

Diet for the Students of the University and Its Relationship to Osteoporosis

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Abstract: 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. Hence the importance of this research and this study aimed to learn about the diet of the students of Faculty of Designs and Home Economics in Taif University and the proportion of mother's worker habits and genetics and the impact of this system on the health of bones that are about. Based work on the drafting of a questionnaire to measure calcium intake daily quantity and located in many of the foods that have been measured by the study of food history for girls and their mothers, as well as the study of some of the habits that affect the level of taken daily calcium such as exercise and some wrong eating habits, as well as to identify the presence of some systematic pathological symptoms related to osteoporosis. 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. In conclusion, there is at present a paucity of information in Saudi Arabia on student nutrition, eating habits and underlying influences, and the impact of intervention in student's nutrition. It is thus imperative that both educational authorities and researchers attend to this area, and that health education and information about healthy eating habits and lifestyle be included in the education curriculum.

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1. Introduction

Osteoporosis is a clinically-silent disease in its early stages. Bone loss occurs without symptoms. It can lead to hip and spine fractures later in life (**Ghobadi and Hoseini, 2014**). Osteoporosis is a disease characterized by low bone mass and deterioration of bone structure that causes bone fragility and increases the risk of fracture. For practical purposes, the World Health Organization has defined osteoporosis as a bone mineral density (BMD) value more than 2.5 standard deviations below the mean for normal young women (**U.S. Department of Health and Human Services, 2004**). Decreased calcium intake, impaired intestinal absorption of calcium due to aging or disease, as well as vitamin D deficiency can result in secondary hyperparathyroidism (**Lawrence, 2005**) and physical activity **Andon et al. (1991)**. Age-related alterations in musculoskeletal health include reductions in bone mineral density (BMD) and bone strength, known as osteoporosis **Keaveny et al. (2010)**.

Osteoporosis is a multi-factorial disease with a major socioeconomic impact. Nutrition, lifestyle, and genetics contribute to the pathogenesis of osteoporosis (**Prema et al. 2001**). According to the National Institute of Health (NIH), "osteoporosis is defined as

skeletal disorder characterized by compromised bone strength" predisposing a person to an elevated fracture risk. Bone strength primarily reflects the integration of bone density (grams of calcium per unit area or volume of bone) and bone quality (micro architecture of bone) (**NIH, 2001**).

Optimal dietary intake is essential for bone health. During childhood and the pubertal growth spurt, nutrients are needed to fully consolidate skeletal mass and to ensure the attainment of a peak bone mass consistent with one's genetic potential. After peak bone mass is obtained, nutrition continues to play an essential role in skeletal health. If intakes of key nutrients are not consumed at required levels, mineral may be lost from bone or essential bone proteins may not be fully functional **Caballero (2005)**.

Adolescence is a particularly critical period for bone health because the amount of bone mineral gained during this period typically equals the amount lost throughout the remainder of adult life (**Bailey et al. 2000**). So dietary calcium intake is important for young adulthood to assure adequate bone mineral accretion and peak bone density (**Nieves, 2005**), yet evidence suggests that calcium intake begins to fall during adolescence (**Fiorito et al. 2006**). Although bone turn

over slows down later in life, resorption or breakdown of bone tissue continues to occur, typically at rates that exceed bone formation. The net effect is a slight loss of bone mass (or bone density) in the later years of life, especially after age 50 years (**John, 2009**). Because bone loss is not fully reversible, the most effective strategies for reducing osteoporosis should focus on prevention, with nutrition playing a key role. So food plays, especially in the period of growth, an important role to achieve the maximum level of bone density after teen (**Mazess, 1990**). So is the special food lifestyle factors in the community of more factors that help the emergence of osteoporosis, and most important: calcium deficiency due to not eating adequate amounts of milk and milk products, proteins and amino acids (**Rennie et al. 1982**) as well as excessive tea and coffee (**Prema et al. 2001 and Magda and Najat, 2011**). Lack of exposure to the sun, and the lack of movement for a long time or exercise (**John, 2009 and Rizzolia et al. 2014**). As well as the proliferation of fast foods and soft drinks (**Hanson et al. 2005**), sweets and chocolate, so it is expected to increase the incidence of osteoporosis among these communities are sudden and large. It has been found in the results of a study that about 40-60 per cent of the bone-building process occurs during the teenage years, so this is the most important stage for the human body.

