

Factors influencing eating behavior of Benghazi University students



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Submitted: 26-11-2019

Revised: 08-05-2020

Published: 01-07-2020

ABSTRACT

Background: University students are more exposed to new individual and environmental influences. This transition period is considered as a risky life phase because it's characterized by changing in physical and social status as well as changing in the lifestyle that will affect the eating behavior of students. **Aims and Objectives:** The current study aimed to determine the factors influencing the eating behaviors of Benghazi University students. **Materials and Methods:** A cross sectional study was undertaken for a period from January to May 2019 in Benghazi University. Samples of 300 students were requested to fill out a questionnaire. SPSS was used to analyze the data. **Results:** After starting university, (64%) of students stated that they had a change in eating behavior and (59%) of participants reported unhealthy eating pattern. About (67%) of students had a sedentary lifestyle with the majority of them were having unhealthy eating patterns (P value = 0.000). According to the BMI the majority of students had normal weight (62.6%). About (80%) of student reported that the lack of time to prepare a healthy meal during study period was effective and More than half of the students reported that inaccessibility of healthy food, student's positive emotions, poor knowledge of healthy food, and stress associated with exams period were effective. There was a statistical difference between student's eating patterns and poor knowledge, lack of time, stress, body weight concerns, negative emotions, peer pressure, lack of parental control, mass media and social life (P value < 0.05). **Conclusion:** This study concluded that the majority of students undergo a negative shift in their eating and lifestyle after starting university, and there is statistical difference between many factors and student's eating pattern.

Key words: University students; BMI; Diet change; eating behavior; factors influencing eating behavior

INTRODUCTION

Nutrition is important for every person in community, but it constitutes a particular importance for college students. University students are the most important categories of society because they are the future so in order to ensure a healthy future the maintenance of physical, mental, and psychological health of students are recommended. University students are at the period of beginning adulthood, that is the period of development from late teens throughout the twenties with a focus on ages between

18 -25 years.¹ This targeting period of human life maybe particularly important time for health promotion of healthy eating habits.²

Moreover, university students are more exposed to environmental influences due to higher levels of independency, communication with new people. While their pre-university life, eating habits of students are dependent on their family's lifestyle.³ This transition is considered as a risky life phase because it's characterized by changing in physical and social status.^{4,5} Students, also,

Access this article online

Website:

<http://nepjol.info/index.php/AJMS>

DOI: 10.3126/ajms.v11i4.26464

E-ISSN: 2091-0576

P-ISSN: 2467-9100

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face academic responsibilities that generate stress and lead to changes in eating habits and most of students is often developed with unhealthy eating habits.⁶⁻⁸ University is a critical period regarding weight gain and establishing behavioral patterns that will affect chronic disease risk.^{9,10} This change in lifestyle affects the eating behavior of students as they skip their meals, eat single meals and prefer unhealthy snacks that may lead to many health problems related to malnutrition such as (obesity, underweight, bulimia, anorexia nervosa and others), as well as increasing the risk of developing many chronic diseases.¹¹

The previous literatures from different countries discovered that most of the university students suffered from changes in eating behavior that include eat unhealthy food choices, skipping meals, unhealthy snacks and others unhealthy habits which revealed negative impact for productivity and effectiveness of students during the study period.^{12-14, 15} In public university in Northeastern Brazil, cross-sectional study of 933 undergraduate students aged 18-35 years, found that (69.6%) of students showed low frequency of healthy eating habits; high intake of food rich in fat and sugar and low consumption of fruits and vegetables.¹⁵ As well as in USA, Egypt, Maltase, Cameron, Malaysian, universities explored that more than half of students chose less healthy food.^{12-13, 16,17}

University populations are vulnerable in their eating habits for different reasons and barriers.^{13,18,19} The most two factors were studied by previous literatures were the price (cost) of healthy foods and the lack of time to prepare a healthy meal which in turn limit student's healthy food choices. Two studies were conducted in Mansoura University and in Mendel University reported that money is an issue regarding buying healthy foods by (77.9% and 58%, respectively).^{13,19} American studies also reported that money is an important determinant regarding food choices by (74.66% and 62.0%, respectively) as well as the importance of convenience and time by (76.47% and 82.0%, respectively).^{12,20} Moreover, literatures have studied other factors that affect healthy eating of the university students.

