Breakfast Consumption Patterns among the Students at Ahfad University for Women

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Abstract: Background: The intake of breakfast fuels the body with essential nutrients needed for the optimal function and helping the brain to concentrate during the day. Skipping breakfast puts the body at risking of entering into a starvation mode, leading to compensate and overeat later in the day. This current study was conducted between July 2019 and March 2020 at Ahfad University for Women. The main objective: To assess breakfast consumption pattern among the female students of Health sciences, Department of Nutrition and Dietetics at Ahfad University for Women in Sudan. Methodology: An epidemiological, cross-sectional study was conducted at Ahfad University for Women. A total of 100 students were selected by a stratified multi stage sample technique. Data was collected by using close ended questionnaire and analyzed by using SPSS (version 21). Results: The results showed that 80% of the students skipped their breakfast. Reasons for skipping their breakfast included lack of time to eat breakfast (32%), lack of appetite (18%), financial constraints (16%), stress and family eating patterns (6%), with only 2% mentioned they were following dietary regimen. Statistically significant differences was found between the observed and expected distributions of the sample regarding difficulties facing the students when skipping their breakfast (P=0.000), more than half of the students (n=56) faced many difficulties when skipping their breakfast. These included feeling hungry, lack of attention and being less active during their practical class. Linear regression model revealed that when students' pocket money increased, some types of their food consumed increased by 90%. Conclusion: The study concluded that the majority of the student skipped their breakfast and there was significant relationship between students' pocket-money and types of food consumed in the breakfast meal. Recommendation: The study recommends development of nutrition education program on the importance of breakfast meal for the student's health.

Keywords: *Breakfast, Skipping, pocket-money, Food consumption.*

1. Introduction

Breakfast is thought to be the most important meal of the day, which provides energy for the brain and improves learning capacity. It is also known to contribute significantly to the total daily energy and nutrient intake. Breakfast seems to provide an important source of nutrients including carbohydrates which subsequently contributes to energy intake [1]. People who consume breakfast have a better intake of essential macronutrients and micronutrients, compared to those who skip breakfast [2]. Moreover, the consumption of breakfast leads to positive health behavior, improved stress management, feeling energetic and making less unhealthy snack choices [3]. Conversely, the consequences of skipping breakfast include fatigue and suboptimal concentration levels [4], as well as an increased risk for developing obesity [3].

Breakfast is the meal that keeps a student active for many hours prior to lunch meal break. Due to skipping of breakfast, students find difficulty in attending their lectures and their cognitive power is impacted which further leads to weak scholarly performance [5]. Those who either skip breakfast or

consume it infrequently have an increased risk of developing metabolic syndrome [6]. Metabolic syndrome is a common medical condition, comprising of a cluster of symptoms including abdominal obesity, hypertension, dyslipidaemia and abnormal fasting blood glucose levels or insulin resistance [7].

Several reasons for skipping breakfast have been suggested including financial constraints, habitual, unavailability of time to prepare breakfast among others [8]. Study in Pakistani university revealed that, only 44.1% of female students consumed breakfast regularly [9], while at a Turkish university, only 35.6% of students consumed breakfast daily [10]. The major reason for students skipping breakfast is that of availability of time to eat before the first lecture of the day, no appetite or oversleeping, and 15% of the students stated financial reasons for skipping breakfast [4].

There were commonly reported reasons for students skipping breakfast in multiple studies conducted worldwide. This includes: a lack of appetite in the morning, a lack of time [11], do not like to eat too early, waking up late [11], inadequate money to purchase food [4] and methods to lose weight and there are multiple factors that influence the decision to omit breakfast, particularly among university students, where the lack of breakfast is only one of many poor dietary choices [12].

2. Justification

There is a lack of current data regarding the consumption or skipping of breakfast, as well as the habitual foods or beverages that constitute a typical breakfast amongst Sudanese university students. It was observed that students skip breakfast meal or take it in late time which contribute to many health problems. Skipping breakfast may lead to an increased feeling of hunger, and thus to the consumption of larger portions in subsequent meals during the day.