The importance of this study, which aimed to learn about the diet of the students and their mothers and the extent of the impact of food on the bones that are about can taken advantage of it to get to know how likely cut their fragile future and whether there are mothers or a family member a complaint from the disease or some of the symptoms associated with it and can take advantage of it in the development of nutritional programs for women in Saudi Arabia. Also, it was benefit the development of scientific methods to the students, especially the Department of Nutrition faculty, and it was this whole reflection of the impact on bone health for all members' Saudi society, especially women.

2. Materials and Methods

Time limits

Data were collected during the first month of Gammed El-Aowal and Gammed El-Akher in 1435 AH. It was in the morning during the presence of the students at the college.

Spatial border

This research was conducted in Taif on College Students Designs and Home Economics at Taif University, Department of Nutrition and Food Science of the difference to the school all the difference.

The research sample

Using stratified random sampling method in the selection of the sample, because all the members of the original sample defined and registered in the lists of the

four teams in school nutrition and food sciences department, who are 200 students at random and 200 form for their mothers.

Search Tools

Have been prepared in a questionnaire as a means to collect research data, and designed this form accurately, it was an initial test on the form by taking a sample of the students have reached about 40 students at a rate of about 13 students from each level and after the confirmation of the success of the survey and the lack of vague questions or inaccurate data were collected.

Includes research in the form finalized five parts:

Section I: Form 1

This section contains a number of questions to gather the data necessary to measure the independent variables in this study include the level of those that belong to him in the student section variables, and social status, economic status, and monthly income of the family.

Section II: Form 2

Special standards physical part: standards and includes physical form and the presence of bone defect and other questions related to bones and body shape.

Section III: Form 3

Include questions related to the nutritional status of the number of meals, type and method of cooking followed what your favorite food and what does not prefer, as well as exposure to the sun and coffee and soft drinks.

Section IV: Form 4

Retrieve food form 24 hours to be retrieved 24 hours prior to the day of filling out the form.

Section V: Form 5

Include food history form for each student depending on the different food groups.

Measuring research variables:

This section describes how to measure the research variables used in the study:

First, the form of social / economic

(1) **Marital status:** The marital statuses of the student nominal scale of measurement categories are married, and unmarried. The figures given discriminatory categories 1 and 2, respectively.

(2) **The educational level of the father and mother:** Educational level was measured arrange scale consists of seven degrees is my mother, and reads and writes, elementary, and intermediate, and secondary, and university degree, and graduate and those ranks are given digital weights: 1.2, 3, 4.5, 6, 7 respectively

(3) **Job or the work of father and mother:** The measurement function of the father or husband to arrange scale consists of eight grades is not working, dealer, employee, teacher, doctor and so on and those ranks are given digital weights: 1, 2.3, 4, and 5.6, respectively.

(4) Income: The income measure by less than 2000 riyals, from 2000-3000 riyals more than 3000-4000 riyals, more than 5000-6000 riyals, more than 6000-7000 riyals, more than 8,000 riyals, and finally other sources of income to remember and given her the numbers 1, 2, 3.4, 5 and 6.7 respectively. Has been divided into (less than 3,000 riyals) low-income, and (the average income from 3000 to less than 6,000 riyals), and (high income from 6000 to less than 9,000 riyals), and (a distinct income of 9000 riyals and above).

Second: Social level:

The equation was used to measure the level of social research sample for the students and it calculates the level of education, type of work or employment for family members. Father education + mother's education + work father + mother work = social level to be predictable, and then are collected points and are divided social level as follows: low social level (9 or less) medium social level (9-18) high social level (18-19).

Third: the physical form metrics:

Therefore as to measure the height, weight, and body mass index (BMI) and arm circumference, and skin thickness, and arm muscle circumference, and abdominal circumference, and the level of hemoglobin in the blood (Shin et al. 2012).

Length: Samples were taken Find lengths using a measuring tape after it has been installed on the wall after that measured 50 cm distance from the bottom and recorded measurements to the nearest 0.5 cm.

