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## Assessment of university students' Dietary practices and its related specified parameters: A cross-sectional study

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Poor dietary practices most commonly presented among university students, which ultimately affect their health. Now traditional Mediterranean healthful food habits actually switched by westernized habits, which characterized by low dietary fiber, vegetables, and fruit with high consumption of fatty food, sugar; and consequently, overweight with its related problems. So, this research aiming to assess university students' dietary practices and its related specified parameters. An authorized survey was distributed haphazardly to 350 faculty students. The survey was performed using a pre-validated 14 items questionnaire. Some dietary related parameters as hemoglobin & cholesterol level and body mass index were measured. 46.57% of studied female were skipping breakfast, also 32.85% and 38% eating fast food three times weekly and eating sweets/chocolates 4 times or more/ day respectively. 99% of the studied female versus 63% consumed carbonated drinks two times per day. Additionally, 40.86% of studied students were normal weight while 28.28% were overweight. There was a greater elevation in cholesterol with mean  $241.31 \pm 18.14$  mg/ dl in studied female versus slight elevation with mean  $192.00 \pm 12.69$  mg/ dl in male. Also, Blood hemoglobin had normal level with mean  $14.19 \pm 1.98$  mg/ dl in male versus reducing level than normal with mean  $10.42 \pm 2.67$  mg/ dl in female. Conclusions: Unhealthy dietary practices and consumption of fast food have undesirable effects on health as elevated cholesterol and hemoglobin. Conducting awareness programs-raising on healthy dietary practices and the health-related effects of over-consumption of fast food among university students.

**Keywords:** Dietary practices, Specified related parameters & University students.

### INTRODUCTION

Youth dietary habits primarily influenced by the fast-food. The traditional Mediterranean healthy food habits were switched by westernized food habits, which are characterized by low consumption of dietary fiber, vegetables, and fruit and high consumption of foods prosperous in fat,

sugar; and consequently, overweight and weight problems are increased (Popkin et al., 2012). Owing to the well-known health risks and considerable elevation in prevalence, obesity is a prime worldwide catastrophe health problem (Fleming et al., 2014).

Nutritional knowledge is one of the essential

elements for the determination of a healthy and nutritious diet (Hruby et al., 2016). Improper knowledge about nutrition is considered the major causes of nutritional problems, which negatively affect dietary practices (Mariyam et al., 2018).

Dietary practices and nutritional state have been proved to have strong associations with diseases in students (Cooke et al., 2018). Adolescent people are ordinarily prone to select unhealthy dietary habits. Faulty dietary habits as reducing intake of milk, fish, fruits and vegetables, skipping breakfast, high consumption of fast food, and sweets, and sugar-sweetened beverages are present in young university students (ZarrazquinArizaga et al., 2018). Students, existing away from their homes utilize fewer amounts of fruits, vegetables, and meat (Musaiger et al., 2017).

World Health Organization (WHO) stated that extra than 1.6 billion adults are obese and extra than four hundred million are overweight (Fleming et al., 2014) Furthermore, mortality levels also hiked with greater ranges of obese (Peltzer & Pengpid, 2015).

An individual with a body mass index (BMI) of 25 or extra is counted by the WHO to be overweight, while obesity is defined as possessing BMI of 30 or additional. As obesity obviously becomes wide-spread in developing countries (UNICEF Children in Egypt, 2016). Overweight and obesity are sturdy jeopardy reasons for several diseases such as diabetes type 2, hypertension, coronary heart disease, stroke, and cancers of the breast, ovaries, and colon. So prevention of obesity is pivotal for public health priority (Ramasamy et al., 2018).

College students symbolize the youthful age inhabitation of a community, and are inclined to unhealthy foods and habits through their college years which might affect their wellbeing and upsurge the risk of obesity as fast food eating, diminishing vegetable and/or fruit consumption beside with physical inactivity and elevation of hours in following Television and using computer (Al-Qahtani, 2016 & Al-rethaiaa et al., 2010).

Previous studies informed that dietary habits generally depend on lecture schedules attended by students and accessibility of food inside the university campus, lack of time and stress (Alston et al., 2019). Also, lack of availability and high cost of healthier food (Eyles & Baxter, 2016), and lack of nutrition knowledge and skills (El-Bagoury et al., 2017; Gazibara et al., 2013).

Due to the high rates of obesity between college students, the target of the current study

was to assess University Students' Dietary Practices and its related Specified parameters as BMI, cholesterol level and glucose in the blood.

