in minute amounts, include copper, fluoride, iodine, iron, selenium, and zinc.

Table (3) showed that the level of calcium metal intake for the third; the fifth and the seventh levels female students on Nutrition and Food Science Department at Taif University. The resultant showed that the highest intake from calcium metal for the female students in the third, the fifth and the seventh levels the medium nutritional status were 53, 52 and 46%, respectively. Moreover, the majority of the students their consumption of calcium metal in the medium status was 50.3%, followed by the normal consumption of calcium metal 20.3%. Therefore, it may be say that the nutritional status of students of the intake calcium metal mostly medium. It turned out after conducting statistical transactions; the no significant differences between the three levels for the consumption of calcium metal.

Food plays especially in the period of growth, an important role to achieve the maximum level of bone density after the age of adolescence. Whenever increase bone density in young adulthood increased as the amount of metal in them. The results show that there is a direct correlation between the social and economic level of the students and the intake of nutrients. It turns out that most of the food students similar habits to some extent their mothers, a large number of respondents are likely of contracting osteoporosis as a result of irregular eating some foods rich in minerals important for bone health and vitamins, such as fruits and vegetables, citrus fruits, dairy products, and more than half of the respondents do not eat final fish, and nearly one-third of the sample drank soft drinks daily, and deals with them as well as fast food 3-4 times weekly[34].

Table (3): Shows the percentage intake of calcium metal and its sufficiency of the international recommendations for female students are allowed in each level of the three educational levels of Nutrition and Food Science Department.

Calcium metal content		Levels			Total
		Third	Fifth	Seventh	
Not enough	Number	30	8	8	46
Less than 60%	%	30%	8%	8%	15.3%
Medium	Number	53	52	46	151
From 60 to 89%	%	53%	52%	46%	50.3%
Normal	Number	11	24	26	61
From 90 to 110%	%	11%	24%	26%	20.3%

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High	Number	6	16	20	42
More than 110%	%	6%	16%	20%	14%
Total		100	100	100	300
Fisher test 162.058 r 0.06 Not significant					

Effect of iron metal intake on the status health for female students

Table (4) showed that the level of iron metal intake for the third, the fifth and the seventh levels female students the highest intake from iron metal in the third level was medium nutritional status 46%. The fifth and seventh levels were 48 and 41% in the medium status for the female students. Moreover, the majority of the students their consumption of iron metal in the medium status was 38.3%, followed by the normal consumption of iron metal 36.3%. Therefore, it may be say that the nutritional status of students of the intake iron metal mostly medium. It turned out after conducting statistical transactions; significant differences at 1% were between the three levels differences for the consumption of calcium metal. This decline has been attributed to some major factors like poor academic background, attitude of students towards examinations and attitudes of teachers to work. Another remote cause of poor academic performance of students could be linked to the worsening socioeconomic condition of the country, which has affected the feeding habit of students[35].

Table (4): Shows the percentage intake of iron metal and its sufficiency of the international recommendations for female students are allowed in each level of the three educational levels of Nutrition and Food Science Department.

Iron metal content		Levels			Total
		Third	Fifth	Seventh	
Not enough	Number	21	8	18	47
Less than 60%	%	21%	8%	18%	15.6%
Medium	Number	46	34	35	115
From 60 to 89%	%	46%	34%	35%	38.3%
Normal	Number	20	48	41	109
From 90 to 110%	%	20%	48%	41%	36.3%
High	Number	13	10	6	29
More than 110%	%	13%	10%	6%	9.6%
Total		100	100	100	300
Fisher test 37.318 r 0.00 significant at 1%					

Correlation betweendietary intakes for micronutrients status and nutritional awareness for the female students

Correlation between vitamin A intake and nutritional awareness for female students

The results in Tables 5, 6 and 7 showed the proportion of students of the third, the fifth and the seventh levels consumption of vitamin A intake and relationship nutrition awareness for the female students. From Table (5) it could be noticed that the correlation between vitamin A intake and nutritional awareness for female students third level, the medium, normal and high status were weak in the nutritional awareness (36, 43 and 100%, respectively). Meanwhile, the intake vitamin Anormal, the nutritional awareness was weak status 38% followed by medium in the nutritional awareness was 24%. These variations in the results may be caused the poor knowledge about the nutritional awareness and also, the statistically analysis showed that no significant relationship between the third level of nutritional awareness.

