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## DIETING PRACTICES AMONG STUDENTS IN AHFAD UNIVERSITY FOR WOMEN (SCHOOL OF HEALTH SCIENCES)

### ABSTRACT

The present study was conducted in Ahfad University for Women during the period from June 2012 to March 2013 to assess the dieting practices among the students of the School of Health Sciences. The study objectives are: to find out prevalence of dieting among the students of the School of Health Sciences. Identify reasons behind dieting. Find out the relationship between the socio-demographic factors and dieting among the students and to Identify methods used for dieting. All the students who were on diet during the study period in addition to those who have experienced dieting before were included in the present study. They were found to be 100 students out of 419 students who were enrolled in the 2<sup>nd</sup> to 5<sup>th</sup> years. Those who were at the first year (freshman) were excluded from the sample due to difficulty to locate them because they were scattered among the other schools. Data was collected using a questionnaire and anthropometric measurements. The questionnaire was used to gather information about the participants and the socio-demographic data of their families, their dieting behavior and their food habits; in addition to the physical activities they performed. Whereas, the anthropometric measurements were taken to measure height, weight; BMI and waist to hip ratio. Other data was collected from books scientific magazines, previous researches, articles and from the internet. Data were analyzed by the computer using the Statistical Package for Social Sciences (SPSS) and presented in the form of tables showing frequencies and percentages. The result of the study indicated that 26.6% the students of the School of Health Sciences had practiced dieting before or were still on diet during the study time.

Most of them at their final year and they said that they have involved in dieting for better figure clearer skin and energy. The majority of the participants (60%) practiced dieting to reduce their weight while the rest (40%) targeted weight gain. Most of those students tried dieting between 1-3 times. Those seeking weight losses were found to use low carbohydrate diet. Few (12.5 %) of the students used readymade manufactured food for losing weight such as dieting tea, low fat (milk and yoghurt) and light (cake and biscuit) for diet and the majority (81.7%) did not use the readymade food. 29% of the participants were found to be under weight, 21% were obese and 26% were overweight according to the BMI classification. According to the waist circumference measurement, 49% of the participant had normal Waist circumference. 20% were at risk of chronic diseases and 31% at high risk of chronic diseases such as cardio vascular diseases, *diabetes mellitus* and hypertension as previous researchers indicated. While waist to hip ratio of most of the dieters were at normal range for females. The Study reached to the following: There is a need for strengthening the nutrition courses of curriculum of the School of Health Sciences to give more attention to the recommended healthy programs of dieting. Further researches are needed in this area at Ahfad University for Women besides conducting similar studies in other universities in the Sudan

## INTRODUCTION

Nearly everybody in the society is conscious of his/her weight at one time or another. For some, it is a serious struggle that is dealt with for weeks, months, years and even decades. This translates into a great deal of time and energy dedicated to one's appearance and health.

There are two aspects of dieting whether to loose or to gain weight, both of them can be either health beneficial or health hazard according to the method of diet and how it is implemented (Scott, 2005).

Dieting is a following of specific method of eating food in order to lose, gain or maintain weight, also it is an ongoing lifestyle that includes long-term changes, (e.g., changing to a low-fat diet or increasing physical activity), the unhealthy behaviors of dieting include fasting, skipping meals, intentional vomiting, binge eating (Heatherton, et al 1991).

### **Dieting among university students:**

It is widely common that students attend university are likely to experience a remarkable change in their lifestyle, including their diet (Papadaki et al, 2007). That life transitions form a major factor in influencing eating habits and influencing health as well (Lake et al, 2009), especially among young females because they are extremely concerned of weight and body shape, in addition there are unique experience of female students that may promote dieting, including fear of gaining weight, increased independence, changes of daily schedule, friend and/or peer influence and living away from home (Jaworowska and Bazylak, 2007).

Evidence study on dieting among adolescent female in Iceland, indicated a quit high frequency of female dieters; about half of the participants had been on a diet for one time or more, also other previous studies have shown similar frequency in dieting among adolescents female (Vignisdottir, 2012).

### **Types of dieting:**

There are various types of dieting differ in the percentage of fats, carbohydrates and the amount of calories, for example a low fat diet involves the reduction of the percentage of fat in one's diet, calorie consumption is reduced because less fat is consumed, other example is the low carbohydrates diet, but there are some studies stated that low carbohydrate diet can cause Ketosis which is the elevated level of ketone bodies in the blood that result from the depletion of glycogen stores in the liver (Strychar, 2006).

Very low calorie diets is another type of diet which provide 200 to 800 kilocalories, these diets are designed to include a full complement of vitamins, minerals, electrolytes, and essential fatty acids but no calories and they are usually given for a period of 12 to 16 weeks. Their major advantage is rapid weight loss. These types of diets may be indicated for persons who are overweight and obese, but when it comes to persons that are underweight they follow a high-energy diets which contain an additional 500 to 100 calories to the calories needed per day to meet total energy requirements (Mahan and Stump, 2008).

