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Dietary Pattern of University Students: a case Study of the University of Juba. Sudan

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Abstract:

The analysis of dietary pattern gives a more comprehensive impression of the food consumption habits within a population. University admission provides the adoption of new behaviors which can affect the health of students. The objective of this study to assess the dietary pattern among undergraduate Sudanese University students, Sudan. As a cross-sectional research, the present study was conducted with the participation of 200 students (111males and 89females) from University of Juba, Sudan. Data were collected using pretested, structured self-administered questionnaire and dietary information were measured to determine dietary patterns.Weight, height, and body mass were measured. Data were analyzed using SPSS statistical package (version 21) and level of significance was set at $P<0.05$.

The Results show that the Mean age of respondents was 23.28 ± 2.53 years, with a higher proportion being females (55.5%, and 33% were simple financial

expenses in the month and 69% they drain the food 5 pounds Sudanese. Over half of the respondents (56.5%) consumed breakfast daily. Females were more likely to consume a daily lunch than males (88.8%and 80.2%, respectively). (P< 0.05). In contrast, males (67.6%) were more prone to a daily consumed dinner than females (21.4%) (P< 0.05). About 73 and 25% of the students consumed vegetables and fruit, respectively, on more than 3 day a week. Fast food was consumed significantly more (P<0.05) for more than 3days per week by females (66.29 %) than males (27.93%). Females were more likely to consume chocolates (43.82%), sweets (68.54%), soft drinks (31.46%) on more than three days per week than males (9%, 32.43%, 22.52%, respectively),(P<0.05). Majority of the students (61%) were of normal Body Mass Idex (BMI) (mean was 21.19±0.78), 25%, and 14% were underweight, and overweight/obese, respectively. The 24 hour recoll showed that the mean daily intakes of energy, and iron (females only) were less than the RDA (Recommended Dietary Allowances) values

Skipping of breakfast and eating fast foods are common among the study population. Highlights of the finding of the food intake pattern consist of cereals, legumes, and nuts, and lack of eating red meats, chicken, fish and fruits..

Regular nutrition education program by institution with emphasis on adequate dietary practices is recommended.

Keywords: Dietary Pattern, Sudan, Uiversity student.

Introduction

Dietary Pattern (DP) is general profile of food and nutrient consumption which is characterized on the basis of the usual eating habits. The analysis of dietary pattern gives a more comprehensive impression of the food consumption habits within a population. It may be better at predicting the risk diseases than the analysis of isolated nutrients or foods because the joint effect of various nutrients involved would be better identified [(1)] .Patterns of nutritional behaviors adopted in childhood and adolescents are mostly continued in adult life and increase the risk of development of many chronic diseases [(2)]. Transition from high school to university is a critical period for changes to occur in dietary habits, lifestyle and weight gain [(3,4,5,6)].The transition from adolescence to adulthood is an important period for establishing behavioral pattern that affect long-term health and chronic diseases risk. University students seem to be the most affected by this nutritional transition [(7)]. Studies have shown that adolescence leaving their parents and

living away from home attend college experience numerous health –related behavioral changes, which includes adoption of unhealthy dietary habits. These adopted habits are mostly attributed to drastic changes in the environment and resources available, frequent exposure to unhealthy foods and habits [3]. Several studies in developing and developed countries have shown that dietary behaviors of university students are poor, with low intake of milk, fruits and vegetables, and high intake of food rich in fat and carbohydrates. [8,9,5]

Due to the lack of knowledge in the Sudanese population especially in universities students tend to practice wrong eating habits such as fast foods, this sort of food has no value to their nutrition what so ever but during the past years students seem to have diverted from home cooked meals to university cafeterias [10,6] . As the foundation of Sudanese eating habits started in early childhood they paved the way for their current food choices. There are certain factors that leads to this, the most important one is the globalization phenomena that shows that there is a change in lifestyle and nutritional habits not only in Sudan but worldwide. Fast foods became the main diet taken by the Sudanese population, particularly among students at various levels of education [11].The objective of this

study was to identify the dietary pattern of University students, Faculty of Community Studies and Rural Development University of Juba.

Materials and Methods:

Design and Participant:

This was a cross sectional, descriptive study conducted on 200 students at the college of Community Studies and Rural development, university of Juba, Sudan (111 males and 89 females), This represented 26% of total students in the college of community studies and rural development (770 students) . The age of the students ranged between 18 and 26 years with a mean age of23.2.The data were collected during march to June 2005, through a questionnaire.

