Original Research Article

Body Weight among Medical Students at Benghazi University in Relation to BMI Based Weight Status and Socioeconomic Factors

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Abstract: There are several methods can be used to assess nutritional status, among these methods is Body Mass Index (BMI). Therefore this cross-sectional study examined differences in body weight of male and female medical students in relation of socioeconomic variables. The Participants completed the self-administration Questionnaire. Body weights, and height were measured for calculating BMI. A total of 579 students in which 95 (16.4%) and 484 (83.6%) male and female respectively. The mean age of our subject's ±SD was 21.1 ±1.6 ranged from 21.6 or 20.9 male and female respectively. About 4% of males and 9% of females were underweight, while the percentage of obesity almost same among both genders 37.1%, 36.6 respectively. Based on age classification, we found that the majorities of our participants aged groups 18-24 were obese (64%) whereas those aged group 25 years old and over were normal weight (93%). Classification of body mass index among our medical faculty branches shown significant increase in obese students with highly prevalent in dental followed by public health and medical. A number of different variables were statistically significant associated with body weight; socioeconomic factors, eating habit, physical activities, daily activities and chronic diseases in which P value p< 0.05. Chronic diseases have positive association with body weight rather than being negatively, which mean those subjects suffering from chronic diseases had higher body mass index than those with none. This study highlights the presence of significant different in body weight among four different medical faculties background. Furthermore, presence of socioeconomic variable showed strong impact on the study samples. Despite this study need further investigation and larger sample in which to mask bias.
Keywords: Body weight, Height, nutritional status, medical students, BMI.

INTRODUCTION

The developmental stages from adolescence to young adulthood are crucial for health promotion and disease prevention. In this period, the individuals are at risk for unhealthy eating habits which can result in fluctuation in the body weight. University students are considered to be great targets for undesirable weight changes [1]. Unhealthy eating habits and negative or positive weight changes are the main public health issues especially among young adults who are experiencing move into university life [2, 3].

Malnutrition is a consequence of unbalanced diet by which certain nutrients are missing or in an incorrect proportion[4]. A number of special nutrition disorders may occur, based on which nutrients are under or overabundant in the diet. Malnutrition is worldwide problem that present in industrialized but most commonly in developing countries. In better-off nations it is more likely to be caused by unhealthy diets with excess energy. A rising trends of obesity is now a major public health issues in developing countries [5,6].

Obesity is a condition resulting from atypical or undue fat accumulation in adipose tissue, which leads to extent health impairments. Recent epidemiological studies indicate that the rise in overweight and obesity is a result of environment and behavioral change beside to genetic disorders [7]. In addition to, there has been a substantial dietary change including the inert over consumption of energy [8]. It has also been shown that, the media has a convincing influence on food choice. Furthermore a number of international and regional studies indicated that obesity is multifactorial in origin beside those factors mentioned earlier include age, sex, education, culture, socioeconomic, psychological factors and physical activity[9].

Obesity is a well-recognize risk factor for cardiovascular diseases, diabetes and deteriorate life expectancy. On the other hands, under-nutrition is failure to intake adequate energy, protein and

micronutrient to meet body requirement for growth and development. Poverty, socioeconomic factors, dietary pattern and agricultural productivity are the main causes of undernutrition [10]. Impaired immune response, muscle wasting, delay wound healing, impaired psycho-social function, slow recovery from illness are considered to be the major clinical consequences of undernutrition [11].

Nutritional assessment is an influential tool for screening those who are already undernourished or at risk for nutritional disorder. There are a number of measures can be used to assess the nutritional status. Body mass index (BMI) is one of them [12].Uses the body mass index (BMI) to classified weight status is a quick and powerful nutritional screening tool [13]. Based on BMI categories, the WHO speculate more than a billion adults to be overweight and a million of them to be obese [14].