Some people do it the easy way by using diuretics which will help in weight loss by increasing the excretion of water. Diuretics can be used in the forms of medications, supplements, or herbs. Diuretics reduce overall body weight, but have no effect on an individual's total content of body fat. Laxatives that are often used for treating constipation also are used by people on diet to increase the frequency of defecation in order to lose weight, laxatives can be in form of foods, compounds or drugs (Strychar, 2006).

### **Healthy and unhealthy dieting practices:**

Most studies have shown that dieting behaviors are often unhealthy, due to unhealthy dieting practices among college students in young age, particularly adolescent and adult females because they are very conscious of their body image. These behaviors and attitudes may include self-induced vomiting, diuretics, use of laxatives, skipping meals, smoking cigarettes, the use of artificial sweeteners and using dieting pills (Yahia et al, 2011). However, dieting may involve healthy practices such as increasing the intake of fruits and vegetables, as well as decreasing fat and sugar intake and increased physical activity (Yanovski, 2005).

A previous study of the University of Kentucky in UK, investigated whether nutrition students use their own knowledge to apply it on their life or they only deliver information to other people, the result was most of the participants about 51% don't apply their knowledge in their life (Boyee, 2011).

### **Consequences of failure in dieting:**

Bad dieting practices can lead to failure in accomplishing the desired body weight which will make the person try to practice dieting several times throughout a lifetime, this will lead phenomenon called weight cycling or yoyo dieting which in term is the repeated bouts of weight loss and regain, occurs in males and females and is common in both overweight and non-overweight individuals, Thus there is a clear need for further research on yo-yo effect of weight cycling, which appears to result in increased body fatness and weight and decrease in body protein with the end of each cycle , not only these metabolic effects, but also psychological ones (Mahan and Stump 2008).

A previous study on dieting for weight loss, indicated that most of the participants believed that they would be greater than current weight if they did not diet; the majority of participants reported using physical activity to control weight, although only few exercised at a level that would promote weight loss some of the participants were consciously eating less, others use artificial sweeteners. The most prevalent weight loss behavior was smoking cigarettes and most unhealthy one was skipping breakfast. Collectively, results indicated female college students, regardless of their weight status, would benefit from open discussions with health educators regarding healthy and effective dieting practices to achieve and/or maintain a healthy body weight (Malinauskas et al, 2006). complied more with their parents, they were also more competitive with their peers. Perceived supportiveness of fathers was also found to set apart those who had never dieted. Girls who are just begun to diet differ from those who have never dieted, predominantly in terms of their perceived social influence. The forms of parental influence that distinguish the two groups differ in nature from the type of influence exerted by peers (Huon and Walton, 2000).

### **Justification:**

Young people, particularly adolescent and adult females, are very conscious of their body image; hence dieting to lose or to gain weight is common, it's important to determine the unhealthy weight reduction and gain practices. There is a need for studies using large representative samples of students to accurately assess the prevalence of these behaviors and attitudes, because unhealthy food affects in the school performance of these students which certainly will affect the educational level, and in order to stop these attitudes, such as

fasting, vomiting, diet pills, laxatives, cigarettes, diuretics and weight gain pills, the unhealthy behavior were reported in a substantial proportion of female (Grigg, et al, 2006).

In Sudan few studies concerning dieting among adults, compared with the numerous studies and surveys done in other countries particularly among the university students or youth. Therefore, there is a great need to focus on the dieting among this group.

**General Objective:**

The present study aims to assess dieting practices among the students of School of Health Sciences in Ahfad University for Women.

**Specific Objective:**

- To find out prevalence of dieting among the students of the School of Health Sciences.
- To identify reasons behind dieting
- To find out the relationship between the socio-demographic factors and dieting among the students
- To identify methods used for dieting
- Find out whether the students perform physical activities or not while dieting
- Know if they have visited diet centers, consultants (doctors, nutritionist) or not
- Investigate dieting practices, desired weight, and their eating habits.
- To draw recommendations for promotion of healthy diets and physical activity among the students of the School of Health Sciences.

**Methodology:**

The study is cross sectional study included participants from the School of Health Sciences who either were previously on diet or they were on diet during this study. The total number of the students of the School of Health Sciences was 419. It is important to note that all students of the University are females. The sample size was 100 female students. Data was collected using questionnaires and anthropometric techniques. The questionnaire was used to gather information about the participants and the socio-demographic data of their families, their dieting behavior and their food habits; in addition to the physical activities they performed. Whereas, the anthropometric were taken to measure height, weight; BMI BMI is calculated by dividing weight in kilo grams over the height in meters

square ( $Wt/Ht^2$ ). A waist circumference greater than 102 cm (40 in) indicate a high measure in men and women have a waist circumference greater than 88 cm (35 in) is also high (Brown, 1996). Waist to hip ratio is calculated by dividing waist over hip circumference. Data were analyzed by the computer using Statistical Package for Social Science (SPSS) and presented in the form of tables and percentages, a ratio of 0.8 or above indicates risk in women, and a ratio of 1 and above indicates risk in men (Mahan and Stump, 2008)..