Table (5): Relationship between vitamin A intake and nutritional awareness for female students the third level of Nutrition and Food Science Department.

Awareness		Total vitamin A for third level				
		Not enough	Medium	Normal	High	Total
Weak	Number	8	20	6	4	38
	%	31%	36%	43%	100%	38%
Medium	Number	6	16	2	0	24
	%	23%	29%	14%	0%	24%
Good	Number	2	6	6	0	14
	%	8%	11%	43%	0%	14%

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Very good	Number	8	8	0	0	16
	%	31%	14%	0%	0%	16%
Excellent	Number	2	6	0	0	8
	%	8%	11%	0%	0%	8%
Total		26	56	14	4	100
Fisher test 1.7 r 0.2 not significant						

Table (6) it could be noticed that the correlation between vitamin A intake and nutritional awareness for female students fifth level, the medium status was very good in the nutritional awareness (45%) followed by normal status is good (54%) and high status was medium(50%) in the nutritional awareness. Meanwhile, the total average intake vitamin A, the nutritional awareness status was good and very good 38%. These variations in the results may be caused the medium knowledge about the nutritional awareness and also, the statistically analysis showed that no significant relationship between the fifth level of nutritional awareness.

Table (6): Relationship between vitamin A intake and nutritional awareness for female students the fifth level of Nutrition and Food Science Department.

Awareness		Total vitamin A for fifth level				
		Not enough	Medium	Normal	High	Total
Weak	Number	2	0	0	0	2
	%	17%	0%	0%	0%	2%
Medium	Number	2	12	4	2	20
	%	17%	21%	15%	50%	20%
Good	Number	2	12	14	0	28
	%	17%	21%	54%	0%	28%
Very good	Number	6	26	4	2	38
	%	50%	45%	15%	50%	38%
Excellent	Number	0	8	4	0	12
	%	0%	14%	15%	0%	12%
Total		12	58	26	4	100
Fisher test 0.7 r 0.5 not significant						

Table (7) it could be noticed that the correlation between vitamin A intake and nutritional awareness for female students seventh level, the not enough, medium, normal and high status were excellent in the nutritional awareness (50, 55, 50 and 33%) These results showed that the seventh level have to high knowledge about the nutritional awareness and also, the statistically analysis showed that significant at 5% relationship between the status and seventh level of nutritional awareness.

Young females are at risk of nutrient deficiencies due to poor diets and higher requirements for micronutrients, such as iron and folate especially in the periconceptional period and during pregnancy[36].Some young women's dietary patterns which include the avoidance of micronutrient-rich meat and poultry[37] and social influences such as the desire to have a lower BMI despite having a BMI in the normal range[38] resulting in chronic dieting, could further negatively impact their nutrient status and related health outcomes. Multiple micronutrient deficiencies are a worldwide problem, and extend to a range of population groups including young and apparently healthy women[39].Due to the significant role that vitamin and mineral statuses play in disease prevention, it is important to identify deficiencies in sub-populations. Data on the micronutrient status of women are less readily available and incomplete.

Table (7): Relationship between vitamin A intake and nutritional awareness for female students the seventh level of Nutrition and Food Science Department.

Awareness		Total vitamin A for seventh level				
		Not enough	Medium	Normal	High	Total
Weak	Number	0	4	0	0	4
	%	0%	9%	0%	0%	4%
Medium	Number	2	4	2	0	8
	%	25%	9%	6%	0%	8%
Good	Number	0	2	10	4	16
	%	0%	5%	28%	33%	16%
Very good	Number	2	10	6	4	22

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	%	25%	23%	17%	33%	22%
Excellent	Number	4	24	18	4	50
	%	50%	55%	50%	33%	50%
Total		8	44	36	12	100
Fisher test 3.1 r 0.00 significant at 5%						

Correlation between vitamin C intake and nutritional awareness for female students

The results in Tables 8, 9 and 10 showed the proportion of students of the third, the fifth and the seventh levels consumption of vitamin C intake and relationship nutrition awareness for the female students. From Table (8) it could be noticed that the correlation between vitamin C intake and nutritional awareness for female students third level, the medium was medium status 50%, and also, normal and high status were weak in the nutritional awareness (36, and 43%). Meanwhile, the intake vitamin C, the nutritional awareness was weak status 38% followed by medium in the nutritional awareness was 24%. These variations in the results may be caused the poor knowledge about the nutritional awareness and also, the statistically analysis showed that no significant relationship between the third level of nutritional awareness.