Much less investigated and even less discussed is being underweight. Reported of BMI status among University student in Libya is very limited, so that there is no available literatures published. There are a number of studies were investigated different variables on University students which include BMI, weight perception and nutritional status [15, 16, 17, 18, 19, 20].College students have been found to have experience stresses which may negatively influence their weights that give rise to unhealthy eating behaviors due to the significant cost of healthy foods and accessibility of fast food. Previous studies have shown that university students to some extend failed to meet ideal body weight [21].

Several studies of high school male and female students, across the U.S, found that 1.5% of students to be underweight and 51.2% and 47.4% to be normal weight and overweight respectively [8]. Moreover, study of nutritional status by using BMI on first year female university in South Africa found that 7.2% to be underweight and10% overweight [9].

In Asia a limited numbers of studies are available to find out the prevalence of weight status [18]. The prevalence of obesity among females in Arabian Gulf countries has noticeably increased during the last decades and there has also been reported that a high prevalence of overweight and obesity among UAE University students [21,22].

There is a little or no studies have been carried out for investigating the body weights among medical students either in Arab region or somewhere else. Although there are considerable amount of data on the prevalence of obesity in developed or underdeveloped countries but less paid attention on the prevalence of underweight among university students. Therefore, the aim of this study was to measure the nutritional status related to socioeconomic factors through BMI profile among undergraduate medical students at Benghazi University.

SUBJECTS AND METHODS
Study population
A cross sectional study was carried out from March to June 2013 on university students in the city of Benghazi, Libya. Well-recognized university in Benghazi approached of our study is medical faculties (Medicine, Dental, Pharmacy and Public health). The samples, 579 students, from four faculties were involved in the study. After obtaining written consent, students were requested to fill out a questionnaire and proceed to a private area to have their height and weight measured. Although we approached different number of students at each faculty, the final completed questionnaires in hand were 579 from the four faculties. The loss of questionnaires was due to various reasons including students refusing to continue mid-way, leaving the institution unannounced and misplacing questionnaires. Hence, our overall response rate was 99%.

Questionnaire
The questionnaire for this study included 36 items divided into four sections. It contained questions about personal information, demographic characteristics, socioeconomic factors, physical activity and personal habits.

Measures
Weight and height were measured after completion of the questionnaires and hand in by two students. Height was measured to the nearest 0.1 cm using standard calibrated scale attached to the balance against a wall. Weight was measured to the nearest 0.5 kg using weighing machine. All measurements were collected with participants in either thin socks or barefoot and with heavy clothing items taken away. Body mass index (BMI) was computed as weight in kilograms divided by the square of height in meters and categorized according to the World Health organization [4].

Ethical statement
This study was granted approval by the local Ethics Committee of the Benghazi province. Informed written consent was obtained through a consent form that was given to the participants along with the questionnaire.

Statistical analysis
The data from the questionnaires was entered using Excel. Data set was exported to SPSS v.18 and Epi-info for complete analysis. Statistical analysis was carried out for the complete sample as well as for four

different groups which were created according to measured BMI: underweight, normal and overweight. Mean values and standard deviation for all continuous variables: weight, height, BMI other variables for all groups were obtained. Frequencies for each categorical variable were calculated for each group as well. To determine the differences regarding to categorical variables in each BMI group, Chi sq test was done and also ANOVA test as well for comparison the significant variables.

RESULTS
1-Age and gender distribution of study samples
Table (1) shows subject characteristic according to age and sex. The total numbers of study samples were 579 in which 95 (16.4) and 484 (83.6) male and female. The age of our subjects were ranging between 18-24 and 25 years old and over. The distribution of male and female aged groups 18-24 were 69 and 327 respectively. Moreover the participants of 25 years old and over represent 26 and 157 male and female. Mean age of male and female subjects were 21.6 and 21 respectively.

2-Frequency distribution of sociodemographic variables
Our study shown that the majorities of students were having Libyan nationality and from Benghazi province which accounts around 98.5% and 95% respectively. In regard marital status and availability of jobs among the students the majorities were single and with no additional jobs. Approximately 27% of students had average monthly family income between 500-1000 LD. The largest family sizes among the students were 5-10 members. These variables could be implicated in critically important in negative or positive weights changes (Table 2).