### Results:

		Frequency	%
<b>Age (years)</b>	17-20	14	14.0%
	21-23	69	69.0%
	24-26	15	15.0%
	27 and above	2	2.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>
<b>School year</b>	Second	16	16.0%
	Third	26	26.0%
	Fourth	26	26.0%
	Fifth	32	32.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>
<b>Marital status</b>	Not married	60	60.0%
	Married	15	15.0%
	Engaged	25	25.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>

**Table 1: Basic information about the respondents who practiced dieting or were currently on diet:**

Table (1) illustrated that most of the respondents (69%) were in the age group of (21 - 23) years, 32% of the students were in their 5<sup>th</sup> year, 60% of the participants were single.

Responses		Frequency	%
<b>Residence</b>	Khartoum	26	26.0%
	Omdurman	56	56.0%
	Bahri	16	16.0%
	Outside Khartoum	2	2.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>
<b>Tribe</b>	North	58	58.0%
	South	2	2.0%
	East	2	2.0%
	West	29	29.0%
	Central	8	8.0%
	Foreigners	1	1.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>
<b>Number of family members</b>	1-3	8	8.0%
	4-6	44	44.0%
	7-10	41	41.0%
	> 10	7	7.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>
<b>Occupation of father</b>	Professional	9	9.0%
	Free business	44	44.0%
	Employee	40	40.0%
	Worker	4	4.0%
	Pension	2	2.0%
	Not working	1	1.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>
<b>Occupation of mother</b>	Professional	4	4.0%
	Free business	2	2.0%
	Employee	23	23.0%
	Worker	2	2.0%

	Housewife	62	62.0%
	Not working	7	7.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>
<b>Monthly income</b>	< 500 SDG	7	7.0%
	500-1000 SDG	15	15.0%
	1100-2000 SDG	34	34.0%
	> 2000 SDG	44	44.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>

**Table 2: Socioeconomic characteristics of the participants' families:**

Table (2) showed that 56% of the respondents lived in Omdurman and 58% of them were from Northern Sudan. The family members ranged from (4-6) which were slightly greater than the range (7-10). The participants whose fathers were business men were (44%) while Forty percent worked as employees. 62 % of the participant's mothers were house-wives. 44% of the respondents stated that their monthly income is more than 2000 SDG.



		Frequency	%
<b>Tried to be on diet</b>	Yes	100	100.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>
<b>Number of trials</b>	1-3	87	87.0%
	4-6	10	10.0%
	> 10	3	3.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>
<b>Reasons for failure</b>	No answer	39	39.0%
	Intolerance	14	14.0%
	Food	8	8.0%
	No time	30	30.0%
	Health causes	6	6.0%
	Fatigue	3	3.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>
<b>Currently on diet</b>	No	56	56.0%
	Yes	44	44.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>
<b>Type of dieting</b>	Weight reduction	60	60.0%
	Weight gain	40	40.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>
<b>Source of information about diet</b>	Internet	28	28.0%
	Health Center	15	15.0%
	Nutritionist	30	30.0%
	Friend	27	27.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>
<b>Method used in Dieting</b>	Low fat diet	21	21.0%
	Low CHO diet	10	10.0%
	Diuretics	1	1.0%
	Low calories	30	30.0%
	Pills	7	7.0%

	Laxatives	1	1.0%
	High CHO diet	16	16.0%
	High calories	14	14.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>

**Table 3: Dieting practices among participants:**

The above result (Table 3) indicated that 87% of the dieters tried dieting between 1 to 3 times. 30% of respondents considered that having no time to be involved in dieting as a reason for their failure to reach their goal in the diet they are practicing. 56 % of respondents were on diet during the study time. 60% of them dieted for weight reduction while the rest dieted for weight gain. 30% of the respondents got the information concerning diet from nutritionists while 28% found it on the internet. 30% of them used low calorie diet as a method for reducing weight while only one used laxatives.

	Pass		Light diet (juices, milk, sandwiches)		Medium diet (small amount of meats, vegetables, etc)		Heavy (meats, vegetables, kiswa, bread, etc)	
	F	%	F	%	F	%	F	%
<b>Break-fast</b>	0	.0%	23	23.0%	66	66.0%	11	11.0%
<b>Lunch</b>	3	3.0%	10	10.0%	43	43.0%	44	44.0%
<b>Dinner</b>	11	11.0%	46	46.0%	38	38.0%	5	5.0%
<b>Snacks</b>	15	15.0%	67	67.0%	16	16.0%	2	2.0%

**Table 4: Types of food eaten during meals**

Table 4 showed that 66% of those who have breakfast used medium diet. The respondents used heavy diets were slightly lower than those who used medium diet. 46% and 67% of the dieters' dinner and snacks respectively consisted of light diet.