Weight: Members were of the research sample weight using a digital balance sensitive and taken into account when measuring student wearing clothes that are lightweight and without shoes, and recorded measurements to the nearest 0.5 cm. **Body Mass Index (BMI):** The best standard for measuring fat stock under the skin is the body mass index, or index, which is

body weight in kg divided by the height in the box which reflects the amount of fat in the body and the base calculations to find the index is the weight in kg / height (m²), less than 18.5 (thinnest), from 18.5 to 24.9 (normal weight), from 25 - 29.9 (overweight) and 30 (obesity).

Fourth: retrieving food form 24 hours:

One of the most is prevalent and easy ways and relies on the knowledge of the amount of per capita intake of food during the past 24 hours and compared to international recommendations allowed (Shin et al. 2012). Has been taking three days to get to know affordable food was taking the average intake was food analysis (24) hours by food balance program and then compares the average intake of food recommendations allowable and measured as follows: If the intake of food is less than 60% shall be consumption diet inadequate, and if the intake of food from 60% to 89% is described as the average consumption, and if the intake of food from 90% to 110% is described as a dietary consumption of natural and, if taken from food is more than 110% is described as food consumption plus (Shin et al. 2012).

Fifth: Form food history:

Food habits prevailing among that the students and used to obtain information on the quality (not quantity) for different food groups do you eat each day or a week or a month or a year, or rarely. These groups are the meat and alternatives group and milk and a range of vegetables, fruits and breads, cereals and other foods and fast food group.

3. Results

The results of the current study Table (1) showed that most of the students (83%) and (67%) had moderate to high social level and moderate to high family income. Also Table (1) represented the background characteristics of the study sample (86%) of the whole sample were single.

Table (1): Sample characteristics

Social level	low	Moderate	High	T	P
Numbers	35	123	42	2.014	0.023
%	18%	62%	21%		
Family income	Low (<4.000SAR)	Moderate (4.000-10.000SAR)	High (>10.0000SAR)	T	P
Numbers	15	134	51	3.1	0.015
%	8%	67%	26%		
Marital status	Single	Married			
Numbers	171	29			
%	86%	15%			

The sample consists of 400 (200 girl students and 200 there mothers). Table (2) represented anthropometric measurements of the study participants. The results found that mean of weight, length and BMI

of total sample were (65.51 kg), (159.9 cm²) and (25.7 kg/m²) respectively. There was a statistical significant difference between students and their mothers in relation to the mean weight and height (p<0.05).

Table 2: weight, height and BMI of the participants by motherhood

variables	Girl Students (n=200) (Mean ± S.D.)	Their mothers (n=180) (Mean ± S.D.)	Total (n=360) (Mean ± S.D.)	T	P- value
Weight (Kg)	59.46 ± 10.92	71.5 ± 8.58	65.51 ± 11.52	2.13	< 0.019
Height (cm ²)	160.68 ± 5.87	159 ± 7.02	159.9 ± 6.51	3.14	< 0.001
BMI (kg/m ²)	23.01 ± 4.05	28.39 ± 3.98	25.7 ± 4.08	2.2	0.029

BMI: body mass index

Table (3) illustrated that most of the girl students fill in the underweight and normal category (68%). Overweight and obese subjects represented 24% and 9% of the girl students respectively. Fifty two percent of their mothers have obesity; while (42%) fill in

normal and overweight category. There was a significant difference between the percentage of girl students and their mothers of all categories for BMI ($p < 0.001$).

Table 3: BMI distribution for level 3, level 5 and level 7 college students

BMI (kg/m ²)	Girl students (n=200) # (%)	Their mothers (n=200) # (%)	Total (n=400) # (%)	Chi Square	P- value
Underweight (<18.5)	74 (37)	13 (7)	87 (21.75)	18.6	0.000
Normal (18.5-24.9)	61 (31)	27 (14)	88 (22)	16.4	>0.001
Overweight (25-29.9)	47 (24)	56 (28)	103 (25.75)	19.5	0.000
Obesity (≥30)	18 (9)	104 (52)	122 (30.5)	18.3	0.000

Table (4) showed that the food consumption for the girl students and their mothers. Most of the sample takes three meals (54.5%), and some of them (42%) deleted one meal per day, about (17.3%) deleted dinner and (16.3%) deleted breakfast about (33%) takes tea directly after meals, while (62%) didn't so. Regarding

the amount of salt in their food, more than (59%) of the all sample consume normal salt in their food, while (30%) consume little salt in their food. There was no significant difference between the girl students and their mothers in terms of frequency of food consumption.