Egyptian study found taste, smell, and shape of food affect student's food choices by (97.9%, 92.4%, 89, 3%, respectively).¹³ Also, a study conducted in Czech Republic indicated that the exams period would change student's eating behavior to less healthy by (51%).¹⁹ In addition, two studies were conducted in Malaysian and Bangladesh medical universities mentioned the effect of the psychological factors on student's eating behavior and both indicated that eating because of feeling happy is more influential than eating because of feeling upset of nervous (80.3%vs 53.0%) and (77.6% vs 19.6, respectively).^{21,22}

Besides the quantitative researches, the factors influencing student's eating behavior have discussed by many qualitative researches as well.^{18,23,24}

Other research findings have also clarified statistically significant correlations between the factors and eating behavior of university students. The American study indicated that, among 114 students, students who reported high stress levels ate healthier foods than students who reported low stress levels ($P = 0.004$).²⁵ Study in Northern Illinois University which indicated that, among 221 students, cost, convenience and health concerns appeared to influence the food choices of students significantly more than weight control ($P < 0.001$).¹² Moreover, a study was conducted in a Malaysian medical school university found that among 132 students, four psychological factors out of six (Eating because of feeling lonely, upset of nervous, or bored, and eating until stomach hurts) were significantly associated with lower eating habits score ($P < 0.005$).²⁶

Other researches took another direction and assessed the effectiveness of some factors by applying intervention programs in an attempt to promote student's healthy eating.^{27,28} A study in Bilecik University, Turkey (n = 471) introduced a nutrition knowledge training program to the students and compared their food consumption before and after knowledge. The consumption ratio of fruit-vegetables for every day was increased from (36.7% to 46.2%) and sugary food consumption ratio was decreased from (91.7% to 88.7%) after increasing student's level of knowledge.²⁷ According to most of the previous literatures worldwide, university students faced many barriers that tend to experience unhealthy eating behaviors during this stage of life.^{12-14, 18,29,30} Although few studies were conducted in Benghazi to assess the eating behaviors of university students, none of them tend to study the factors which influence the eating behaviors of university students in Benghazi. The current study was undertaken to determine the factors influencing the eating behaviors of Benghazi university students and to determine the statistical difference between students's eating patterns and the individual and environmental factors.

MATERIALS AND METHODS

Across sectional study of university students was undertaken between January to May 2019 in Benghazi University, Benghazi, Libya. A sample size of 300 of university students aged 18 to 32 years were recruited to participated in this study (N = 96, 204) male and female respectively. After obtaining a written consent, participants were requested to fill out a questionnaire and proceed to private area to measure their weight and height. The

present study targeted a number of students from different faculties at Benghazi University, and the final completed questionnaires in hand were 300, and the overall response rate was 100%.

Questionnaire

The pretested questionnaire was used in the current study based on 47 items divided into five sections. The first section was about university student's personal information which include socioeconomic characteristics (less than 1000 ld/month=low, between 1000 and 1500 ld/month=medium, more than 1500 ld/month=high), weight and height measurements, faculty and year of study. The second section include both students' diet and weight changes after starting university and the eating and life style patterns of the students during the study period. The third section asked the university students about their eating behaviors during the study period. The last section includes the factors that influence student's eating behaviors during the study period.

Measurements

Weight and height were measured by researchers after completion of the questionnaire. Height was measured to the nearest 0.1 cm using calibrated tape. Weight was measured to the nearest 0.2 kg using weighing scale. During measuring body weight, participants were either wearing thin socks or bare feet and with minimal clothing items, then the body mass index was calculated and classified according WHO classification.

Statistical analysis

The statistical package for the social sciences (spss) version 21.0 was used to analyze the data. Descriptive statistical tests were conducted to make comparison including frequencies and chi square test with (95%) confidence intervals. Chi square test was used to investigate the statistical difference between student's BMI and gender differences, and the statistical difference between student's eating patterns and the individual, environmental and life style factors. All P values < 0.05 were considered statistically significant.

Ethics

This study was approved by Benghazi University, informed written consent was obtained from participants and all questioners were anonymous and unidentified to ensure the confidentiality of collected information.