		Frequency	%
<b>Method used for cooking food</b>	Boiling	30	30.0%
	Grilling	25	25.0%
	Frying	26	26.0%
	Steaming	4	4.0%
	All	15	15.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>
<b>Number of meals per day</b>	One	1	1.0%
	Two	41	41.0%
	Three	58	58.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>
<b>Snacks eaten per day</b>	Do not eat snacks	15	15.0%
	One	31	31.0%
	Two	36	36.0%
	Three	18	18.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>

**Table 5: Methods used for cooking and the numbers of meals and snacks per day**

Table (5) indicated 30% of respondents boil their food while 25% and 26% used grilling and frying respectively, more than half of the respondents 58% have 2 meals per day and 36% have 2 snacks per day

		Frequency	%
<b>Depending on readymade food manufactured for losing weight</b>	No	49	81.7%
	Yes	11	18.3%
<b>Total</b>		<b>60</b>	<b>100.0%</b>
<b>Type</b>	Dieting tea	4	6.7%
	Low fat milk	2	25.0%
	Dieting cake and biscuits	2	25.0%
	Low fat yoghurt	3	37.5%
<b>Total</b>		<b>8</b>	<b>100.0%</b>
<b>Depending on readymade food manufactured for weight gain</b>	No	21	52.4%
	Yes	19	47.6%
<b>Total</b>		<b>40</b>	<b>100.0%</b>
<b>Type</b>	High fat junk meals	1	5.3%
	Starchy foods	15	78.9%
	Fresh juices	3	15.8%
<b>Total</b>		<b>19</b>	<b>100.0%</b>
<b>Intake of multivitamins</b>	No	46	46.0%
	Yes	54	54.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>

**Table 6: Intake of readymade foods and supplements related to dieting by the participants**

Eighty percent of the respondents who wanted to lose weight used to use readymade food as shown in Table (6). 6.7% of them used dieting tea, while only 47.6% of the participants who wanted to gain weight used to use readymade food. 78% of them used starchy foods, more than half (54%) of the students used to take multivitamins.

		Frequency	%
<b>Peer interfere in dieting</b>	No	60	60.0%
	Yes	40	40.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>
<b>Get support from family and friends</b>	No	25	25.0%
	Yes	75	75.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>

**Table 7: Peer group interference and support from family and friends during dieting**

Table (7) illustrated that peers were found to interfere in the diets of 60% of participants, while 75% of them got support from their family and friends.

		Frequency	%
<b>Practicing of exercises</b>	No	31	31.0%
	Yes	69	69.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>
<b>Frequency</b>	Daily	16	23.2%
	2-3 times per week	44	63.8%
	2-3 times per month	9	13.0%
<b>Total</b>		<b>69</b>	<b>100.0%</b>
<b>Duration</b>	< 30 min	28	40.6%
	30 min	25	36.2%
	> 30 min	16	23.2%
<b>Total</b>		<b>69</b>	<b>100.0%</b>
<b>Place of exercise</b>	Home	32	46.4%
	Outdoors	24	34.8%
	GYM	12	17.4%
	All	1	1.4%
<b>Total</b>		<b>69</b>	<b>100.0%</b>
<b>Type of exercise</b>	Walking	48	69.6%
	Jogging	4	5.8%
	Swimming	1	1.4%
	Cycling	1	1.4%
	Aerobics	14	20.3%
	All	1	1.4%
<b>Total</b>		<b>69</b>	<b>100.0%</b>

**Table 8: Practicing of physical exercises by the participants**

Table (8) showed that 69% of the respondents practiced physical exercise. 63.8% of them practiced the exercise two-three times per week. 32.2% of the dieters performed physical exercise on daily base and 63.8 of them used to do that 2-3 times per week. For 13% of the dieters, practicing of physical exercises was a habit but they exercised only between 2-3 times per month. Those who practiced the

exercise for 30 minutes and more constituted 59.4 % of the dieters. 46.4% of the dieters used to execute their exercises at home and 34.8% of them executed them outdoors. But few visited the GYM (17.4%). Walking was preferred by the majority of participants (69.6%), 20.3% used to do aerobic exercises

	Never		Rarely		Sometimes		Often		Always	
	F	%	F	%	F	%	F	%	F	%
<b>Feel of guilty after overeating</b>	29	29.0%	12	12.0%	27	27.0%	13	13.0%	19	19.0%
<b>Worry keep on gaining when gain a kilogram</b>	30	30.0%	11	11.0%	20	20.0%	13	13.0%	26	26.0%
<b>Swing of mood several times a day</b>	11	11.0%	14	14.0%	35	35.0%	19	19.0%	21	21.0%

**Table 9: Personal feelings towards dieting**

The results (Table 9) illustrated that 29% of respondents feel guilty after over eating, 30% of them were found to be concerned about keep on gaining and only 11% have a stable mood during the day.