Table 4: Food consumption for girl students and their mothers

Food consumption questions	Girl students n=200 (%)	Their mothers n=200 (%)	Total n=400 (%)	Chi Square	P- value
The number of daily meals intake				5.1	<0.10
one	7 (3.5)	4 (2)	11 (2.8)		
Two	73 (37)	96 (48)	169 (42)		
Three	109 (54.5)	97 (48.5)	206 (51.5)		
More three	11 (6)	3 (2)	14 (4)		
Deleted meal				4.3	<0.21
Breakfast	31 (15.5)	34 (17)	65 (16.3)		
Lunch	24 (12)	11 (6)	35 (9)		
Dinner	18 (9)	51 (26)	69 (17.3)		
Do you take tea after meals directly				3.3	<0.35
Yes	43 (22)	89 (45)	132 (33)		
No	137 (69)	111 (56)	248 (62)		
The amount of salt in your food				4.5	<0.200
salt Increase	9 (5)	4 (2)	13 (3)		
Normal salt	158 (79)	81 (41)	239 (59.8)		
Little salt	33 (17)	86 (43)	119 (30)		
Without salt	---	29 (15)	29 (7)		

Table (5) showed that important practices associated with bone health for example sunlight exposed and physical activity. It can be found that 82% from girl students' exposed to sunlight, in contrast only 12% from their mothers sunlight exposed. 93% of

mothers and 41% of girl students claimed that didn't do physical activity. There was significant difference between the girl students and their mothers in two terms of the important practices associated with bone health.

Table (5): Some of the important practices associated with bone health for girl students and their mothers

	Girl students n=200 (%)	Their mothers n=200 (%)	Total n=400 (%)	Chi Square	P- value
Did you exposed to sunlight				11.3	0.000
Yes	163 (82)	23 (12)	186 (46.5)		
Rarely or not	37 (19)	177 (89)	214 (53.5)		
Did you do Physical activity (equivalent to 30 min/ day)				12.5	0.000
Yes	118 (59)	15 (8)	133 (33.3)		
Rarely or not	82 (41)	185 (93)	267 (66.8)		

Table (6) showed a weekly consumption of impotent food groups for the healthy bones and dietary habits of the samples. A weekly consumption of fruits and vegetables was usually high. Approximately 55%

and 47% of girl students and 51% and 55% of their mothers reported consuming of fruits and vegetables for everyday, while approximately half of the sample divided between non-consuming or a few consumption.