RESULTS

Demographic characteristics of participants

The study consisted of 300 students (68% female students and 32% male) (Table 1). Half of students aged 23-27 years. Most

Table 1: Demographic characteristics of students in Benghazi University

Characteristics		N=300	%
Sex	Male	96	32
	Female	204	86
Age	18-22	139	46.30
	23-27	150	50
	28-32	11	3.70
Economic status	Low	7	2.30
	Medium	279	93
	High	14	4.70
Marital status	Single	283	94.3
	Married	17	5.7
Faculty	Medicine	65	21.70
	Pharmacy	31	10.30
	Dentistry	22	7.30
	Public health	56	18.70
	Law	55	18.30
	Science	19	6.30
	Economics	1	0.30
	Arts	7	2.30
Year of study	Engineering	44	14.70
	First year	56	18.70
	Second year	70	23.30
	Third year	72	24
	Fourth year	66	22
	Fifth year	36	12

of students were single (94.3%) with medium socioeconomic status (SES) (93%). The majority of participants were from medicine, Public health, and Law faculties (21.8%, 18.7% and 18.3% respectively) whereas the least of them were from economics and arts faculties ((0.3% and 2.3% respectively). Most of participants were at the second and third year of their study (23.3% and 24%, respectively).

Changes in eating pattern and weight status of students after starting university

The (Table 2) shows the majority of students (64%) stated that they had changed eating behavior while the minority (36%) of participants reported that their diet didn't change. (58.7%) of participants reported that had unhealthy diet after starting university. In regarding to weight changes among the participants, almost half of the students reported that their body weight decreased after starting university (48.67%). see (Table 2).

The (Figure 1) shows the statistical difference between body mass index of the students and gender. The majority of students had normal weight (62.6%) and most of them were female students (45.30%) whereas males (17.0%) were normal weight. While (23%) of students who have overweight and the majority of them were female students (13.3%).

Regarding the physical activity (PA), the majority of students were sedentary (66.7%) and the majority of them were having unhealthy eating patterns (44% vs. 22.7%,

P value = 0.000). While the active students were (33.3%) and most of them were having healthy eating patterns (18.7% vs. 14.7%, *P* value = 0.000). See (Table 3)

Factors influencing eating behavior of university students

(Figure 2) show the factors that influence the eating behaviors of university students in Benghazi. The majority of the students reported that the lack of time to prepare a healthy meal during study period was effective (80.3%). More than half of the students reported that body weight

concerns, healthy food appearance, inaccessibility of healthy food, student’s positive emotions, poor knowledge of healthy food, stress associated with exams period, social life and negative emotions of students were effective (77.7%,74.7%,73.9%, 70.7%, 70.3%, 67.7%, 61.3%, 61.3%, respectively).

Almost half the students reported that high cost of healthy food was effective. Less than half of the students reported that mass media and lack of parental control were effective (44.0% and 39.8%, respectively). The minority of the students reported that peer pressure was effective on their eating behavior (13.7%).

Table 2: Changes in eating pattern and weight status of students after starting university

Eating pattern and weight status		NO	%
Diet change	Changed	191	64
	Doesn't change	109	36
Eating pattern	Healthy	124	41.30
	Unhealthy	176	58.70
Weight change	Increased	93	31
	Decreased	146	48.67
	Not change	61	20.33

Table 3: The physical activity status of Benghazi university students

Student's life style	N	%	Student's eating pattern (Chi- square test)				
			Healthy		Unhealthy		
			N	%	N	%	
Physical Activity	Sedentary	200	66.7	68	22.7	132	44.0
	Active	100	33.3	56	18.7	44	14.7
	Total	300	100	124	41.3	176	58.7

(*) significant association *p*. value <0.05 by chi-square test

The table below (Table 4.1) illustrates that the factors influencing students eating behaviors in Benghazi University that were statistically significant with their eating patterns. Factors that were more effective among students with unhealthy eating patterns than among students with healthy eating patterns were poor knowledge of healthy foods (36% vs 34.3%, *P* value = 0.000), lack of time to prepare a healthy meal during the study period (49.7% vs 30.7%, *P* value = 0.025), stress associated with the exams period (44.3% vs 23.3%, *P* value = 0.000), student’s body weight concerns (42.7% vs 35%, *P* value = 0.014) and student’s negative emotions and feeling disappointed (42.7% vs 18.7%, *P* value = 0.000).