The questionnaire:

A self –reported validated was used to gather the data .Detailed information on the reliability and validity of the questionnaire has been published elsewhere [5].The questionnaire consisted of information on Socio- demographic characteristics(age, gender, expenditure and budget on food), information on the patterns of food such as number of meals consumed daily, meal patterns,

snacking habits, weekly food frequency consumption of food groups, and anthropometric measurements.

The dietary information's were investigated with a 24-hour diet recall (based on three consecutive days), and food frequency questionnaire [45]. In the 24-hour diet recall questionnaire, the students were asked to recall and report their consume food material during the previous 24 hour including drinks and dietary complements. The recall method for assessing food consumption in the following manner: upon obtaining information from the students and with due consideration of the standard requirements for each students, the relevant values were calculated from the raw and cooked food composition tables [46,47] .These tables present analysis of 100 g samples for all nutritional compositions (raw and cooked) used in various Sudanese dishes. The mean food intake values had been duly recorded, some items such as the amounts of food intake, i.e. Carbohydrates, proteins, and other nutrients were calculated and compared with the recommended dietary allowance (RDA) values.

Anthropometric measurements were taken with the respondents wearing light clothes and no shoes.

Weight was measured to the nearest 0.1 kg using seca scale, the scale was zeroed before the respondent stopped into it. The respondents were asked to remove any heavy items from their pockets, and remove any heavy items of clothing or apparel. thy were asked to look straight ahead and stay still on the scales .The body weight (kg)was measured to the nearest 0.1kg.

Height was measured in full standing position to the nearest 0.1 cm using a portable stadiometer [3]. Body mass index (BMI) ; was used to determine the nutritional status, it calculated as the weight in kilograms divided by the square of the height in meters. It is classified according to the World Health Orgaization 2000 {27} classification criteria for adults as underweight(BMI less than 18.5) normal (18.5- 24.9), overweight (25-30) ,and obese (BMI above 30) { 48} .

Ethical considerations:

The ethical permission to carry out the study was obtained from the Department of Nutrition and Health, College of Community Studies and Rural development, university of Juba, Sudan.

Inclusion and Exclusion criteria

Student of other college except the Juba university college of community studies and rural development will be excluded from the study .None of the studied female were pregnant or breast feeding at the time of the study .At the same time, the students who had diseases such as diabetes, hypertension, etc., were excluded from the study .

Statistical analysis:

The statistical analysis was performed using SPSS version 21. Chi- squared tests were used to determine the presence of association between gender and the variables. The data collected was also analyzed using simple description analysis such as percentages and frequency counts. The significance level was set at $P<0.05$.

Results:

Table -1 Shows that 55.5% of the students was males, 44.5% was females .And majority of them (80%) in the age group (12-23) years, 15.5% and 4.5% in categories (24-26),(18-20) years, respectively.

Table (1): Age and Sex distribuation of the samples

Sex	**Frequency**	**Percentage**
Male	111	55.50%
Female	89	44.50%
Total	200	100.00%
Age (years)		
18-20	9	4.50%
21-23	160	80.00%
24-26	31	15.50%
Total Mean age ±SD(years) 23.28±2.53	200	100.00%

Table 2- indicates painful monthly stipend students take him where he found that the 33% taking less than 150 pounds, and 47% deal (150-300) and 20% deal amount to more than 300 pounds. And expense the students daily on food as behavior 68% 5 pounds a day.

Table (2): Monthly Expenditure and Budget on food

Parameters	Frequency	Percentage
Monthly Expenditure:		
Less than 150 pound	66	33.00%
150-300 pound	94	47.00%
More than 300 pound	40	20.00%
Total	200	100.00%
Monthly budget:		
5 pound	138	69. 00%
5-10 pound	50	25.00%
10-15 pound	12	6.00%
Total	200	100.00%

The main meals and snack patterns of the students according to gender are showing in table 3. Regulars of meal were consumed by 45% of the students. 52% of the students ate three main meals in a day, and 14% ate more than three. Breakfast was consumed daily by more than half (56%); however, most of the students ate their breakfast at the university cafeteria (65%). Females were more likely to consume a daily lunch than males (88.8%and 80.2%, respectively) (P< 0.05). In contrast, males (67.6%) were more prone to a daily consumed

dinner than females (21.4%) (P< 0.05). Morning snacks were consume daily by 40% of the students, but Afternoon snacks were not a common habits among students, as only 12% of them regularly ate it. 30% of the students drank more than 8 cups of water per day. Majority of the students (90%) and (70%) drank tea and coffee respectively 1-3 times per day. 45% of students rarely planning to daily meals, and 53% of them making to decision to eat within a group.