Table (8): Relationship between vitamin C intake and nutritional awareness for female students the third level of Nutrition and Food Science Department.

Awareness		Total vitamin C for third level				
		Not enough	Medium	Normal	High	Total
Weak	Number	4	0	10	24	38
	%	100%	0%	36%	43%	38%
Medium	Number	0	6	4	14	24
	%	0%	50%	14%	25%	24%
Good	Number	0	0	6	8	14
	%	0%	0%	21%	14%	14%
Very good	Number	0	4	4	8	16
	%	0%	33%	14%	14%	16%
Excellent	Number	0	2	4	2	8
	%	0%	17%	14%	4%	8%
Total		4	12	28	56	100
Fisher test 0.2 r 0.9 not significant						

Table (9) it could be noticed that the correlation between vitamin C intake and nutritional awareness for female students fifth level, the medium and normal status were very good in the nutritional awareness (40 and 47%) followed by high status is an excellent (48%) in the nutritional awareness. Meanwhile, the total average intake vitamin C, the nutritional awareness status was good and very good 38%. These variations in the results may be caused the medium knowledge about the nutritional awareness and also, the statistically analysis showed that significant at 1% relationship between the fifth level of nutritional awareness.

Table (9): Relationship between vitamin C intake and nutritional awareness for female students the fifth level of Nutrition and Food Science Department.

Awareness		Total vitamin C for fifth level				
		Not enough	Medium	Normal	High	Total
Weak	Number	0	0	2	0	2
	%	0%	0%	7%	0%	2%
Medium	Number	0	4	2	14	20
	%	0%	20%	7%	29%	20%
Good	Number	0	6	4	18	28
	%	0%	30%	13%	38%	28%
Very good	Number	2	8	14	14	38
	%	100%	40%	47%	29%	38%
Excellent	Number	0	2	8	2	12
	%	0%	10%	27%	4%	12%
Total		2	20	30	48	100
Fisher test 5.819 r 0.003 significant at 1%						

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Table (10) it could be noticed that the correlation between vitamin C intake and nutritional awareness for female students seventh level, the not enough, medium and normal status were excellent in the nutritional awareness (100, 50 and 42%). Meanwhile, the high status was equal percent in good, very good and excellent 27%. These results showed that the seventh level have to high knowledge about the nutritional awareness and also, the statistically analysis showed that no significant relationship between the status and seventh level of nutritional awareness.

Malnutrition is a major problem in both developed and developing countries and deficiencies in some nutrients have been reported to cause diseases which could lead to impaired cognitive development[40]. Other studies have related lifestyle of students, particularly breakfast consumption, to their cognitive abilities as reflected in their academic performance[41-42]. However, most of these studies have excluded young adults in the tertiary institution.

Table (10): Relationship between vitamin C intake and nutritional awareness for female students the seventh level of Nutrition and Food Science Department.

Awareness		Total vitamin C for seventh level				
		Not enough	Medium	Normal	High	Total
Weak	Number	0	4	0	0	4
	%	0%	13%	0%	0%	4%
Medium	Number	0	2	2	4	8
	%	0%	6%	5%	18%	8%
Good	Number	0	2	8	6	16
	%	0%	6%	19%	27%	16%
Very good	Number	0	8	8	6	22
	%	0%	25%	19%	27%	22%
Excellent	Number	4	16	24	6	50
	%	100%	50%	57%	27%	50%
Total		4	32	42	22	100
Fisher test 2.002 r 0.137not significant						

Correlation between calcium metal intake and nutritional awareness for female students

The results in Tables 11, 12 and 13 showed the proportion of students of the third, the fifth and the seventh levels consumption of calcium metal intake and relationship nutrition awareness for the female students. From Table (11) it could be noticed that the correlation between calcium metal intake and nutritional awareness for female students third level, the not enough and medium status were excellent in the nutritional awareness (40 and 50%). Meanwhile, the intake calcium metal normal and high the nutritional awareness was good and weak status both of them 100% in the nutritional awareness These variations in the results may be caused the poor knowledge about the nutritional awareness and also, the statistically analysis showed that no significant relationship between the third level of nutritional awareness.