3-Education levels of the parents
In the next step we looked at the parental educations, in which our study indicated that the lowest numbers of students had father education levels illiterate and the highest were occupied by University which represent by 4.5 and 55% respectively. In concerning mother education were shown differently in which highest number of participants had their mother with secondary education levels (27.5). While the lowest percentage of mother education were illiterate (9%)(Table 3).

4-Academic characteristic of the participants
The most participant in our study were from pharmacy (34%) followed by public health, medicine and dental (32%, 20.5% and 13% respectively) (Table 4).

5-Dietary habits and type of physical activities among students
Physical activities and dietary habits play an important role in controlling weight (13) so that we imply to be filled out by our participants (Table 5 and 6). Overall, around 50% of the students' participants in different kinds of exercises with average frequencies less than 3 days a week.47% of the participants were involved in regularly physical activities in compared with those with not activities 53%.

Food habits have also been implicated in weights modification (12), so we intended to study such pattern behavior. The majorities of student ate three meals a day (51%), with average snakes two per day (40%).Eaten fasting foods were representing the highest percentage among the students (79%).

6-Distribution of study sample according to BMI
Table (7) presented BMI categories for all subjects, the percentage of underweight were around 5%, whereas obesity was 21.5%, the rest of the samples were located in normal range 73.6%.

Recent studies shown that, one of the risk factors of obesity is family history [11,23], therefore we investigated this factor among the participants (table 8). We found that obesity is most common and linked in family with their mothers were originally obese 23%. In contrary, slim, were found there no association to the family history.

7-Study of other variables contribute to weights modifications
Smoking habit, daily activity and chronic diseases are among the risk factors for developing malnutrition [20, 22].We tested this hypothesis among our participants (Table 9, 10 and 11). We found that smoking was not prevalent (4%) among the students. While presences of chronic diseases and medications among students (Table 10)were less common than those without (17.65, 23.5%), (82.4%, 66.5% respectively). Majorities of the students spend their free time watching TV for 5 hours a day(54%) with sleeping time 6-8 hours a day 77% beside that spend most of their times study at University 53.7% with average resting hours 3-5 hours a day 40.2%(Table 11).

8- Effect of different variables on body weight
In the first we classified our participants according their BMI (Table 12) we found that the majorities of our participants aged groups 18-24 were obese (64%) whereas those aged group 25 years old and over were normal weight (93%). We compared the differences between tow subgroup of ages and we found there was significant different between those subgroups in which students with age groups less than 24 have underweight. Female gender was associated ($p < 0.05$)

with better weight status. Females as compared to males had a higher percentage of normal BMI and a lower percentage of having malnutrition (Table 13).

Socioeconomic variables play a critical role in prevalence malnutrition [13], so that we investigate the effect different socioeconomic variables. In regard, occupation of the students there were associated (p< 0.05) with the weight status of the subjects. Part time employed students had a better weight status as compared to those who were unemployed. This was reflected as a higher percentage of normal weight status and a lower percentage of malnutrition and risk of malnutrition among those currently employed as compared to those unemployed (Table 14).

Next we investigated if there is any association of the second variable is family income with body weight, we found that Income was associated (p< 0.05) with better weight status. Those with a higher family income had higher percentage of subjects with a normal weight status and a lower percentage of those at risk of extreme weight (Table 15).

Marital statuses of the students were also investigated if shown any further independent risk factor for developing malnutrition. Marital status such as marriage was not associated with body weight changes more percentage of married subjects (85.7 %) had a good weight in compared to their unmarried counterparts (32.9 %). None of the married subjects were found to have a poor weight while this figure was 8.7 % in case of single subjects. Only 14.3 % of married subjects needed an improvement in their weight quality as against 58.3 % among the unmarried subjects. On the other hands, single status were strongly significant ((p< 0.05) with having increasing body weight.