		Frequency	%
<b>Face problems when on diet</b>	No	59	59.0%
	Yes	41	41.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>
<b>Sort of problems</b>	Fatigue	12	30.0%
	Hunger	17	42.5%
	Health problems	7	17.5%
	Financial problems	4	10.0%
<b>Total</b>		<b>40</b>	<b>100.0%</b>
<b>Dieting difficult</b>	No	44	44.0%
	Yes	56	56.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>
<b>Reason behind dieting</b>	For a better figure	37	37.0%
	Clear skin and more energy	12	12.0%
	To be more attractive for the other sex	5	5.0%
	All of the above reasons	36	36.0%
	Other	10	10.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>
<b>Other drives for doing dieting</b>	For healthy life	7	7.0%
	For ideal weight	3	3.0%
<b>Total</b>		<b>10</b>	<b>100.0%</b>

**Table 10: The difficulties that faced the participants during dieting:**

Table (10) revealed that 59% of participants faced some problems while being on diet. 42% considered hunger a problem for them, while only 10% have financial problems. Also 56% of the respondents found dieting a difficult mission. 37% of them practiced dieting for better figure while only 5% wanted to be attractive for the other sex. 36% of them were found to be involved in dieting for a combination of



reasons. These reasons included (better figure, clearer skin, more energy and to be attractive for the other sex). While only 7% of the participants sought a healthy life and only 1% participant was found to be targeted an ideal body weight

		Frequency	%
<b>BMI</b>	Underweight (< 18.5 )	29	29.0%
	Normal (18.5-24.9)	24	24.0%
	Overweight (25-29.9)	26	26.0%
	Obese (> 30)	21	21.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>
<b>Waist circumference</b>	Normal < 80	49	49.0%
	At risk 80-87	20	20.0%
	At high risk > 88	31	31.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>
<b>Waist to hip ratio</b>	Normal $\leq$ 0.8	73	73.0%
	At risk > 0.8	27	27.0%
<b>Total</b>		<b>100</b>	<b>100.0%</b>

**Table 11: Anthropometric measurements of the participants:**

According to the BMI 29% of the participants were underweight while 21% were obese. 49% have a waist circumference of 80cm and less. The majority (73%) of dieters were found to have normal waist hip ratio (Table 11).

**Bivariate analysis (Correlations)**

			Monthly income								P value
			< 500 SDG		500-1000 SDG		1100-2000 SDG		> 2000 SDG		
			F	%	F	%	F	%	F	%	
<b>Number of meals per day</b>	<b>One</b>	1	100.0%	0	.0%	0	.0%	0	.0%	<b>0.003*</b>	
	<b>Two</b>	0	.0%	4	9.8%	16	39.0%	21	51.2%		
	<b>Three</b>	6	10.3%	11	19.0%	18	31.0%	23	39.7%		
<b>Total</b>		<b>7</b>	<b>7.0%</b>	<b>15</b>	<b>15.0%</b>	<b>34</b>	<b>34.0%</b>	<b>44</b>	<b>44.0%</b>		

\*(Significant P ≤ 0.05)

**Table 12: Relationship between number of meals per day and monthly income**

There is a significant association between number of meals per day and monthly income of the participant's family [(P > 0.05) (Table 12)].

		Doing exercise				P value
		No		Yes		
		F	%	F	%	
Type of dieting	Weight reduction	12	20.0%	48	80.0%	<b>0.004*</b>
	Weight gain	19	47.5%	21	52.5%	
<b>Total</b>		<b>31</b>	<b>31.0%</b>	<b>69</b>	<b>69.0%</b>	

\*(Significant P ≤ 0.05)

**Table 13: Relationship between physical activity and type of dieting**

A significant association was observed between exercising and type of dieting (P ≤ 0.05).