## MATERIALS AND METHODS

### Study Design:

A cross-sectional descriptive study, Faculty of Nursing, Menoufia University, Egypt.

### Sample Size

A Multi-stage random sampling of 350 both gender students with 17 years or older were selected, based on their eligibility as well as willingness to participate in the study. Studied students were elected in accordance to the following inclusion criteria.

### Sample selection criteria

- Free from chronic diseases.
- They have not a regimen diet
- Can communicate effectively.

### Tool of Data collection:

**Tool:** An interviewing Questionnaire: It was designed by the researcher after reviewing recently related literatures. It is including the following parts:

**Part I:** Characteristics of the studied students which used to collect basic students' data as age & gender.

**Part II:** Dietary related practices: includes 14 questions such as meals frequency per day, Breakfast skipping, meal contents, Fast food frequency / week ...etc.).

**Part III:** Specific measured parameters which includes the following:

1-Anthropometric measurements: body weight and height used to compute body mass index by way of dividing weight through height in meters square (kg/m<sup>2</sup>) and weight categorized by international classification for BMI.

2-Blood sampling were collected for measuring hemoglobin & cholesterol level.

### Validity and Reliability:

1-The questionnaire was adapted from a previously published study (Yahia et al., 2008) where authors have standardized its use among university students. A slight modification was done on the questionnaire to be more suitable with the dietary and food patterns of the Egyptian students.

2- Questionnaire Validity: the questionnaire was translated into Arabic and then pre-tested for

accuracy and clarity. Moreover, the majority of questions in the questionnaire were taken from a previously validated tool.

### Methods

A survey was performed using a pre-validated 14 items questionnaire beside 3 parameters to be measured rather than bio demographic data, on studied students. The questionnaire was distributed on studied students as a previous study conducted by (Bhojaraja *et al.*, 2016). Also, to assess the dietary related practices among university students in relation to body mass index (BMI), blood hemoglobin & cholesterol level.

### Maneuver

1-The researchers primarily assess personal data of studied sample and then assess dietary related practice.

2-The researchers measure each student height and weight to calculate their BMI. These values were used to calculate the BMI ( $\text{kg}/\text{m}^2$ ), then it was classified according to (Pi-Sunyer, 1998 and Green, 2009).14, 8. Body mass index was calculated as  $\text{Kg}/\text{m}^2$  and classified into underweight ( $\text{BMI} < 18.5$ ), normal ( $18.5\text{--}24.9$ ), overweight ( $25\text{--}29.9$ ) and obese ( $\geq 30$ ) by following international classification for BMI.

3-The researchers measure each student blood hemoglobin to be analyzed in which normal range was 13.5-17.5mg/dl in male and 12 - 15.5 mg/dl in female according to (Ren *et al.*, 2014).

4-The researchers also measure each student total cholesterol level to be analyzed in which normal range lower than 200 mg/dL are considered desirable for adults. A reading between 200 and 239 mg/dL is borderline high and a reading of 240 mg/dL and above is considered high according to (Fletcher, 2017).

### Data analysis

Statistics were performed after the coding process using SPSS 24.0 software, where univariate, multivariate analysis, frequencies, Mean and standard deviation values to assess the relationship between the study variables. The researcher had compared between studied students' gender and specific measured parameters which including BMI, blood hemoglobin and cholesterol level.

### Ethics and Human Subjects Issues

1-Formal approval will be taken from the concerned authorities.

2-Informed verbal consent will be obtained from the studied students before giving the questionnaire.

3-Confidentiality will be maintained throughout the study.

### Human Subjects Issues

Ethical study was entirely voluntary.

### RESULTS

Table (1) represented that, more than two thirds (71.42%) of studied sample were female with mean aged 20 years old while 28.57% of them were male with mean aged 19 years old.

**Table (1): Characteristics of the studied students:**

Students ' characteristics		No=350	
		No	%
Gender	Male	100	28.57
	Female	250	71.42
Age in year ( Mean $\pm$ SD)	Male	19 $\pm$ 2.12	
	Female	20 $\pm$ 1.22	

Table (2) showed that more than half of the studied students (55.14%) don't eat three meals per day. About half of the studied female (46.57%) versus 3.3% of the studied male was skipping breakfast. More than half of the studied female (58%) versus 18% of studied male ate snacks regularly. Also, more than a third of them (32.85% and 38%) eating fast food three times per week as fried food and eating sweets/chocolates 4 times or more/ day respectively. Moreover, less than a quarter of studied male (19.14% and 19.43%) rarely or never consumed vegetables and fruits per week respectively. More than a third of studied female (41.2%) versus less than fourteen percent of studied male (14%) consumed carbonated drinks two times per day.