Faculty was the academic characteristics which associated (p< 0.05) with the weigh status of the subjects. Students belonging to the medical academic stream had the highest percentage of subjects with good weight status (42.5 %) and the least with a poor weight status (5.2 %) and students of public health academic stream came to the second rank that had 31.4 % of subjects with good weight status and 7.0 % with poor weight status. At the bottom were dental academic stream students: only 8.1 % with a good weight status

and the rest with either a poor weight status (8.6 %) or weight that needed improvement in its status (80.2 %), Pharmacy did not show any further differences (data not shown)(Table 17).

Other variables were also investigated include eating out; levels of activities and medical characteristic include presences of chronic diseases and medication. Our study shown that, subjects who ate out had a lesser percentage of good weight status (16.7 %) and a greater percentage of subjects with poor weight status (19.4 %) as compared to those who did not eat out (34.9 % and 5.5 % respectively) (Table 18). Furthermore, higher activity level was associated with a better weight status. Subjects with more studying time had better weight status than those who had higher sleeping and rest time (Table 19).

The presence of disease was the medical characteristics associated (p < 0.05) with weight status. Subjects with disease(s) had a lower weight status as seen by a lower percentage of normal weight status and a higher percentage of overweight and underweight as compared with those without any disease (Table 21). All of the above testes were carried out by Chi Square test.

Because of have more than two variables in related to components of students' daily activities so that we performed Analysis of variance ANOVA**.** The individual scores from all the components of the daily activity and the overall daily activities score according to the three categories of activity level (sedentary, low active and moderate activity) are presented in (Table 21). Analysis of variance by ANOVA showed that in terms of the mean overall daily activity , the group with a good quality weight (87.64 ± 5.96)), the group with overweight (67.15 ± 7.97) and underweight group (45.66 ± 4.14) differed significantly (p< 0.05) from each other.

The three groups of subjects categorised according to their weight status as assessed by the BMI also differed (p < 0.05) in their mean scores for all the components of the daily activities.

Table 1: Study Sample according to age and gender

Age (Years)		Sex		Total
		Male	**Female**	
18-24	**No.**	69	327	396
	%	72.63	67.56	68.4
≥25	**No.**	26	157	183
	%	27.37	32.44	31.6
Total	**No.**	95	484	579
	%	16.4	83.59	100
Age (Years) Mean ± SD		21.6 ± 1.577	20.9 ± 2.2	21.1 ± 1.626

Table 2:Participants' socioeconomic characteristics

Characteristics	Male		Female		Total	
	Number	%	Number	%	Number	%
Nationality						
Libyan	93	97.9	477	98.55	570	98.45
Others	2	2.1	7	1.45	9	1.55
Total (N)	**95**	**100**	**484**	**100**	**579**	**100**
Living Place						
Benghazi	**79**	**83.16**	**423**	**87.4**	**551**	**95.16**
Out of Benghazi	**16**	**16.84**	**61**	**12.6**	**28**	**4.84**
Total (N)	**95**	**100**	**484**	**100**	**579**	**100**
Marital status						
Not Married	87	91.58	457	94.42	553	95.5
Married	8	8.42	27	5.58	26	4.49
Total (N)	**95**	**100**	**484**	**100**	**579**	**100**
Part time Job						
Yes	34	35.79	0	0	34	5.87
No	61	64.21	484	100	545	94.13
Total (N)	**95**	**100**	**484**	**100**	**579**	**100**
Average family income" LD"						
<200	2	2.1	2	0.41	4	0.69
200-500	13	13.68	92	19	105	18.13
500-1000	36	37.89	190	39.25	226	39
1000-1500	18	18.94	136	28.1	154	26.59
>1500	26	27.36	64	13.22	90	15.54
Total (N)	**95**	**100**	**484**	**100**	**579**	**100**
Family Size exclude parents						
<5	25	26.32	24	4.96	49	8.46
5-10	35	36.84	411	84.9	446	77.03
>10	35	36.84	49	10.12	84	14.51
Total (N)	**95**	**100**	**484**	**100**	**579**	**100**

Table 3: Socio-economic characteristics of subjects: Paternal and maternal educational status