Table (6): Dietary habits of the sample by motherhood

Parameters		Girl students n=200 (%)	Their mothers n=200 (%)	Total n=400 (%)	Chi Square	P- value
Consumption of fruits in a week	1-2 times	52 (26)	46 (23)	98 (24.5)	6.5	<0.1
	3-4 times	12 (6)	16 (8)	28 (7)		
	5-6 times	31 (16)	45 (23)	76 (19)		
	Everyday	71 (35.5)	80 (40)	151 (37.8)		
	Never	34 (17)	13 (7)	47 (11.8)		
Consumption of fresh vegetables in a week	1-2 times	54 (27)	43 (21.5)	97 (24.3)	5.5	<0.1
	3-4 times	18 (9)	34 (17)	52 (13)		
	5-6 times	15 (8)	21 (11)	36 (9)		
	Everyday	68 (34)	80 (40)	148 (37)		
	Never	45 (23)	22 (11)	67 (16.8)		
Consumption of meat in a week	1-2 times	31 (16)	81 (41)	112 (28)	9.2	<0.2
	3-4 times	22 (11)	49 (25)	71 (17.8)		
	5-6 times	13 (7)	8 (4)	21 (5.3)		
	Everyday	60 (30)	37 (19)	97 (24.3)		
	Never	74 (37)	25 (13)	99 (24.8)		
Consumption of milk and dairy products in a week	1-2 times	23 (12)	36 (18)	59 (14.8)	10.5	<0.1
	3-4 times	41 (21)	39 (20)	80 (20)		
	5-6 times	12 (6)	11 (6)	23 (5.8)		
	Everyday	83 (42)	79 (40)	162 (40.5)		
	Never	41 (21)	35 (18)	76 (19)		
Consumption of fishes in a week	1-2 times	60 (30)	79 (40)	139 (34.8)	15.5	>0.05
	3-4 times	28 (14)	43 (22)	71 (17.8)		
	5-6 times	--	--			
	Everyday	---	---			
	Never	112 (56)	78 (39)	190 (47.5)		
Consumption of eggs in a week	1-2 times	91 (46)	75 (38)	166 (41.5)	6.23	<0.1
	3-4 times	31 (16)	58 (29)	89 (22.3)		
	5-6 times	24 (12)	19 (10)	43 (10.8)		
	Everyday	43 (22)	28 (14)	71 (17.8)		
	Never	11 (6)	20 (10)	31 (7.8)		
Consumption of chickens in a week	1-2 times	55 (28)	46 (23)	101 (25.3)	20.4	>0.01
	3-4 times	69 (35)	102 (51)	171 (42.8)		
	5-6 times	---	---			
	Everyday	---	---			
	Never	76 (38)	52 (26)	128 (32)		
Consumption of soft drinks in a week	1-2 times	13 (7)	36 (18)	49 (12.3)	16.2	>0.05
	3-4 times	25 (13)	18 (9)	43 (10.8)		
	5-6 times	55 (28)	26 (13)	81 (20.3)		
	Everyday	76 (38)	54 (27)	130 (32.5)		
	Never	31 (16)	66 (33)	97 (24.3)		
Consumption of fast food in a week	1-2 times	40 (20)	62 (31)	102 (25.5)	6.8	<0.1
	3-4 times	68 (34)	48 (24)	116 (29)		
	5-6 times	33 (17)	12 (6)	45 (11.3)		
	Everyday	9 (5)	3 (2)	12 (3)		
	Never	50 (25)	75 (38)	125 (31.3)		
Consumption of citrus fruits food in a week	1-2 times	52 (26)	50 (25)	102 (25.5)	5.2	<0.3
	3-4 times	22 (11)	25 (13)	47 (11.8)		
	5-6 times	19 (10)	30 (15)	49 (12.3)		
	Everyday	68 (34)	77 (39)	145 (36.3)		
	Never	39 (20)	18 (9)	57 (14.3)		
Consumption of Soybean products in a week	1-2 times	14 (7)	21 (11)	35 (8.8)	6.9	<0.1
	3-4 times	--	--			
	5-6 times	--	--			
	Everyday	--	--			
	Never	186 (93)	179 (90)	365 (91.2)		
Consumption of Brown bread in a week	1-2 times	22 (11)	29 (14.5)	51 (12.7)	17.1	>0.05
	3-4 times	17 (8.5)	21 (10.5)	38 (9.5)		
	5-6 times	23 (11.5)	29 (15)	52 (13)		
	Everyday	91 (45.5)	102 (51)	193 (48.2)		
	Never	47 (23.5)	19 (10)	66 (16.5)		

Table (7) showed that the pathological conditions associated with bone. More than 50% of mothers and about 12% from girl students complain from Pain in the Arthritis, while 49% of mothers and 17% from girl students complain from pain in the bones. While lower back pain complains of them about 38% of mothers and 10.5% of girl. About 56%

of mothers and about 16% from girl students complain from difficulty in fast motion, while 27.5% of mothers and about 7% from girl students complain from difficulty walking regularly. Significant difference between the girl students and their mothers in two terms of pathological conditions associated with bone $P < 0.05$.

Table (7): Pathological conditions associated with bone.