Table-(3) Main meal patterns and snacking among students according gender

Parameters	**Male**	**Female**	**P – value**	**Total**
Regular of meals	**N (%)**	**N (%)**		**N (%)**
Yes	50 (45.05)	40 (44.93)	0.082	90(45.00)
No	41(36.93)	30 (33.70)		71(35.50)
Sometimes	20(18.02)	19 (21.34)		39(19.50)
Daily number of main meals				
Less than three times	38(34.23)	30(33.71)	0.065	68(34.00)
Three times	54(48.65)	50(56..18)		104(52.00)

More than three times	19(17.11)	9(10.11)		28(14.00)
Daily breakfast				
Yes	90(81.08)	23(25.48)	0.061	113(56.50)
No	19(17.12)	61(68.54)		80(40.00)
Sometimes	2(1.80)	5(5.62)		7(3.50)
Place of breakfast				
At home	20(18.02)	50(56.18)	0.081	70(35.00)
At university	91(81.98)	39(43.82)		130(65.00)
Daily Luncg				
Yes	89(80.18)	79(88.76)	0.040	168(84.00)
No	5(4.50)	7(7.87		12(6.00)
Sometimes	17(15.32)	3(3.37)		20(10.00)
Daily Dinner				
Yes	75(67.57)	19(21.35)	0.020	94(27.00)
No	10(9,01)	50(26.18)		60(30.00)

Sometimes	26(23.42)	20(22.47)		46(23.00)
Morning snack intake				
Always	65(58..56)	15(16.85)	0.072	80(40.00)
Sometimes	36(32.43)	26(29.22)		62(31.00)
Never	10(9.01)	48(53.93)		58(29.00)
Afternoon snack intake				
Always	12(10.81)	12(13.48)	0.094	24(12.000
Sometimes	28(25.23)	25(28.09)		53(26.50)
Never	71(65.96)	52(58.43)		123(61.50)
Daily water intake				
<4 cups	20(18.02)	18(20.22)	0.104	38(19.00)
4-8 cups	60(54.05)	46(51.69)		106(53.00)
>8 Cups	31(27.93)	25(58.43)		56(28.00)
Daily tea intake				
No	– –	– –		– –

1–3 times	100(90.09)	80(89.89)	0.061	180(90.00)
>3 times	11(9.91)	9(10.11)		20(10.00)
Daily coffee intake				
No	8(7.20)	16(17.97)		24(12.00)
1–3 times	78(70.27)	63(70.79)	0.102	141(70.50)
>3 times	25(22..52)	10(11.24)		35(17.50)
Planning to daily meals				
Yess	25(22.52)	19(21.35)		44(22.00)
No	11(9.91)	50(56.18)	0.081	61(30.50)
Rarely	75(67.57	20(22.47)		95(47.50)
The decision to eat				
An individual decision	45(40,54)	49(55.06))	0.085	94(47.00)
Decision group	66(59.46)	40(44.94)		106(53.00)

Frequency of food intake among students according to gender is reported in table-4. Majority of the students consumed cereals, legume, eggs, milk and milk product, and nuts (95%), (80%), ((73%), (62.5%), and (72%), respectively, more than three days per

week. Majority of the students consumed vegetables (73.5%) more than three days per week, compared with 25%who consumed fruits at the same frequency. Red meats (58%), chicken (85%), and fish (78 %) were consumed on less than 3day per week. Fast food was significantly (P<0.05) more consumed for more than 3 days per week by females (66.29%) than by males (27.93%). Females were more likely to consume chocolates (43.82%), sweets (68.54%), soft drinks (31.46%) on more than three days per week than males (9%, 32.43%, 22.52%, respectively), (P<0.05).

Table –4 Frequency of intake of different food group among students according to gender.