3. General Objective

To assess the breakfast consumption pattern among female students of Health Sciences, Department of Nutrition and Dietetics at Ahfad University for Women in Sudan.

4. Methodology

4.1. Sample Size

The sample size was determined by using the following formula.

$n = \dfrac{N}{1 + N*e2}$

Total number of students in Health sciences are 713 students

$= 713 / 713*(0.05*0.05) + 1 = 256$

4.2. Sample Distribution

A stratified multi stage sample technique is used to distribute the sample among the students. A simple random sample technique was used to select the school and the department Nutrition and Dietetics department was selected by simple random sample technique.

Total number in the department = 278 student

$n = 278 \times 256 / 713 = 100$

Sample size = 100

Sample size from each class:

Number of students in each level X sample size ÷ Number of students in the department

Total number of the students	Sample size from each class
The second class= 63×100÷278 =	23 students
The third class= 47×100÷278=	17 students
The fourth class=68 ×100÷278=	24 students
The fifth class= 100×100÷278=	36 students

The students were selected from each class by systematic random sample. The sampling frame was designed (student lists) for class. The interval was calculated as below. The first student in class was selected randomly then the second student was selected by adding the interval and so forth till the sample was selected:

Interval = Total student in class ÷ Sample size

Students in Department of Nutrition &Dietetics (second year to fifth year) were included in study, other schools and first year (University Preparatory Program) were excluded from participating in the study.

Data was collected by using close ended questionnaire distributed and collected on the spot/face-to-face to the students, 15 minutes were taken to fill the questionnaire from each student. Questions were asked to assess the students consumption pattern, included students' age, their residency, pocket-money in Sudanese pounds, skipping breakfast pattern, difficulties faced the students when skipping breakfast, time of breakfast consumption, number of food items consumed by the students and types of food items consumed in the breakfast time.

Data was analyzed by using SPSS (Statistical Package of Social Sciences, Version 21). Type of analyses used were descriptive statistics in form of frequency, in addition to chi-square test, cross tabulation, correlation and linear regression were used.

Table 1.

Demographic data	
Age of the female students	Number (%)
16-20	8 (8)
>20	92 (92)
Total	100 (100)
Students' residency	Number (%)
Hostels	35 (35)
With family	61 (61)
With relatives	4 (4)
Total	100 (100)
Breakfast consumption pattern	
Skipping break fast	Number (%)
Yes	80(80)
No	20(20)
Total	100(100)
Pocket money	Number (%)
50-100	49(49)
101-150	9(9)
151-200	12(12)
201-300	7(7)
More than 300	2(2)
Those who did not receive pocket-money	21(21)

5. Results

The study was conducted among female students studying at Ahfad University for women, School of Health sciences, Department of Nutrition and Dietetics, the number of the students in the present study was 100 and their age group range between 16->20, 35% of the students lived in hostels, 61% with their family while only 4 of them were living with their relatives. Students who skipped their breakfast were 80% while 49 % of the students received pocket-money range between (50-100), only 2 of the students received more than 300 SD, while 21 %stated that they did not receive Pocket-money.

Table 2 shows, there were statistically significant differences between the observed and expected distributions of the sample regarding difficulties faced the students when skipping breakfast, time of taking breakfast and number of food Items consumed by the students (P value=.000).

Leaner regression model in table (5) shows that R value is 0.949 which indicates the relationship between R square and the variables (with value of 0.90) that provides the expected change with significance differences (0.000). Pocket-money was the independent variable and type of food consumed during breakfast was the dependent variables. Positive significant relationship was detected between pocket-money and the following types of food: cheese, cooked lentil, burger, shawarma and hotdog, (P value < 0.05).