Pathological condition	Girl students (%)	Their mothers (%)	Total (%)	Chi Square	P- value
Pain in the bones	33 (17)	98 (49)	131 (32.8)	11.4	>0.05
Pain in the Arthritis	25 (12.5)	101 (50.5)	126 (31.5)		
Low back pain	21 (10.5)	76 (38)	97 (24.3)		
Motion					
Difficulty in fast motion	32 (16)	113 (56.5)	145 (36.3)	10.7	>0.05
Difficulty walking regularly	13 (7)	55 (27.5)	68 (17)		
Osteoporosis	—	29 (14.5)	(7.3) 29		

From Table (8) showed that the average intake of protein for all the research sample students was 59.3 gm of students and this exceeds the international food daily recommendations, which amounted to (46 g / day) have found that students who received 128.9% of the daily dietary recommendations proportion of protein. Therefore, it can be found that the nutritional status of students of the protein are excellent, but the average daily intake of protein, more than the daily dietary recommendations.

Average intakes of vitamin (C) for all sample students was 94.6 mg for female students, and this exceeds the international dietary recommendations daily which amounted to (75 mg / day) was found to be the students who received 126% of the daily dietary recommendations proportion of vitamin (C). Therefore it can be found that the nutritional status of students of the vitamin (C) is excellent, but the average daily intake of it more than daily dietary recommendations.

The average intake of vitamin A for all the research sample students was 470.5 micro gm This fits with international dietary recommendations daily to some extent, which amounted to (800 micro gm / day), where he compared the average cited students from vitamin A international food recommendations permitted, it can be found that the students have won their 58.8% of international dietary recommendations daily percentage of vitamin A. Therefore it can be found that the students have access to most of the food needs depending on the international recommendations of this vitamin are allowed.

That the average intake of sodium (Na) for all the research sample students was 3.1 micro gm for students and this exceeds the international dietary recommendations daily, which amounted to (2.2 micro gm / day) have found that the students who received 140.9% of the daily dietary

recommendations proportion of sodium so it can be argued that the nutritional status of students from high sodium.

The average intake of calcium(Ca) for all the research sample students was 601.3 mg, and this at least for international dietary recommendations daily, which amounted to (1000 mg / day). It can be found that the students who received 60% of the daily dietary recommendations of calcium so it can be argued that the students do not have access to food needs depending on the international recommendations of calcium and allowed this, although it was indicated that the presence of a severe shortage of female students at the level of calcium intake.

Average intake of phosphorus (P) for all the research sample students was 645.2 mg, and this fits with the international dietary recommendations daily to some extent, which amounted to (700 mg / day) where that when compared to the average cited students of phosphorus international food recommendations were allowed. Therefore it can be found that the students had won their ratio 92.2 % of the dietary recommendations of the International Journal of phosphorus. This ratio is an excellent so it could be argued that students have access to food needs depending on the international recommendations of this vitamin are allowed and this showed that the students have access to adequate amounts of phosphorus.

The average intake of magnesium (Mn) for all the research sample students was 151.8 mg, and this at least for international dietary recommendations daily, which amounted to (320 mg / day) was found that students who received 47.4% of the daily dietary recommendations proportion of magnesium. Therefore, it could be argued that the students do not have access to food needs depending on the

international recommendations of magnesium and allowed this, although it did indicate presence of a severe shortage of female students at the level of intake of magnesium.

From the above results it was clear that the proportion of the consumption of protein, phosphorus, sodium and vitamin C > 90%, while calcium, magnesium, vitamin A < 60%.

Table 8: Food 24 hours

RDA for nutrients	RDA	Average	% RDA	SD
RDA of protein	46 g	59.3	128.9	6.43
RDA of vit. C	75 mg	94.6	126	3.38
RDA of Na	2.2 µg	3.1	140.9	0.14
RDA of Ca	1000 mg	601.3	60	28.6
RDA of p	700 mg	645.2	92.2	29.3
RDA of vit. A	800 µg	770.5	96.3	15.38
RDA of Mg	320 mg	151.8	47.4	26.54

RDA, Recommended daily/dietary allowance; **SD**, Standard deviation

4. Discussion

National Dairy Council (1989) reviewed a number of studies indicating that gender, race, genetics, calcium intake, other nutritional factors, exercise and overall health may affect peak bone mass and ultimately osteoporosis. However, most studies of risk for osteoporosis reviewed only one or two factors. **Cooper, (1989)** examined a number of research studies on osteoporosis risk and developed a questionnaire to help assess the number of risk factors an individual has. If people know their controllable risk factors for osteoporosis early in life, they may be able to take preventive steps by modifying certain lifestyle aspects (**Agustina and Susiyanti, 1996**).