Food group	Intake(day/week)	Male(111)N (%)	Female (89)N(%)	P–value	Total N (%)
Cereal	<3 (day/week)	7(6.31)	3(3.37)		10 (5.00)
	≥ (day/ week)	104(93.69)	86 (96.63)	0.681	190 (95.00)
Red meat	<3 (day/week)	67(60.36)	50 (56.18)		117 (58.00)
	≥ (day/ week)	44(39.64)	39(43.82)	0.123	83 (41.50)
Chichen	<3 (day/week)	90(81.09)	80 (89.89)		170 (85.00)
	≥ (day/ week)	21(18.91)	9 (10.11)	0.062	30 (15.00)
Fish	<3 (day/week)	85(76.58)	72(81.00)		157 (78.50)

	≥ (day/ week)	26(23.42)	17 (19.00)	0.070	43 (21.50)
Milk and milk products	<3 (day/week)	47(42.34)	28 (31.46)	0.069	75 (37.50)
	≥ (day/ week)	64(57.66)	61 (58.54)		125 (62.50)
Eggs	<3 (day/week)	36(32.43)	17 (19.10)	0.080	53 (26.50)
	≥ (day/ week)	75(67.57)	72 (80.90)		147 (73.50)
Legumes	<3 (day/week)	20(18.02)	20 (22.47)	0.068	40 (20.00)
	≥ (day/ week)	91(81.98)	69 (77.53)		160 (800.00)
Nuts	<3 (day/week)	26(23.42)	30 (33.71)	0.076	56 (28.00)
	≥ (day/ week)	85(76.58)	59 (66.29)		144 (72.00)
Vegetables	<3 (day/week)	36(32.43)	17 (19.10)	0.065	53 (26.50)
	≥ (day/ week)	75(67.57)	72 (80.90)		147 (73.50)
Fruits	<3 (day/week)	85(76.58)	65 (73.03)		150 (75.00)
	≥ (day/ week)	26(23.42)	24 (26.97)	0.091	50 (25.00)
Chocolates	<3 (day/week)	101 (91.00)	14 (15.7)	0.000	115 (57.50)
	≥ (day/ week)	10 (9.00)	39 (43.82)		85 (42.50)
Sweets	<3 (day/week)	75 967.57)	50 (56.18)	0.021	125 (62.50)
	≥ (day/ week)	36 (32.43)	61 (68.54)		75 (37.50)

Fast food	<3 (day/week)	80 (72.07)	30 (33.71)	0.001	110 (55.00)
	≥ (day/ week)	31 (27.93)	59 (66.29)		90 (45.00)
Soft drink	<3 (day/week)	86 (77.48)	61 (68.54)		147 (73.50)
	≥ (day/ week)	25 (22.52)	28 (31.46)	0.000	53 (26.50)
Natural juice	<3 (day/week)	100 (90.09)	80 (72.07)		180 (90.00)
	≥ (day/ week)	11 (9.91)	9 (27.93)	0.085	20 (10.00)

The mean of energy intake, and percentual distribution of BMI by sex are presented in table 5. In contrast to the category of underweight, there were no significant difference in prevalence between both sexes in normal and overweight& obese ($p< 0.05$). Also, the energy intakes for females and male in various groups of BMI were significantly different ($P< 0.05$).

Table (5) Mean of energy intake, and percentual distribution of BMI by sex

		Percentual Distribution N(%)			**Energy Intake (Mean±SD)**		
		Male	**Female**	**P-value**	**Male**	**Female**	**P-value**
BMI	**Un**derweight	32 (28.83%)	18 (20.22%)	0.040	280.00±110.30	1681±231.31	0.010
	Normal	68 (61.26%)	54 (60.67%)	0.150	2312±430.40	1865.6±315.45	0.010
	Overweight& Obese	11 (9.91%)	17 (19.11)	0.120	2320±203.52	1604.3±103.11	0.010

Table 6.presents the mean daily intake of some nutrients. According to these findings, in both sexes, the mean daily consumption of protein was adequate. However, the mean carbohydrate consumption was very high .Nevertheless; the total caloric intake was below the RDA. The mean iron consumption in male students was more than RDA standard, but in female was less than RDA standard.