The table below (Table 4.2) illustrates that a statistically significant association between the environmental factors influencing students eating behaviors in Benghazi University and their eating patterns. Factors that were

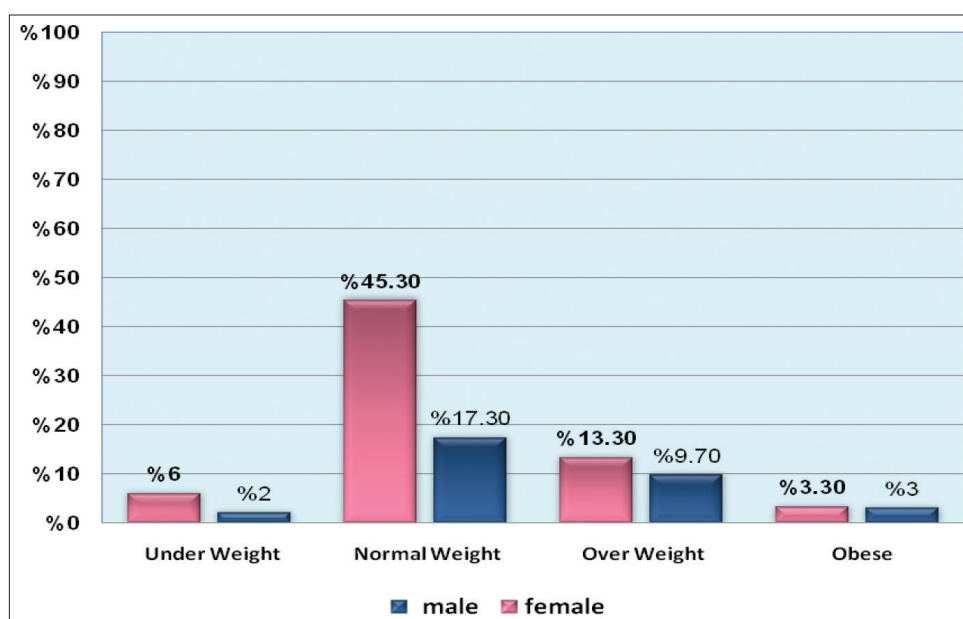


Figure 1: The body mass index of Benghazi University students

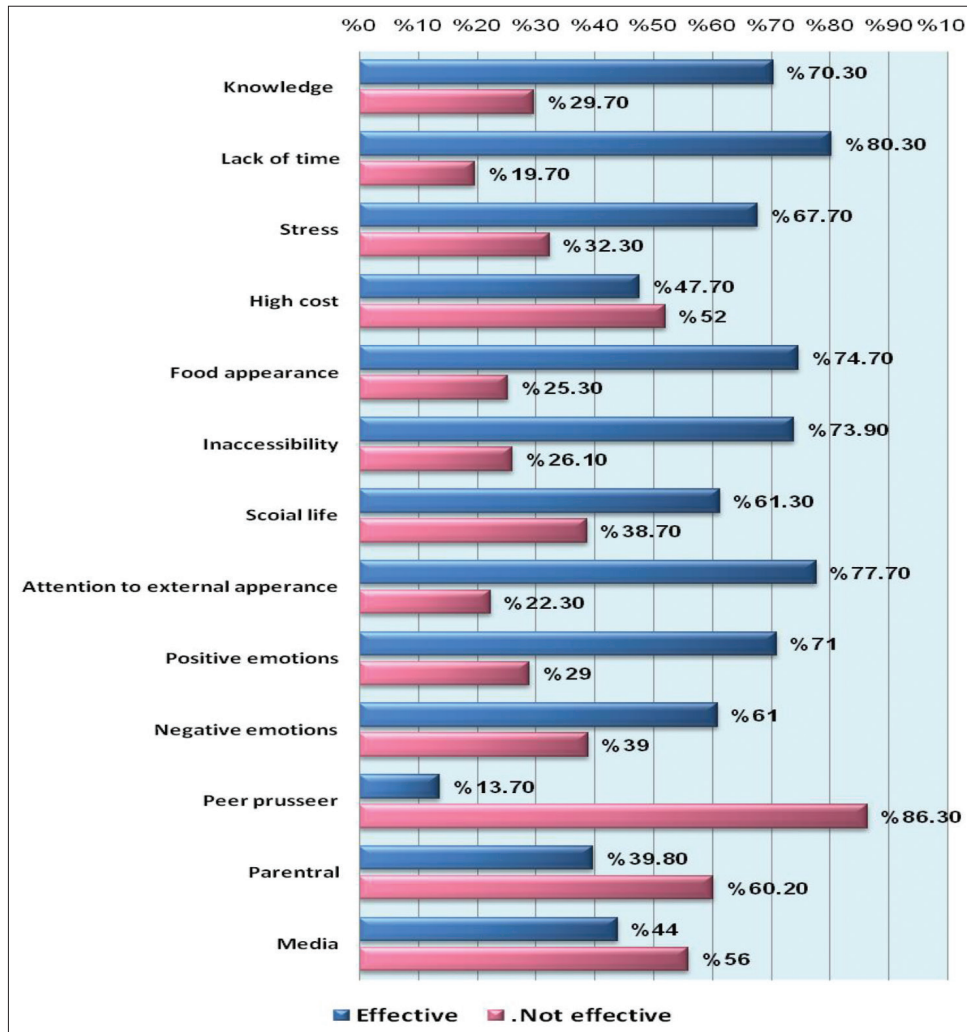


Figure 2: Factors influencing eating behaviors of university students in Benghazi

more effective among students with healthy eating patterns than among students with unhealthy eating patterns, were mass media (22.3% vs 21.7%, P value = 0.003), lack of parental control (24.4% vs 15.4%, P value 0.000) as well as peer pressure (8% vs. 5.7%, P value = 0.016). However, the social life of students was more effective among students with unhealthy eating patterns than among students with healthy eating patterns (40.3% vs 21%, P value = 0.002).

Student’s suggestions about increasing the consumption of healthy foods among students

The (Figure 3) shows that only (25.3%) of students provided their suggestions about the best choices to increase healthy food consumption among students, and they stated offering healthy food choices in the cafeteria at university of Benghazi is the best way. while the least of them reported healthy educational programs, prepared homemade healthy foods and to ensured good hygienic practices at university cafeteria (7%) (5%) (1%) respectively.

DISCUSSION

The results of this study demonstrated that student’s eating behavior changed to unhealthier after starting university. This was confirmed by another study conducted in Ankara.³¹ Therefore, interventions should be made to enhance the healthy eating behavior of university students and to correct the factors that could develop unhealthier eating pattern among them.³¹

Furthermore, as revealed by the current study there was a dramatic weight change among students after starting university, mostly decrease in body weight as reported by students. However, according to the BMI, the results of this study found that most of students had normal body weight. This may indicate that the students were suffering from overweight before starting university and then their body weight decreased and become normal. Similar to previous studies revealed that the majority of students had normal BMI.³²⁻³⁴ In