Negative relationship was also detected between pocket-money and the following types of food, bread + Jam, corn flakes with milk, biscuits. egg fried, green salads, Whole fruits and broad bean, (P value <0.05) ,while no significant differences was detected between pocket- money and other types of foods like, milk, bread + butter, mixed vegetable, chips, yogurt, fruit juice, milk tamia sandwich and egg boiled P=value > 0.05.

Table 2.

Difficulties faced the female students when skipping breakfast

Variables	Observed N	Expected N	Residual
Feeling Hungry, lack of attention, not active in practical class	56	25	31
Feeling Hungry	28	25	3
Not active in practical class	12	25	-13
Cannot concentrate in exams	4	25	-21
Total	100		
Chi-Square 63.200[a] P value =0.000			
Time of taking breakfast			
Variables	Observed N	Expected N	Residual
6-8am	8	33.3	-25.3
9-11 am	12	33.3	-21.3
Skipping breakfast	80	33.3	46.7
Total	100		
Chi-Squire 98.240[a] P value =0.000			
Number of food Items consumed by the students			
Variables	Observed N	Expected N	Residual
1 item	46	25	21
2 items	44	25	19
3 items	8	25	-17
4items	2	25	-23
Total	100		
Chi-Square 64.800[a] P value =0.000			

Table 3.
Correlation between reasons for skipping of breakfast and skipping of breakfast.

Reason for skipping breakfast	Skipping breakfast		
	Yes	No	Total
Lack of time for eating breakfast	32.0%	8.0%	40.0%
Family eating pattern	6.0%	0.0%	6.0%
Lack of appetite	18.0%	4.0%	22.0%
financial constraints	16%	0%	16%
Stress	6%	6%	12%
Dieting	2%	2%	4%
Total	80	20%	100%

Spearman Correlation value 0.80 sig 0.004). Significant Correlation was found between reasons for skipping of breakfast and skipping of breakfast. Lack of time for eating breakfast was stated by 32% of the students while only 2% were dieting.

Table 4.
Correlation between receiving pocket- money and skipping breakfast.

			Skipping breakfast		Total
			Yes	**No**	
Receiving pocket money	Yes	% of Total	65.0%	14.0%	79%
	No	% of Total	15.0%	6.0%	21%
Total		% of Total	80.0%	20.0%	100%

Spear man correlation 0.11 P value=0.247. No significant correlation was found between receiving pocket- money and skipping breakfast.

Model	R	R square	
1	0.949ª	0.90	
Model	F	Df	Sig.
Regression	23	23	0.000ᵇ

Table 5.
Pocket-money and type of food consumed at breakfast meal.

Model	Unstandardized coefficients		Standardized coefficients	T	Sig.
	B	**Std. error**	**Beta**		
(Constant)	102.199	29.542	Beta	3.459	0.001
Corn flakes with milk	-35.253	8.937	-0.338	-3.945	0.000
Bread + Butter	-10.052	7.424	-0.183	-1.354	0.181
Bread + Jam	-21.129	6.326	0.435	3.340	0.002
Mixed vegetables	-10.064	10.568	-0.117	-0.952	0.345
Tamia Sandwich	56.736	11.853	0.596	4.787	0.136
Biscuits	-.204	9.743	-0.003	-0.021	0.043
Milk	11.701	5.135	0.257	2.278	0.127
Yogurt	-2.526	7.531	-0.046	-0.335	0.739
Egg fried	-34.261	7.655	-0.589	-4.476	0.000
Egg boiled	-14.465	6.826	-0.224	-2.119	0.139
Cheese	26.633	7.609	0.500	3.500	0.001
Whole fruits	-33.945	5.449	-0.601	-6.230	0.000
Fruit juice	-2.408	5.952	-0.046	-0.405	0.687
Broad bean	-18.191	5.791	0.320	3.141	0.003
Cooked lentil	21.501	4.441	0.399	4.842	0.000
Green salads	-9.815	7.803	-0.201	-1.258	0.021
Chips	-3.628	4.149	-0.073	-0.874	0.386
Burger	25.147	8.656	0.341	2.905	0.005
Shawarma	12.923	8.355	0.006	0.051	0.000
Hotdog	18.703	6.603	0.138	1.318	0.013

6. Discussion

The present study revealed that the majority of the students skipped their breakfast (table 1). This result is higher than findings reported in Iranian study where 52% of females at the University of Medical Sciences skipped their breakfast [13], was also higher than previously reported in India were the prevalence of breakfast skipping was 42.23% [11].