Therefore, we studied the dietary habits of girls at the university stage and their mother's proportion of worker habits and genetics. Women were more display of vulnerability, as well as measuring the amount of calcium intake per day and it was located in many of the foods that have been measured by the study of food history for girls and their mothers. Moreover the studied of some of the habits that affect the level of calcium is taken daily, such as exercise and some wrong eating habits, as well as to identify the presence of some pathological cases of osteoporosis.

Insufficient bone mass and impaired bone mineralization increases the risk of fractures at considerable cost and loss of quality of life. Because bone loss is not fully reversible, the most effective strategies for reducing osteoporosis should focus on prevention, with nutrition playing a key role (**Caballero (2005)**).

The current data demonstrated that most of the girl students were under the normal body weight. Underweight girl students represented 37% of the sample whereas, 24% were overweight and 9% were obese. In contrast most mothers were overweight 52%, while only about 7% under the normal body weight. But some results suggests that the individuals with

small body frames or those who were excessively thin have an increased risk of osteoporosis due to a lower overall skeletal reserve to draw on for calcium needed to offset the annual loss of bone that occurs later in life. And although higher body weight is typically associated with a greater skeletal mass, obese individuals may sequester nutrients needed for skeletal health, such as vitamin D, in adipose tissue (**Caballero (2005)**). Also **Rizzolia et al. (2014)** reported that lower fitness in old age was associated with greater weight loss and loss of lean mass than with high fitness. Therefore, we note that the rate of 21.75% underweight, and 30% of obese at risk of osteoporosis.

These findings were consistent with the results of similar studies. For example **Jafar et al. (2012)**, found that 22.6% of the students were overweight and 11.6% were obese. Another results **Al-Rethaiaa et al. (2010)** found that 21.8% of the students were overweight and 15.7% were obese.

The results of our study showed that most of the samples have three meals per day 51.5%, and about 42% have two meals per day. An individual who deleted one meal, some of them deleted the dinner 17.3%, and others deleted breakfast 16.3%.

Al-Rethaiaa et al. (2010) and Jafar et al. (2012) are reported that most of the students have irregular meals with two main meals per day including breakfast. But **Jafar (2014)** reported that the adolescents didn't consume breakfast.

Vitamin D nutrition plays an important role in determining bone health. (**Ghobadi and Hoseini, 2014**) Vitamin D is obtained either from the diet or by synthesis in the skin under the action of sunlight (**Prentice, 2004**).

The results reported that 82% from girl students' exposed to sunlight during this and go to the university but only in the rest of the year, they do not offer the sun,, in contrast only 12% from their mothers sunlight exposed. 93% of mothers and 41% of girl students

claimed that didn't do physical activity. Also **Jafar (2014)** similar results were reported that the students lacked a fixed plan for exercise. Despite off during growth of the skeleton in the first 20 years of life or so, physical activities contribute to increased bone mass and strength, in addition to a good diet, exercise also contributes to the development of healthy bones (**John, 2009**) and (**Ghobadi and Hoseini, 2014**) and In postmenopausal women, physical activity programs also serve the all-important role of maintaining bone mass (**U.S. Department of Health and Human Services, 2004**). So find risk for that didn't exposed to sunlight and didn't have Physical activity.

In this study it can be found that low level consumption of fruits, vegetables and citrus fruits among the girl students and their mothers, It was 37.6%, 37% and 36.3% respectively for the samples consumption those food every day, while 11.6%, 16.6% and 14.3% never eating the fruits, vegetables and citrus fruits respectively. This may be due to during school times is common and might be explained by several factors including exposure to unhealthy foods, their autonomy to select and intake the preferable, favorable snacks, eating away from home and lack of time **Fitzgerald et al. (2010)** and **Shokrvash et al. (2013)**.

Huncharek et al. (2008) reported that high calcium intakes by children through adolescence are considered optimal for skeletal development compared to the lower amounts needed by adult. Calcium intake of adolescents was associated with availability of milk with meals (**Larson et al. 2006**) dairy and calcium.

Our study demonstrated that 40.5% consumption of milk and dairy products every day, while the rest of the sample while the rest of the sample consumed dairy slightly during the week between the lack of consumption or limited consumption. There is a positive relationship between calcium intake among adolescents and food inverse relationship between calcium and soft drinks and fast food (**Larson et al 2006**).