Table 6- Mean and SD of nutrients intakes

Nutrients	Female	Standard for Female	Male	Standard for Male
Protein (g/d)	55.138±22.176	46	59.154± 29.642	56
Fat (g/d)	80.560±48.624	-	83.702±56.246	-
Carbohydrate(g/d)	211.552±73.401	130	214 .654± 66.832	130
Energy(k ca /d)	1699.861± 760.075	2403	1670.231 ±599.89	3067
Iron (mg/d)	10.5 ± 3.8	18	11.4±3	8

Discussion:

This study could show light on the dietary pattern of Juba University Students, Sudan. The results on demographic data revealed that, age of majority of students was ranging from 21 to 23 years (80%) , refers to expense the students daily on food as behavior 69% 5 pounds a day, and this percentage is high and indicates that the students don't care to spend on food but the Exchange in other areas including cosmetics probably because few expenses and cost of living in this time which affects their health. this result could be similar to the result conducted in Zimbabwe [12] about the adequacy of the allowance for food needs answered 66.66% to monthly expenses are not enough meet their needs food and the lack of access to meet their needs, also similar to the result conducted in Sudan [11] he found that 68.33% of the students expense daily on food behavior 5 pounds a day.

Eating at same time every day is important because at that time stomach secretes more gastric juice , appetite increases, and the food is rapidly digested [13], we found that 45% of the students had regular meals, , this higher than that reported in their counterparts in Malaysian (57.6%) {Ganasegeran et al 2012).

Also more frequency of meals intake associated with lower BMI [15]. We found that more than half of the students (52%) had three meals per day which is necessary for good health. This is similar to findings from a study carried out among university students in South- Eastern state of Nigeria [16] and southern Nigeria [3].

The results show that the pattern of food intake per day where there is an absence of basic food for some students, breakfast 40%, lunch 6%and dinner 30%,this is higher than that found among their counterparts in Sudan, breakfast 10%[11].

Skipping of meal is very common practice among undergraduates[17,18]. Also breakfast is very important for the health and well-being of the body, students may find it difficult to take as they are always in hurry to go for their classes. Some may deliberately skip breakfast because of the consciousness of their body weight and appearance. This more common among females who are more conscious of their diet [19]. However, it is interesting that 56.5% of students consumed breakfast daily. This percentage is higher than that documented in university students in Ghana (8%) [20], but lower than that documented in

university students in Saudi Arabia (68%) (Females only) [21] and in Sudan (85.5%) [5]. several studies report that regular intake of breakfast reduces the risk of obesity and some chronic problems [5]. Nevertheless, it is worth mentioning that 65% of the students consumed their breakfast at the university, therefore the dietary quality of their breakfast depends on foods provided by university cafeteria. The dinner meals are important because they help enough daily food requirements affecting academic achievement is due to the ignorance of the effect on long –term .And this agrees with [10]. A morning snack was skipped by 29% of students, compared with 61.5 who skipped an afternoon snack. A literature review indicates contrasting findings for snacking, as eating snacks may be a protective factor for obesity and provide essential nutrients. On the other hand, snacking provides extra energy and may contribute to weight gain [5,22]. However, this depends on the types of food consumed during snacking time.

Daily water intake varies according to the physical activity, for active adults living in warm environment daily needs is about 6 liters [23] 28% of the students in this study drank more than 8 cups of water per day, this finding was lower than Malaysian medical school study (40%) had two or more liters of water [14], and

Sudanese medical students (30%) had more than 8 cups of water per day. Majority of the students (90%) and (70%) drank tea and coffee 1-3 times per day respectively, this types of drinks is poor in content vitamins and minerals .A similar intake of tea and coffee was reported among Sudanese university students (90%) and (70%) 1-3 times per day [11]. The results showed that 35% of the students making the decision to eat with a group , known as the discrimination so as to pay equal money for the food planning budget for meals during the week and be a joint decision of the meals, this result high than that conducted by [11] he found 40% .The meal pattern of the students also shows that majority of them consumed more of foods belonging to the cereals, legume, eggs, milk and milk product ,nuts and vegetables, and less of food belonging to the red meats, chicken, fish, and fruits. This may affect the availability of nutrition (i.e., minerals vitamins, and proteins) inherent in these food groups, to the students. This funding in agree with [3].

The majority of the students (73,5%) in this study consumed vegetables at least three times per week, this result was lower than Malaysian medical school study(81.8%) [14], and Sudanese medical students [15]. According to my finding

more vegetables were consumed than fruits (73.5%), (25%) respectively on more than three days per week of the students. This is probably due to the fact that vegetables are widely used in the preparation of many local dishes in Sudan, may be due to the price of fruit is very expensive than vegetables. However, both vegetables and fruits were consumed less than dietary guidelines recommended [24] .This result was high than that conducted by [5] they found that 43%, 21% respectively in the same frequency .A similar low intake of vegetables and fruits was reported among university students in Jordan [25], Lebanon [26], Saudi Arabia [27]. A review of the intake of vegetables and fruits in university students in 26 countries showed that 83% of students consumed less than the recommended guidelines [28]. Previous studies showed that the frequently intake of vegetables and fruits associated with low risk of cardiovascular disease and low BMI [15] .About two-third (62.5%) of both male and female student consumed milk and dairy products on more than 3 days per week.This proportion is higher than that found among their counterparts in Jordan (51%) [25] and Sudan (30%) [5]. It has been suggested that a greater dairy consumption is associated with

lower prevalence of metabolic syndrome, with calcium probably being responsible for this association [29].