Characteristics	Male		Female		Total	
	Number	%	Number	%	Number	%
Paternal educational level						
Illiterate	10	10.53	16	3.31	26	4.49
Primary education	20	21.05	50	10.33	70	12.09
Secondary education	33	34.74	71	14.67	104	17.96
University degree	29	30.53	291	60.12	320	55.27
Others	3	3.16	56	11.57	59	10.19
Total (N)	**95**	**100**	**484**	**100**	**579**	**100**
Maternal educational level						
Illiterate	12	12.63	43	8.88	55	9.5
Primary	19	20	87	17.97	106	18.31
Secondary	23	24.21	137	28.31	160	27.63
University degree	34	35.79	160	33	194	33.5
Others	7	7.37	57	11.77	64	11.05
Total (N)	**95**	**100**	**484**	**100**	**579**	**100**

Table 4: Different education background of the study samples

Characteristics	Male		Female		Total	
	Number	%	Number	%	Number	%
Faculty						
Dental	15	15.79	60	12.4	75	12.95
Medicine Pharmacy	23	24.21	96	19.8	119	20.55
Public Health	44	46.32	153	31.6	197	34.02
	13	13.68	175	36.2	188	32.47
Total (N)	95	100	484	100	579	100

Table 5: Self-reported physical activity among subjects

Characteristics	Male		Female		Total	
	Number	%	Number	%	Number	%
Exercise done						
Yes	35	36.84	238	49.38	273	47.32
No	40	42.11	265	54.75	305	52.68
Total (N)	**95**	**100**	**484**	**100**	**579**	**100**
Frequency per week						
< 3	32	91.43	103	43.28	135	49.45
3-5	2	5.71	94	39.50	96	35.16
Daily	1	2.86	41	17.23	42	15.38
Total (N)	**35**	**100**	**238**	**100**	**273**	**100**
Type of exercise						
Football	28	80.0	0	0.00	28	10.26
Walking	0	0.0	190	79.83	190	69.60
Tennis	3	8.6	0	0.00	3	1.10
Swimming	4	11.4	5	2.10	9	3.30
Running	0	0.0	42	17.65	42	15.38
Basketball	0	0.0	1	0.42	1	0
Total (N)	**35**	**100**	**238**	**100**	**273**	**100**

Table 6: Dietary habits characterization of the subjects

Characteristics	Male		Female		Total	
	Number	%	Number	%	Number	%
Eating out						
Yes	88	92.63	223	46.07	311	53.71
No	7	7.37	261	53.93	268	46.29
Total (N)	**95**	**100**	**484**	**100**	**579**	**100**
Number of meals/day						
One meal						
Two meals	5	5.26	20	4.13	25	4.32
Three meals	20	21.05	132	27.27	152	26.25
Four meals	45	47.37	250	51.65	295	50.95
	25	26.32	82	16.94	107	18.48
Total (N)	**95**	**100**	**484**	**100**	**579**	**100**
Number of snakes/day						
No snakes						
One snake	4	4.21	13	2.69	17	2.94
Two snakes	33	34.74	177	36.57	210	36.27
Three snakes	24	25.26	208	42.98	232	40.07
Four snakes	25	26.32	50	10.33	75	12.95
	9	9.47	36	7.44	45	7.77
Total (N)	**95**	**100**	**484**	**100**	**579**	**100**
Eating fast food						
Yes	71	74.74	386	79.75	457	78.93
No	24	25.26	98	20.25	122	21.07
Total (N)	**95**	**100**	**484**	**100**	**579**	**100**

Table 7: Distribution of subjects according to BMI categorization

Characteristics	Male		Female		Total	
	Number	%	Number	%	Number	%
Underweight						
Severe	2	2.11	2	0.41	4	0.69
Moderate	3	3.16	7	1.45	10	1.73
Mild	4	4.21	11	2.27	15	2.59
Normal weight	**46**	**48.42**	**380**	**78.51**	**426**	**73.58**
Pre-obese						
Obese	25	26.32	33	6.82	58	10.02
Class I	7	7.37	23	4.75	30	5.18
Class II	5	5.26	15	3.10	20	3.45
Class III	3	3.16	12	2.48	15	2.59
Total (N)	**95**	**100**	**484**	**100**	**579**	**100**