Table 4.1: The statistical difference between factors influencing students eating behaviors and students eating patterns

Factors Influencing Eating Behavior of University Students		Student's eating pattern (Chi- square test)			
		Healthy		Unhealthy	
		NO	%	NO	%
Knowledge about the importance of healthy food*	Effective	103	34.30	108	36
	Not effective	21	7	68	22.70
Total		124	41.30	176	58.70
Lack of time to prepare a healthy meal during the study period*	Effective	92	30.70	149	49.70
	Not effective	32	10.70	27	9
Total		124	41.30	176	58.70
Stress associated with the exams period make you eat more unhealthy food*	Effective	70	23.30	133	44.30
	Not effective	54	18.00	43	14.30
Total		124	41.30	176	58.70
High cost of healthy food	Effective	67	22.30	76	25.30
	Not effective	57	19	100	33.30
Total		124	41.30	176	58.70
Food appearance and method of preparing of healthy food	Effective	93	31	131	43.70
	Not effective	31	10.30	45	15
Total		124	41.30	176	58.70
Inaccessibility and unavailability of healthy food	Effective	85	28.40	136	45.50
	Not effective	39	13.00	39	13.00
Total		124	41.50	175	58.50
Body weight concerns*	Effective	105	35	128	42.70
	Not effective	19	6.30	48	16%
Total		124	41.30	176	58.70
Positive emotions and feeling happy	Effective	91	30.30	121	40.30
	Not effective	33	11.00	55	18.30
Total		124	41.30	176	58.70
Negative emotions and feeling disappointed*	Effective	56	18.70	128	42.70
	Not effective	68	22.70	48	16.00
Total		124	41.30	176	58.70

(*) significant association p. value <0.05 by chi-square test

Table 4.2: The statistical difference between factors influencing students eating behaviors and students eating patterns

Environmental Factors Influencing Eating Behavior of University Students		Student's eating pattern (Chi- square test)			
		Healthy		Unhealthy	
		NO	%	NO	%
Peer pressure upon your food *	Effective	24	8	17	5.7
	Not effective	100	33.3	159	53
Total		124	41.3	176	58.7
Lack of parental control on your food choices after starting collage *	Effective	73	24.4	46	15.4
	Not effective	50	16.7	130	43.5
Total		123	41.1	176	58.9
Mass media and social *	Effective	67	22.3	65	21.7
	Not effective	57	19	111	37
Total		124	41.3	176	58.7
Social life make you eat more unhealthy food*	Effective	63	21	121	40.30
	Not effective	61	20.30	55	18.30
Total		124	41.30	176	58.70