Table 3 illustrated that nearly half of the studied female (47.6%) versus a quarter of studied male (24%) were normal weight. On the other hand, nearly a third of studied male (30%) versus more than a quarter of studied female (27.6%) were overweight. Also, 10% of the studied students were obese. Regarding the mean blood cholesterol level, there was a greater elevating in cholesterol above normal level with mean  $241.31\pm 18.14$  mg/ dl in studied female versus slight elevation with mean  $192\pm 12.69$  mg/ dl in male. Also, Blood hemoglobin had normal level with mean  $14.19\pm 1.98$  mg/ dl in male versus reducing level than normal with mean  $10.42\pm 2.67$  mg/ dl in female.

**Table 2 ; Dietary practices of studied students:**

Items of Knowledge	Total number of students = 350				Total N=(350)	
	Male N=(100)	%	Female N=(250)	%		%
<b>Eating three meals / day</b>						
	<b>Male (No)</b>	<b>%</b>	<b>Female (No)</b>	<b>%</b>		
Yes	22	6.28	135	96.7	157	44.85
No	78	66.7	115	3.3	193	55.14
<b>Breakfast skipping</b>						
Yes	86	3.3	163	46.57	249	71.14
No	17	4	87	24.85	101	28.85
<b>Snacking regularly</b>						
Yes	63	18	203	58	266	76
No	37	10.57	47	13.43	84	24
<b>Fast food frequency / week (as fried food, potatoes )</b>						
1-2 times	10	2.86	80	22.86	90	25.71
3 times	23	6.57	115	32.85	138	39.43
4 times and more	67	19.14	55	15.71	122	34.86
<b>Frequency of vegetables and fruits consumption / week</b>						
Daily	8	1.43	55	15.71	63	18
3-4 times per week	10	2.86	47	13.43	57	16.28
1-2 times per week	14	14	81	14.57	95	27.14
Rarely or never	68	19.43	67	19.14	63	18
<b>Carbonated drinks consumed / day</b>						
Never	233	66.57	17	4.86	26	7.43
One time	14	14	103	41.2	117	33.43
2 times	36	36	63	14.4	99	28.28
3 times	33	33	55	22	88	25.14
More than 3 times	8	8	12	4.8	20	5.71
<b>Sweets or chocolates frequency / day</b>						
1-2 times	37	10.57	21	6	58	16.57
3 times	45	12.86	96	27.43	141	40.28
4 times and more	18	5.14	133	38	151	43.14
1-2 times	37	10.57	21	6	58	16.57

**Table 3: Dietary related specified parameters of the studied students:**

Items	Male N=(100)	%	Female N=(250)	%	Total N=(350)	%
<b>Body mass index (BMI)</b>						
	<b>Male</b>	<b>%</b>	<b>Female</b>	<b>%</b>		
<b>Underweight</b>	32	32	41	16.4	73	20.86
<b>Normal weight</b>	24	24	119	47.6	143	40.86
<b>Overweight</b>	30	30	69	27.6	99	28.28
<b>Obese</b>	14	14	21	8.4	35	10
<b>Blood cholesterol level (mg/ dl)</b>						
<b>Mean ±SD</b>	<b>Male</b>		<b>Female</b>			
	192.00±12.69		241.31±18.14			
<b>Blood Hemoglobin level (mg/ dl)</b>						
<b>Mean ±SD</b>	<b>Male</b>		<b>Female</b>			
	14.19±1.98		10.42±2.67			

## DISCUSSION

Young people are normally inclined to adopt unhealthy dietary habits. Faulty dietary habits, as breakfast skipping, decreased intake of milk, fish, vegetables and fruits, and increased intake of fast food, sweets, and sugar-sweetened beverages are present in university students (Musaiger et al., 2017). College students are living away from their homes, so they consume fewer amounts of vegetables, fruits and meat (Peltzer & Pengpid 2015). Also, the change in lifestyle across the world mainly in dietary habits was associated with obesity. So, it is an important issue to identify the poor dietary choices and other health risk behaviors early in life along with multifaceted efforts to improve right choices well therefore go a long way in turning around overweight and obesity (Mo'ez Al-Islam et al., 2014).

As regarding studied students' characteristics, more than two-thirds of studied sample were female with mean age of 20 years old, while more than a quarter of them were male with a mean age of 19 years old. Our study in accordance with (Niba et al., 2017) who confirmed that 52.1% of them were females and 47.9% of studied students were males with mean age  $21.4 \pm 2.1$  years.