		Monthly income								P value
		< 500 SDG		500-1000 SDG		1100-2000 SDG		> 2000 SDG		
		F	%	F	%	F	%	F	%	
<b>Break fast</b>	<b>Light diet (juices, milk, sandwiches)</b>	3	13.0%	6	26.1%	6	26.1%	8	34.8%	<b>0.28*</b>
	<b>Medium diet (small amount of meats, vegetables, etc)</b>	4	6.1%	9	13.6%	24	36.4%	29	43.9%	
	<b>Heavy (meats, vegetables, kisra, bread, etc)</b>	0	.0%	0	.0%	4	36.4%	7	63.6%	
	<b>Total</b>	<b>7</b>	<b>7.0%</b>	<b>15</b>	<b>15.0%</b>	<b>34</b>	<b>34.0%</b>	<b>44</b>	<b>44.0%</b>	
<b>Lunch</b>	<b>Skip</b>	0	.0%	0	.0%	2	66.7%	1	33.3%	<b>0.67*</b>
	<b>Light diet (juices, milk, sandwiches)</b>	0	.0%	3	30.0%	2	20.0%	5	50.0%	
	<b>Medium diet (small amount of meats, vegetables, etc)</b>	5	11.6%	5	11.6%	15	34.9%	18	41.9%	
	<b>Heavy (meats, vegetables, kisra, bread, etc)</b>	2	4.5%	7	15.9%	15	34.1%	20	45.5%	
	<b>Total</b>	<b>7</b>	<b>7.0%</b>	<b>15</b>	<b>15.0%</b>	<b>34</b>	<b>34.0%</b>	<b>44</b>	<b>44.0%</b>	
<b>Dinner</b>	<b>Skip</b>	0	.0%	2	18.2%	4	36.4%	5	45.5%	<b>0.87*</b>
	<b>Light diet (juices, milk, sandwiches)</b>	5	10.9%	8	17.4%	13	28.3%	20	43.5%	
	<b>Medium diet (small amount of meats, vegetables, etc)</b>	2	5.3%	5	13.2%	15	39.5%	16	42.1%	
	<b>Heavy (meats, vegetables, kisra, bread, etc)</b>	0	.0%	0	.0%	2	40.0%	3	60.0%	
	<b>Total</b>	<b>7</b>	<b>7.0%</b>	<b>15</b>	<b>15.0%</b>	<b>34</b>	<b>34.0%</b>	<b>44</b>	<b>44.0%</b>	
<b>Snacks</b>	<b>Skip</b>	1	6.7%	2	13.3%	7	46.7%	5	33.3%	<b>0.84*</b>
	<b>Light (juices, milk)</b>	5	7.5%	11	16.4%	21	31.3%	30	44.8%	
	<b>Medium (milk, cake, etc)</b>	1	6.3%	1	6.3%	6	37.5%	8	50.0%	

	<b>Heavy (sandwich, milk, vegetables)</b>	0	.0%	1	50.0%	0	.0%	1	50.0%	
<b>Total</b>		<b>7</b>	<b>7.0%</b>	<b>15</b>	<b>15.0%</b>	<b>34</b>	<b>34.0%</b>	<b>44</b>	<b>44.0%</b>	

:\* (Not Significant P > 0.05)

**Table 14: Types of food taken during the day and income**

There was no significant association between the type of food taken by the participants during day and the monthly income of their families (P > 0.05).

		Source of diet								P value
		Internet		Health Center		Nutritionist		Friends		
		F	%	F	%	F	%	F	%	
<b>Dieting method followed</b>	<b>Low fat diet</b>	11	52.4%	4	19.0%	2	9.5%	4	19.0%	<b>0.15*</b>
	<b>Low CHO diet</b>	5	50.0%	2	20.0%	1	10.0%	2	20.0%	
	<b>Diuretics</b>	0	.0%	0	.0%	0	.0%	1	100.0%	
	<b>Low calories</b>	6	20.0%	5	16.7%	9	30.0%	10	33.3%	
	<b>Pills</b>	1	14.3%	1	14.3%	2	28.6%	3	42.9%	
	<b>Laxatives</b>	0	.0%	0	.0%	1	100.0%	0	.0%	
	<b>High CHO diet</b>	3	18.8%	2	12.5%	6	37.5%	5	31.3%	
<b>High calories</b>	2	14.3%	1	7.1%	9	64.3%	2	14.3%		
<b>Total</b>		<b>28</b>	<b>28.0%</b>	<b>15</b>	<b>15.0%</b>	<b>30</b>	<b>30.0%</b>	<b>27</b>	<b>27.0%</b>	

**Table 15: Relationship between method of dieting and the source of information concerning diet**

\* (Not Significant  $P > 0.05$ )

There was no significant association between methods of dieting and sources of information concerning dieting ( $P > 0.05$ ).