(*) significant association p. value <0.05 by chi-square test.

contrast, high prevalence of student's BMI in Malaysian University was underweight.¹⁷ The current study indicated low prevalence of overweight and obesity with higher prevalence among female than male students. In contrast, the overweight and obesity prevalence was greater in men compared to women among Kuwait University students. This recommends the need for

evidence-based gender specific strategies to reduce the number of overweight and obese college students and enhance healthy dietary habits and eating attitudes among students.³⁵

According to student's PA, the results of this study revealed that the majority of the students were physically inactive.

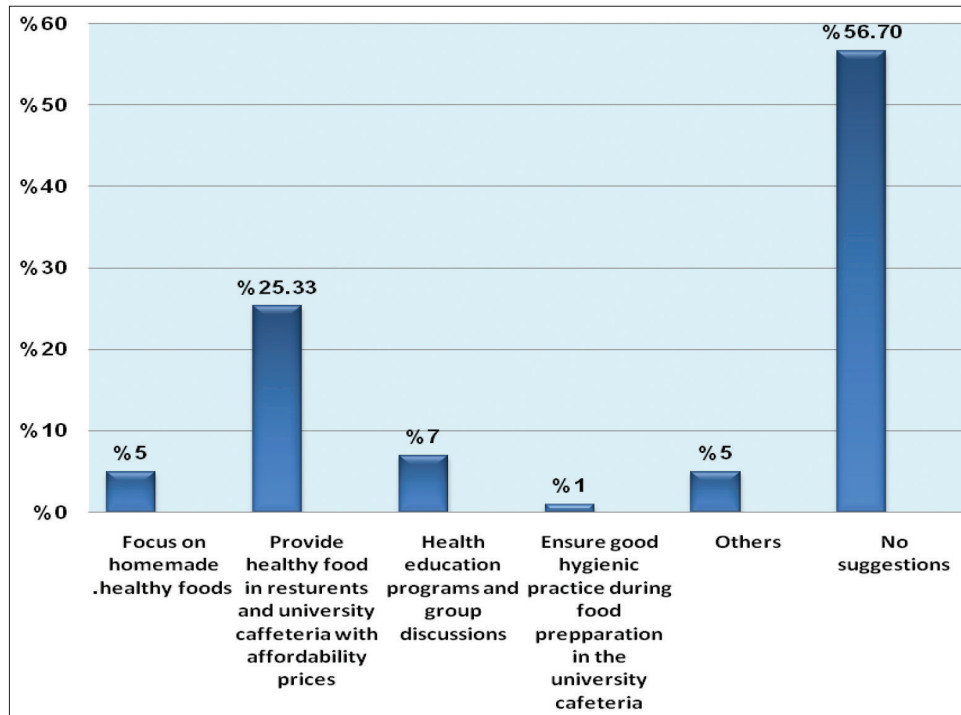


Figure 3: Student's suggestions about increasing the consumption of healthy foods

Hence, they considered to be adopting sedentary life style which was consistent to other previous studies.^{22, 36} In addition, the findings of the current study showed a statistical significance between being physically inactive and having unhealthy eating patterns. Hence, although interventions to promote student's PA are still at an early stage and have only produced moderate effect.²² Preventive interventions should focus on promoting healthy eating habits and physical activity in adulthood.³²

The findings of this study also indicated that lack of time; poor knowledge, stress, body weight concerns, and negative emotions were statistically significant with student's eating patterns and found to be more effective among students with unhealthy eating patterns. They considered as common barriers to healthy eating among university students. Results from previous studies were conducted in several states of USA and Bangladesh agreed to this study that unhealthy eating patterns are influenced by busy schedules and lack of time of university students to prepare a healthy meal.^{12, 23-24, 37} Therefore, nutrition interventions that focus on providing students with education about how to eat healthy on a limited budget and minimal time for food preparation are needed.¹² Furthermore, previous literatures conducted in Egypt as well as from countries worldwide (USA, Bangladesh and Turkey) also agreed with finding of the current study and confirmed that poor nutritional knowledge of students affect their healthy food choices.^{13, 23,24,27} Therefore, the university should prepare some action plans to educate their students about nutrition

and eating habits and teach them how to use this knowledge in practice because a healthier population brings many advantages to the country.¹⁹