The proportion of the samples in the present study consuming fast food more than three times per week was 34% for girl students and 24% for their mothers. Similar study reported same results **Al-Rukban, (2003)** and **Jafar, (2014)**.

Most of the samples in this study consumption soft drinks between everyday or five to six times per week.

Fish meat contained phosphorus, magnesium, vitamin D, vitamin A, and others. (**Dias et al. 2003**) and reported this is an important vitamins for the bones, as reported **Caballero (2005)**. **Dias et al. (2003)** "Vitamin content of fish and fish products consumed in Portugal".

Inhibitors of calcium absorption such as phytates and oxalates are abundant in the vegetarian diet and retard the absorption of dietary calcium (**Ghobadi and Hoseini, 2014**). Phytates can be found in cereals and grains. In our study investigated that in brown bread, we found that 48.3% like to eat it every day. So this finding cans inhibitor absorption of dietary calcium.

In this study, it can be found that more than half of the sample of mothers complains of pain in the bones, joints and difficulty in fast motion and about one-third of a sample of mothers complains of difficulty in walking regularly and lower back pain. We also found a significant number of students complaining of the same pains. Some research has attributed some of these pains to obesity as stated in **Shiri et al. (2009)**.

In this study, most of the students animate the average social level was the level of average income. It has been found that whenever the level of economic and social level is high whenever calcium and dairy products high among female students and their mothers consumption. It was agreed with the result that it was the highest calcium consumption among children, according to the level of education of the mother. Moreover, the habits is important extension work programs for mothers as well as mothers of the future, especially because they also take that into account during university education Nutrition and Food Science Department Students (**Abdulrahman and Nisreen, 2013**) and (**Larson et al. 2006**). Also **Reicks et al. (2011)** parental education should focus on increasing awareness regarding adequacy of calcium intake and related health risks. Predictor of mothers' nutrition knowledge and health attitude scores (**Verecken, et al. 2010**). Several studies have also shown that perceived parental modeling can influence food intake of adolescents (**Martens, et al. 2005**).

Al-Othaimen and Villanueva (1988) and **Shaaban et al. (2009)** they found the average intakes of vitamin (c) for all sample students was 126% of the daily dietary recommendations of vitamin (c) so we can say that the nutritional status of students of vitamin (c) are excellent, but the average daily intake of it more than the daily dietary recommendations. From this results, where these studies have shown that the consumption of vitamin C among female students was lower than the international recommendations permitted.

The average intake of vitamin A for all the research sample were students at 58.8% of the international dietary recommendations of the daily vitamin A so we can say that students do not have access to most of the food needs according to international recommendations permitted of this vitamin. This is consistent with some previous studies, including the study **Shaaban et al. (2009)** who found a

decreased in the amount of the daily intake of vitamin A.

That the average intake of sodium for all the research sample were students at 140.9% of the daily dietary recommendations of sodium so it can say that the nutritional status of students from high sodium. The agreement of this result with some previous studies, including the **Shaaban et al. (2009)** who explained that excess consumption of fast food are widespread among young people and eat sauces and pickles, as well as soft drinks, where the increased intake of these foods increases the sodium intake rate. The average intake of calcium for all the research sample students was 60% of the daily dietary recommendations of calcium.

Average intake of phosphorus for all research samples students were increased by 92.2% from international dietary recommendations daily phosphorus this is an excellent ratio. Some results in previous studies have showed that excessive intake of phosphorus significantly among female students **Shaaban et al. (2009)**.

The average intake of magnesium for all the research sample students were up 47.4% of the daily dietary recommendations of magnesium so it could be argued that the students do not have access to food needs according to international recommendations allowable magnesium Although this rate, it indicates the presence of a severe shortage when the students in the level of intake of magnesium. This is not consistent with the stated **Shaaban et al. (2009)** that the average consumption of the sample element magnesium was good. **Caballero (2005)** showed that all previous very important nutrient for bone health.

It is already clear that the students have a shortage in the level of calcium, magnesium, vitamin A and an increase in the rate of consumption of sodium consumption. This would have an impact on bone health.

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