		Drives for doing dieting										P value
		For a better figure		Clear skin and more energy		To be more attractive for the other sex		All of these		Other		
		F	%	F	%	F	%	F	%	F	%	
<b>BMI</b>	<b>Underweight (&lt; 18.5 )</b>	11	37.9%	2	6.9%	1	3.4%	10	34.5%	5	17.2%	<b>0.48*</b>
	<b>Normal (18.5-24.9)</b>	7	29.2%	6	25.0%	2	8.3%	8	33.3%	1	4.2%	
	<b>Overweight (25-29.9)</b>	9	34.6%	3	11.5%	1	3.8%	12	46.2%	1	3.8%	
	<b>Obese (&gt; 30)</b>	10	47.6%	1	4.8%	1	4.8%	6	28.6%	3	14.3%	
<b>Total</b>		<b>37</b>	<b>37.0%</b>	<b>12</b>	<b>12.0%</b>	<b>5</b>	<b>5.0%</b>	<b>36</b>	<b>36.0%</b>	<b>10</b>	<b>10.0%</b>	
<b>Waist circumference</b>	<b>&lt; 80</b>	18	36.7%	6	12.2%	3	6.1%	17	34.7%	5	10.2%	<b>0.71*</b>
	<b>80-87</b>	4	20.0%	4	20.0%	1	5.0%	9	45.0%	2	10.0%	
	<b>&gt; 88</b>	15	48.4%	2	6.5%	1	3.2%	10	32.3%	3	9.7%	
<b>Total</b>		<b>37</b>	<b>37.0%</b>	<b>12</b>	<b>12.0%</b>	<b>5</b>	<b>5.0%</b>	<b>36</b>	<b>36.0%</b>	<b>10</b>	<b>10.0%</b>	
<b>Waist to hip ratio</b>	<b>≤ 0.8</b>	22	30.1%	11	15.1%	5	6.8%	27	37.0%	8	11.0%	<b>0.10*</b>
	<b>&gt; 0.8</b>	15	55.6%	1	3.7%	0	.0%	9	33.3%	2	7.4%	
<b>Total</b>		<b>37</b>	<b>37.0%</b>	<b>12</b>	<b>12.0%</b>	<b>5</b>	<b>5.0%</b>	<b>36</b>	<b>36.0%</b>	<b>10</b>	<b>10.0%</b>	

**Table 16: Relationship between reasons behind dieting and anthropometric measurements**

\* (Not Significant  $P > 0.05$ )

No significant association was observed between and BMI, waist circumference, WHR and drives for engaging in dieting ( $P > 0.05$ ).

		Type of dieting				P value
		Weight reduction		Weight gain		
		F	%	F	%	
<b>BMI</b>	Underweight (< 18.5 )	3	10.3%	26	89.7%	<b>0.00</b>
	Normal (18.5-24.9)	10	41.7%	14	58.3%	
	Overweight (25-29.9)	26	100.0%	0	.0%	
	Obese (> 30)	21	100.0%	0	.0%	
<b>Total</b>		<b>60</b>	<b>60.0%</b>	<b>40</b>	<b>40.0%</b>	
<b>Waist circumference</b>	< 80	11	22.4%	38	77.6%	<b>0.00</b>
	80-87	18	90.0%	2	10.0%	
	> 88	31	100.0%	0	.0%	
<b>Total</b>		<b>60</b>	<b>60.0%</b>	<b>40</b>	<b>40.0%</b>	
<b>Waist to hip ratio</b>	≤ 0.8	40	54.8%	33	45.2%	<b>0.05</b>
	> 0.8	20	74.1%	7	25.9%	
<b>Total</b>		<b>60</b>	<b>60.0%</b>	<b>40</b>	<b>40.0%</b>	

**Table 17: Relationship between types of dieting and anthropometric measurements**

\* (Significant  $P \leq 0.05$ )

A significant association was detected between BMI and BMI/waist circumference/WHR and type of dieting ( $P \leq 0.05$ ).

		Number of trials						P value
		1-3		4-6		> 10		
		F	%	F	%	F	%	
<b>Reasons for failure</b>	No answer	35	89.7%	2	5.1%	2	5.1%	<b>0.41*</b>
	Intolerance	10	71.4%	3	21.4%	1	7.1%	
	Food	7	87.5%	1	12.5%	0	.0%	
	no time	28	93.3%	2	6.7%	0	.0%	
		F	%	F	%	F	%	
	Health causes	4	66.7%	2	33.3%	0	.0%	
	Fatigue	3	100.0%	0	.0%	0	.0%	
<b>Total</b>		<b>87</b>	<b>87.0%</b>	<b>10</b>	<b>10.0%</b>	<b>3</b>	<b>3.0%</b>	

**Table 18: Relationship between reasons of failure to continue on diet\* and number of trials**

\* (Not Significant P > 0.05)

There was no significant association between the reasons behind failure in doing dieting and number of dieting trials (P > 0.05).