Moreover, the current study confirmed the evidences from previous studies conducted in several states of Czech Republic, Bangladesh, USA, and Egypt which found that students have the tendency to change their food habits with academic stress situations to even less healthy especially during the exams.^{19, 24, 25, 38} This irregular and unhealthy food habits should be avoided because could bring consequences related with malnutrition, either deficit or excess, in this critical period of life.¹⁹ Hence, this suggests that interventions aimed at stress reduction maybe useful in the fight against unhealthy eating and obesity.²⁵ Another factor that was effective on unhealthy eating behavior of students in this study was body weight concern. This concern of students about their body weight and body images was discussed in more details by a previous study in the United Arab of Emirates which stated that the majority of students were unsatisfied with their Body images. Females desired to lose weight while males desired to gain weight.³⁹ Hence, body weight concern and dissatisfaction may lead to developing unhealthy eating patterns among university students as well as may have impacts on student's quality of life as was shown in a previous study conducted in Brazilian and Portuguese universities where women's quality of life was associated with body shape concern while men's quality of life was associated with general

body appearance.⁴⁰ Therefore, it important to improve the quality of life of university students by increasing the awareness of the importance of healthy eating behaviors and regular physical activities to improve body size, shape perception, and satisfaction among college males and females.^{39,40}

Although this study indicates that there is no statistical association between student's eating patterns and appearance and inaccessibility of healthy food, student's positive emotions and high cost of healthy food, evidences from previous literatures conducted worldwide revealed that these factors had negative impact on student's eating pattern.^{12-13, 19, 23, 24} This result's conflict between this study and the previous literatures may indicate that healthy food could be cheaper and more available in Libya compared to other countries worldwide and also the Libyan traditional food is considered to be fairly nutritious and appealing. A further point of interest although the current study reported that cost was not associated with student's unhealthy eating patterns, the majority of students reported low daily consumption of fruits and vegetables. To conclude, although this study showed that these factors are not associated with student's eating patterns, creating healthier food services within the university campus is recommended.¹³ Furthermore, considering student's economic status in order to carry out a convenient food is also recommended.¹⁹

This study also assessed the statistical association of the environmental factors influencing eating behaviors and student's eating pattern. Lack of parental control, peer pressure and mass media were statistically significant with student's eating patterns are found to be more effective among students with healthy eating patterns. While results from Blijica, Bangladesh and American studies disagreed to this study and indicated that lack of parental control and peers pressure tend to promote unhealthy eating pattern among students,^{18,24,37} previous American study agreed to this study and indicated that nutritional intervention program applied through mass media (student's mobile phones) tend to promote healthy eating pattern among students.²⁸

Interestingly, however, the current study indicated that social life, such as marital status of students and having another job beside their studies is associated with student's eating pattern to being unhealthy eating behavior. This finding has not been clearly discussed by other studies. Therefore, this study suggests that the social life of students should be considered in any health promotion programs.

CONCLUSION

This study highlights one of the most important period of young person's life, which indicates that student's diet changes and becomes unhealthy. Almost all of students have unhealthy lifestyle and unhealthy eating patterns. The factors reported by most of the students which influence student's eating behaviors in Benghazi University were the lack of time to prepare a healthy meal, that body weight concerns, healthy food appearance, and inaccessibility of healthy food. Additionally, there is statistical association between many factors and student's eating patterns which are poor knowledge, lack of time, stress, social life, body weight concerns, negative emotions, peer pressure, lack of parental control and mass media while other factors with no significant association.

Recommendations

Further studies should be conducted among University Students in different regions in Libya to determine the factors which influence in eating behavior. Educational programs should be established to help to improve and raise awareness on healthy eating behavior additional need to learning cooking skills for preparing healthy food and healthy food alternative related to what is available in this area. Healthful food choices in university cafeterias as well as in restaurants should be provided, monitored and evaluated by nutritionist.

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SE-concept and design of the study-reviewing the literature, manuscript preparation and critical revision of the manuscript, **RM**-Contribute in concept of study , interpretation of data , critical revision of manuscript. AE, EA,NS, and RA contribute in data collection ,review of literature , data analysis and interpretation.

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Source of support: None, **Conflicts of Interest:** None