Furthermore, the present study showed that more than half of the students faced many difficulties when skipping breakfast such as feeling hungry, lack their attention during classes and being inactive during practical class. Similar findings were reported previously that students will not be able to pay attention and accommodate their lessons in the class. It was reported that taking breakfast regularly on it's right time, improve alertness, ability to concentrate and general feelings of happiness and wellbeing [14]. Regarding the right time of taking breakfast, few students in the present study took their breakfast between 6-8: am which is lower than result reported among south African university students who commonly consumed their breakfast between 7:00 to 8:00 (43.6%; n=120) (p<0.05) and between 6:00 to 7:00 (28.7%; n=79) (p<0.05 [15], which considers the right time of having breakfast. It was observed that, people in Sudan take their breakfast very late, often at one o'clock which is too late for taking breakfast meal.

Almost half of the students in the present study consumed 1 item in their breakfast. Studies indicated that one item might not provide all the recommended nutrients needed by the body, it may only constitute one or two nutrients and the students in this period of life need well balance meal with variety of nutritious foods providing macronutrients for provision of energy and micronutrients that protect them from many diseases. Reasons for not consuming breakfast by the students in the present study, included, lack of time to eat their breakfast, lack of appetite, financial constraints, stress, family eating patterns and dieting. Lack of appetite in the morning and a lack of time has been widely reported in previous studies [11]. It was observed that most of Sudanese private university classes start lectures at 7:30 am and many students live far away from the universities so they have to leave home early to find transportation to arrive on time, moreover, there is no break between the morning lectures in order to eat their breakfast.

Furthermore, Pocket- money received by the students may be insufficient for breakfast. In Sudan there is every day new prices for all food commodities in groceries, supermarkets and restaurants. Merchants in Sudan are free to determine the prices of their commodities, which negatively affect people's income, and thus their health. In the present study Leaner regression model revealed that when the pocket-money increased some types of food increased, most of these foods were meat products. Consumption of meat products like burger, hotdog or Shawarma among some of the students can be explained by their better pocket-money, as meat (lamb, beef or poultry) is considered one of the most expensive types of food in Sudan. When the pocket-money increased the consumption of following types of food decreased, bread with jam, corn flakes with milk, and biscuits.

These types of food did not become an option for students when their pocket-money increases. This is confirmed by previous study found that, the cost of food as well as budget available to spend on food by students plays a substantial role in food choices [15]. In general, the most popular breakfast items consumed among the students in Sudan are Broad bean Tamia, and Chips, due to their availability and low prices.

7. Conclusion

The study concluded that the majority of the students skipping their breakfasts. Barriers to a healthy lifestyle and regular breakfast consumption were identified in this study, time constraints and a lack of appetite were the most reasons given for skipping breakfast. Significant association was detected between pocket-money and various types of food consumed by the students and there were statistically significant differences between the observed and expected distributions of the sample regarding difficulties faced the students when skipping breakfast, time of taking breakfast and number of food Items consumed by the students.

8. Recommendation

The university environment should be supportive and facilitative in promoting good diet and lifestyle practices. This could include the structuring of lecture times such that students have a morning or mid-morning break to eat and having healthy food options available at lower cost as alternatives to unhealthy snacks, take away and vending. Development of nutrition education program on the importance of breakfast meal for the student's health and further researches should include all students in the Sudanese universities to determine breakfast consumption pattern and the unhealthy effect of skipping breakfast.

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