Table (11): Relationship between calcium metal intake and nutritional awareness for female students the third level of Nutrition and Food Science Department.

Awareness		Total calcium metal for third level				
		Not enough	Medium	Normal	High	Total
Weak	Number	12	20	0	6	38
	%	30%	40%	0%	100%	38%
Medium	Number	8	16	0	0	24
	%	20%	32%	0%	0%	24%
Good	Number	4	6	4	0	14
	%	10%	12%	100%	0%	14%
Very good	Number	10	6	0	0	16
	%	25%	12%	0%	0%	16%
Excellent	Number	6	2	0	0	8
	%	15%	4%	0%	0%	8%
Total		40	50	4	6	100
Fisher test 2.2 r 0.1 not significant						

Table (12) it could be noticed that the correlation between calcium metal intake and nutritional awareness for female students fifth level, the medium status was very good in the nutritional awareness (42%) followed by normal and high status were good 42 and 50% in the nutritional awareness. Meanwhile, the total average intake calcium metal, the nutritional awareness status was very good and good 38 and 28%. These variations in the results may be caused the medium knowledge about the nutritional awareness and also, the statistically analysis showed that significant at 5% relationship between the fifth level of nutritional awareness

Table (12): Relationship between calcium metal intake and nutritional awareness for female students the fifth level of Nutrition and Food Science Department.

Awareness		Total calcium metal for fifth level				
		Not enough	Medium	Normal	High	Total
Weak	Number	2	0	0	0	2
	%	25%	0%	0%	0%	2%
Medium	Number	2	10	4	4	20
	%	25%	19%	17%	25%	20%
Good	Number	0	10	10	8	28
	%	0%	19%	42%	50%	28%
Very good	Number	4	22	8	4	38
	%	50%	42%	33%	25%	38%
Excellent	Number	0	10	2	0	12
	%	0%	19%	8%	0%	12%
Total		8	52	24	16	100
Fisher test 3.474 r 0.032 significant at 5%						

Table (13) it could be noticed that the correlation between calcium metal intake and nutritional awareness for female students seventh level, the not enough, medium and high status were excellent in the nutritional awareness (75, 57 and 50%). Meanwhile the normal status was very good 46%. These results showed that the seventh level have to high knowledge about the nutritional awareness and also, the statistically analysis showed that significant at 5% relationship between the status and seventh level of nutritional awareness.

Chew and Palmer[43]suggested that the three wave national survey they showed that differences in nutrition interest, not education differences, were associated with differences in nutrition knowledge. They also showed that TV viewing was associated with greater interest in nutrition and thus greater nutrition knowledge.

Table (13): Relationship between calcium metal intake and nutritional awareness for female students the seventh level of Nutrition and Food Science Department.

Awareness		Total calcium metal for seventh level				
		Not enough	Medium	Normal	High	Total
Weak	Number	0	4	0	0	4
	%	0%	9%	0%	0%	4%
Medium	Number	2	4	0	2	8
	%	25%	9%	0%	10%	8%
Good	Number	0	6	6	4	16
	%	0%	13%	23%	20%	16%
Very good	Number	0	6	12	4	22
	%	0%	13%	46%	20%	22%
Excellent	Number	6	26	8	10	50
	%	75%	57%	31%	50%	50%
Total		8	46	26	20	100
Fisher test 9.516 r 0.0 significant at 5%						

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Correlation between iron metal intake and nutritional awareness for female students

The results in Tables 14, 15 and 16 showed the proportion of students of the third, the fifth and the seventh levels consumption of iron metal intake and relationship nutrition awareness for the female students. From Table (14) it could be noticed that the correlation between iron metal intake and nutritional awareness for female students third level, the not enough, medium and high status were weak in the nutritional awareness (30, 40 and 100%, respectively). Meanwhile, the intake iron metal normal, the nutritional awareness was good status 100%. These variations in the results may be caused the poor knowledge about the nutritional awareness and also, the statistically analysis showed that significant at 1% relationship between the third level of nutritional awareness.

Table (14): Relationship between iron metal intake and nutritional awareness for female students the third level of Nutrition and Food Science Department.