The current study revealed that approximately half of studied female were skipping breakfast. This was in agreement with (Mo'ez Al-Islam et al., 2014) who reported that female students were at risk for skipping breakfast and meals respectively.

In addition, more than half of the studied female (58%) versus 18% of studied male ate snacks regularly. In the same line of our results, a previous study done by (Hassen et al., 2018) who stated that 68% of study sample ate at least one snack usually in the morning or afternoon.

Moreover, The Kingdom's National Nutrition Survey signposted the changing in dietary preferences of the Saudi population towards eating non-nutritional and high-calorie snacks as fried foods and carbonated drinks generally in daily life (Fatima et al., 2014). These changes reflect the shifting in the socio-environmental status as increasing deleterious lifestyle and fast food culture which can be an essential influence on young adults to be obese.

Also, our results showed that more than a third of studied students eating fast food three times per week as fried food. In addition, almost

all of the studied female versus more than two-thirds of the studied male consumed carbonated drinks two times per day. In agreement of the current results, a previous study carried out by (Ahmed et al., 2019) who established that more than half of the students (56.2%) consumed fast food.

Furthermore, less than a quarter of the studied male rarely or never consumed vegetables and fruits per week. These results were corresponding with (El-Ansari *et al.*, 2015 and Niba et al., 2017) who established that the diminishing in habitual consumption of fruits and vegetables among the students could be clarified by the high prices especially in the dry season. Also, eating of raw vegetables and fruits beside the main meals is not a common practice in the student population.

Our results proved that more than a third of studied students eating sweets/chocolates four times or more per day. Also, the results of a previous study carried out by (Niba et al., 2017) revealed that 46% of the study had eaten sweets/chocolates and 39.5% had sugar-sweetened beverages twice or more times in a week.

In addition, this existing study indicated that about half of the studied female versus a quarter of studied male were normal weight. This result was consistent with outcomes of the study done by (Yahia et al., 2016) which clarified that 78% of female students were within the healthy weight range compared to 52% of male students.

Also, this study showed that nearly a third of studied male versus more than a quarter of studied female were overweight. Also, a previous study conducted by (Ahmed et al., 2019) mentioned that approximately 38% of the students were overweight or obese.

The current study observed that only ten percent of studied students were obese. In the same line with our study a previous study carried out by (Al-Ghamdi et al., 2018). Al-Ghamdi et al., (2018) showed that 4% of obesity observed in rural areas of Saudi Arabia. Conversely, the percentage of obesity in the Western regions, Eastern region, and in Jizan were 10%, 14 %, and 12 %, respectively, due to the consumption of more fast food and a sedentary lifestyle. While a previous study was done by (Ahmed et al., 2019)

notified that the majority of respondents were also overweight and obese (54.3%).

Concerning with the effect of dietary related practices on the level of total cholesterol, the present study observed a greater elevation in cholesterol above normal level in the studied female. This study in agreement with (Samaha et al., 2017) who clarified that the mean for serum levels of cholesterol was  $208.5 \pm 49.5$  mg/dL.

Moreover, a previous study done by (Kara et al., 2016) was in accordance with the outcomes of the current study. (Kara et al., 2016) confirmed that fast food and breakfast intake are connected with the elevation of selected biomarkers as cholesterol in adolescents. While (Porto-Arias et al., 2018) informed that a few percent of the study sample had elevation in the total cholesterol levels ( $>200$  mg/dL).

Also, the results confirmed that blood hemoglobin had normal level with mean  $14.19 \pm 1.98$  mg/ dl in male versus reducing level than normal with mean  $10.42 \pm 2.67$  mg/ dl in female. The results of a previous study carried out by (Akhtar et al., 2018) presented that only 36% respondents had normal hemoglobin level.

## CONCLUSION

Unhealthy dietary practices and fast food consumption have undesirable effects on health, so restraint and limiting consumption of these junk and unhealthy foods is of initial necessities.

## Recommendation

Depend on the results of the current study, we recommended the following:

- 1- Conducting awareness programs by distributing colored brochures on healthy dietary practices among university students.

Conduct awareness-raising programs to clarify the health-related effects of over-consumption of fast food.

## CONFLICT OF INTEREST

The authors declared that present study was performed in absence of any conflict of interest.

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## AUTHOR CONTRIBUTIONS

All authors have read and agreed to the content and the publication of this paper

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