Frequently intake of soft drink is associated with obesity and typeII diabetes mellitus [30] according to this study majority of the students (73.5) consumed soft drinks at least three times per week, this finding was high in comparing California State University survey (51.8%) [31], and Sudanese medical students (57%) [15] ,at the same frequently. It is an interesting that female students were more likely to consumed fast food on more than three days per week than their male counterparts (66.29%, 27.93%). Fast food intake was found to be higher among adolescent males than females in five Arab countries [5]. The proportion of fast food intake of female students was higher than that reported in female university students in Sudan (44.3%) [5], Jordan (25.6%) [25], and Kuwait (58.8%) [32].

The relatively high consumption of fast food among this sample indicates a great shift in food habits among young people in urban areas of Sudan. It has been shown that high intake of fast food is positively associated with obesity and may be other chronic diseases [33, 34].Therefore, a nutrition education program should

be established in the university in Sudan to increase the awareness of students toward healthy dietary habits.

The anthropometric result showed that most (61%) of the students had normal BMI, and therefore seem to be well nourished, this result could be similar to the result conducted in Nigeria [3], and Sudan (66.7%) [15], and Romania (70%) [35]. The percentage of underweight was 25% and of overweight & obese 14%.This prevalence of underweight is considered higher than that reported in their counterparts in Florianopolis(15.9%) female only [36] , china 16.6% [37] , Kuwait 10.3% female only [38], Saudi Arabia 5% male only[27], Nigeria (9.5%)[3] and Sudan (20.5%) [5]. (12.8%) [15]. However, in comparison with the 16.8% female and 10.2% male reported for Iranian students [39] , 22.6% female and 18%male reported for Sudaneses students [5] , and 5.3% female and 7.3% male reported for Malaysian students [40] , the Sudanese students in this stusy exhibited a higher rate of underweight (28.83%, 20.22%) male and female respectivally(P,0.05) . The prevalence of overweight & obesity in this study is slightly higher than that reported in their counterparts in Iran (11.54%) [39], and Florianopolis (11.8%) female only [36], but lower than those in Lebanon (30%) [26],

Saudi Arabia (37.5%) [27], Nigeria (20%) [3], 22country (22%) [41], and Sudan 16% [5], 28.5% [6]. Prevalence of overweight and obesity among undergraduate students, this may bay either due to excessive consumption of selected food groups which are mostly energy –dense or refined and a voidance of food groups with low energy and necessary vitamins and minerals, or increasing consumption of high calorie diets and shift of lifestyles towards sedentariness, in developing countries [42].This is dangerous for their health as obesity or overweight predisposes them to risk of diseases such as cardiovascular, malignancies, diabetes,bondes,and joints complications. [35, 43, 44].The growing problem of overweight and obesity among Sudanese university students should be given high priority in prevention health programs to reduce the risk of high occurrence of chronic diseases in the country.

The result in the current study showed that energy intake among students was considerably less than the RDA, the students most be consume greater amounts of energy as compared with other age groups since they have higher brain activity. The energy intake among female students considerably more than that among male students, this may be due to Sudanese female students were more

likely to consume fast food than male [5]. This result was disagreement with the results obtained by [39] **in Iran, and** [49] **in Turkey. But their carbohydrates intake is greater. Also the** mean iron consumption in female students was less than RDA standard.

Conclusion:

Skipping of breakfast and eating fast foods are common among the study population. Highlights of the finding of the food intake pattern consist of cereals, legumes, and nuts, and lack of eating red meats, chicken, fish and fruits. This study showed that there were differences between male and female university students with regard to dietary pattern which may be due to several confounding factors. Such factors could be the target for future study utilizing the current data. The author hop that this study provides information for establishing and intervention program to promote healthy nutrition among university students, as well as providing baseline data for further studies.

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