Awareness		Total iron metal for third level				
		Not enough	Medium	Normal	High	Total
Weak	Number	12	20	0	6	38
	%	30%	40%	0%	100%	38%
Medium	Number	8	16	0	0	24
	%	20%	32%	0%	0%	24%
Good	Number	4	6	4	0	14
	%	10%	12%	100%	0%	14%
Very good	Number	10	6	0	0	16
	%	25%	12%	0%	0%	16%
Excellent	Number	6	2	0	0	8
	%	15%	4%	0%	0%	8%
Total		40	50	4	6	100
Fisher test 7.375 r 0.001 significant at 1%						

Table (15) it could be noticed that the correlation between iron metal intake and nutritional awareness for female students fifth level, the not enough and medium status were very good in the nutritional awareness (50 and 41%) followed by normal and high status is good (40 and 50%) in the nutritional awareness. Meanwhile, the total average intake iron metal, the nutritional awareness status was very good 38%. These variations in the results may be caused the medium knowledge about the nutritional awareness and also, the statistically analysis showed that significant at 5% relationship between the fifth level of nutritional awareness

Table (15): Relationship between iron metal intake and nutritional awareness for female students the fifth level of Nutrition and Food Science Department.

Awareness		Total iron metal for fifth level				
		Not enough	Medium	Normal	High	Total
Weak	Number	2	0	0	0	2
	%	17%	0%	0%	0%	2%
Medium	Number	0	14	4	2	20
	%	0%	26%	13%	50%	20%
Good	Number	4	10	12	2	28
	%	33%	19%	40%	50%	28%
Very good	Number	6	22	10	0	38
	%	50%	41%	33%	0%	38%
Excellent	Number	0	8	4	0	12
	%	0%	15%	13%	0%	12%
Total		12	54	30	4	100
Fisher test 17.14 r 0.027 significant at 5%						

Table (16) it could be noticed that the correlation between iron metal intake and nutritional awareness for female students seventh level, the not enough, medium and normal status were excellent in the nutritional awareness (44, 61 and 40%). Whereas, the high status was equal present in medium, very good and excellent in the nutritional awareness 33% for each. These results showed that the seventh level have to high knowledge about the nutritional awareness and also, the statistically analysis showed that significant at 5% relationship between the status and seventh level of nutritional awareness.

The adequate intake of vitamins and minerals such as iron, zinc, copper, selenium, vitamin B12 and folate is essential for optimal health[39]**.** Iron deficiency (ID) and iron deficiency anaemia (IDA) are common worldwide especially among young women, and have been shown to decrease general health and wellbeing[44-45]**.**IDA affects work and exercise performance, increases fatigue, and compromises immunity and neurological function[44-46]**.**IDA has been linked to impaired cognitive function and poor pregnancy outcomes[47]including low birth weight[48]**.**Both iron and zinc are readily bioavailable from animal products[45-46]and naturally coexist in foods, so marginal deficiencies of both minerals have been associated[45-46]**.**

Table (16): Relationship between iron metal intake and nutritional awareness for female students the seventh level of Nutrition and Food Science Department.

Awareness		Total iron metal for seventh level				
		Not enough	Medium	Normal	High	Total
Weak	Number	2	2	0	0	4
	%	11%	4%	0%	0%	4%
Medium	Number	4	2	0	2	8
	%	22%	4%	0%	33%	8%
Good	Number	0	8	8	0	16
	%	0%	17%	27%	0%	16%
Very good	Number	4	6	10	2	22
	%	22%	13%	33%	33%	22%
Excellent	Number	8	28	12	2	50
	%	44%	61%	40%	33%	50%
Total		18	46	30	6	100
Fisher test 14.289 r 0.026significant at 5%						

From the obviously results it could be notice that the best students in the food consumption was the seventh level and then the fifth, then the third, and this may be due to study some of the decisions related to health and the right to food, who teaches nutrition, Department of Food Science and this can be impacted positively on the level of awareness of them. However, differences in habits is not great enough and this may be due to dietary habits among female students may be mostly in their behavior. From this results it could conclude that the level of awareness in the high levels of schooling was the best, but the food consumption of the foods were not significantly different between the three levels, but that was also the best of the seventh, then fifth and then third simple differences.

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