		On diet				P value
		No		Yes		
		F	%	F	%	
<b>Dieting method followed</b>	Low fat diet	11	52.4%	10	47.6%	<b>0.33**</b>
	Low CHO diet	6	60.0%	4	40.0%	
	Diuretics	0	.0%	1	100.0%	
	Low calories	17	56.7%	13	43.3%	
	Pills	5	71.4%	2	28.6%	
	Laxatives	0	.0%	1	100.0%	
	High CHO diet	12	75.0%	4	25.0%	
	High calories	5	35.7%	9	64.3%	
<b>Total</b>		<b>56</b>	<b>56.0%</b>	<b>44</b>	<b>44.0%</b>	
<b>BMI</b>	Underweight (< 18.5 )	14	48.3%	15	51.7%	<b>0.36**</b>
	Normal (18.5-24.9)	14	58.3%	10	41.7%	
	Overweight (25-29.9)	18	69.2%	8	30.8%	
	Obese (> 30)	10	47.6%	11	52.4%	
<b>Total</b>		<b>56</b>	<b>56.0%</b>	<b>44</b>	<b>44.0%</b>	
<b>Waist circumference</b>	< 80	26	53.1%	23	46.9%	<b>0.84**</b>
	80-87	12	60.0%	8	40.0%	
	> 88	18	58.1%	13	41.9%	
<b>Total</b>		<b>56</b>	<b>56.0%</b>	<b>44</b>	<b>44.0%</b>	
<b>Waist/hip ration</b>	≤ 0.8	36	49.3%	37	50.7%	<b>0.02*</b>
	> 0.8	20	74.1%	7	25.9%	
<b>Total</b>		<b>56</b>	<b>56.0%</b>	<b>44</b>	<b>44.0%</b>	

**Table (19) Relationship between participants the dieting method followed by the participants who were still on diet during the study and their anthropometric measurements**

\* (Significant  $P \leq 0.05$ )

\*\* (Not Significant  $P > 0.05$ )

There was no significant association observed between method of dieting, BMI, WC and the participants who were still on diet during the study time ( $P > 0.05$ ). However significant association observed between WHR and participants on diet now ( $P \leq 0.05$ ).

## DISCUSSION

Referring to the results it's clearly observed that all respondents in the study practiced diet, and most of them were adults (69% ages ranged between 21 -23 years), 32% in their fifth year and 60% were not married. Seeking better figure was the reason behind dieting for them, 36% dieted for clearer skin, more energy and to be attractive for the other sex, while only few were found seeking healthy life (Table 1 and 10).

More than half of the respondents (58%) were from northern Sudan and 56% live in Omdurman as in Table (2).

Being a Health Sciences Students is very beneficial regarding their diets. Their dieting was successful and 39% of them didn't fail. 87% of the participants dieted 1-3 times only and having no time was their reason for failure (30%), so basically they have good knowledge on what they were doing since the majority chose a low calorie diet, the right way for cooking their food, 58% of the dieters used to take have 3 meals per day, knowing that skipping meals could be a failure to their diet. For those who wanted to gain weight they chose the healthy ways, they did not depend on junk food. 78% of them use starchy foods, 30% of the participants went to a nutritionist for their diet, others 28% found it easier to use the internet as Tables (3 and 6) indicated.

Unlike a previous study at University of Kentucky in UK which investigated that whether nutrition students use their own knowledge to apply it on their life or they only deliver information to other people, the result was "most of the participants about (51%) don't apply their knowledge in their life" (Boyee, 2011).

In Table (8) 69% of the participants practiced exercise not just to lose weight but even practiced by those who wanted to gain weight, according to a previous study about dieting for weight loss, 80% of participants reported using physical activity to control weight, although only 19% exercised at a level that would promote weight loss (Malinauskas et al 2005).

Only few were found to have unhealthy behavior for losing weight, 1% of the participants used diuretics, 7% used pills in their diet and 54% used to take multi vitamins without the perception of the physicians. Previous studies indicated "some of the participants were consciously eating less others use artificial sweeteners, the most prevalent weight loss behavior was smoking cigarettes and most unhealthy was skipping breakfast" (Ibid).

Although 60% of participants suffered from peer interference, 75% of the participants got support from their families and friends (Table 7). A previous study indicated that both initiating dieters and those who never dieted could be distinguished most clearly by their peer and parents. Initiating dieters conformed and complied more with their parents, they were also more competitive with their peers. Perceived supportiveness of fathers was also found to set apart those who had never dieted. Girls who are just begun to diet differ from those who have never dieted, predominantly in terms of their perceived social influence. The forms of parental influence that distinguish the two groups differ in nature from the type of influence exerted by peers (Huon and Walton, 2000).

35% of the participant's mood sometimes swings during the day which indicates that they are under stress which may affect their diet (Table 9).

According to the BMI 29% of the participants were underweight while 21% were obese. 49% have a waist circumference of less than 80cm, 20% of the dieters were at risk of chronic diseases and 31% of them were at high risk of chronic diseases. As pointed by Han (1995) that "excess abdominal fat is a risk factor for developing heart diseases and other obesity related diseases". The majority (73%) of the dieters were found to have normal waist to hip ratio (Table 11).

The correlations showed that there was significant association between monthly income and the number of meals eaten per day (P value 0.003), while no significant association observed between monthly income and food eaten per day (Table 12 and 14).

These was a strong association indicated between BMI and waist circumference with the type of diet practiced [(P value 0.00) (Table 17)].

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