Table 8: Distribution of subjects according to family members' origin of malnutrition

Characteristics	Male		Female		Total	
	Number	%	Number	%	Number	%
Obese family members						
None	30	31.58	266	54.96	296	51.12
Father	10	10.53	15	3.10	25	4.32
Mother	22	23.16	111	22.93	133	22.97
Brother	12	12.63	36	7.44	48	8.29
Sister	21	22.11	56	11.57	77	13.30
Total (N)	**95**	**100**	**484**	**100**	**579**	**100**
Underweight family members						
None	31	32.63	207	42.77	238	41.11
Father	9	9.47	45	9.30	54	9.33
Mother	23	24.21	25	5.17	48	8.29
Brother	11	11.58	107	22.11	118	20.38
Sister	21	22.11	97	20.04	118	20.38
All	0	0.00	3	0.62	3	0.52
Total (N)	**95**	**100**	**484**	**100**	**579**	**100**

Table 9: Distribution of subjects according to smoking Habit

Characteristics	Male		Female		Total	
	Number	%	Number	%	Number	%
No	71	74.74	484	100	555	95.85
Yes	24	25.26	0	0	24	4.15
Total (N)	**95**	**100**	**484**	**100**	**579**	**100**

Table 10: Distribution of subjects according to diseases complained and medications intake

Characteristics	Male		Female		Total	
	Number	%	Number	%	Number	%
Diseases						
Yes	33	34.74	69	14.26	102	17.62
No	62	65.26	415	85.74	477	82.38
Total (N)	**95**	**100**	**484**	**100**	**579**	**100**
Medication						
Yes	25	26.32	111	22.3	136	23.49
No	70	73.68	373	77.7	443	76.51
Total (N)	**95**	**100**	**484**	**100**	**579**	**100**

Table 11: Distribution of subjects according to Daily Activity

Characteristics	Male		Female		Total	
	Number	%	Number	%	Number	%
Watching TV						
< 2 hours	43	45.26	219	45.25	262	45.25
2-5 hours	52	54.74	263	54.34	315	54.40
Total (N)	**95**	**100**	**484**	**100**	**579**	**100**
Sleeping Time						
< 6 hours	17	17.89	38	7.85	55	9.50
6-8 hours	60	63.16	387	79.96	447	77.20
>8 hours	18	18.95	59	12.19	77	13.30
Total (N)	**95**	**100**	**484**	**100**	**579**	**100**
Studying at University						
< 7 hours	47	49.47	216	44.63	263	45.42
7-10 hours	44	46.32	267	55.17	311	53.71
>10 hours	4	4.21	1	0.21	5	0.86
Total (N)	**95**	**100**	**484**	**100**	**579**	**100**
Studying at home						
< 4 hours	52	54.74	216	44.63	268	46.29
4-6 hours	39	41.05	261	53.93	300	51.81
>6 hours	4	4.21	7	1.45	11	1.90
Total (N)	**95**	**100**	**484**	**100**	**579**	**100**
Rest Time						
< 3 hours	27	28.42	136	28.10	163	28.15
3-5 hours	55	57.89	178	36.78	233	40.24
>5 hours	13	13.68	170	35.12	183	31.61
Total (N)	**95**	**100**	**484**	**100**	**579**	**100**

Table 12: Association of age group with weight status of the subjects

Age group (Years)	Percentage of subjects according to BMI		
	Normal	**Overweight/ obese**	**Underweight**
18-24	28.8	64.0	7.3
≥ 25	92.9	7.1	0

Table 13: Association of gender with the obesity status of the subjects

	Percentage of subjects according to BMI		
Sex	**Normal**	**Overweight/ obese**	**Underweight**
Male	53.4	37.1	9.5
Female	59.0	36.6	4.2

Table 14: Association of occupation with the weight status of the subjects

	Percentage of subjects according to BMI		
Occupation	**Normal**	**Overweight/ obese**	**Underweight**
Employed	90.5	57.5	7.3
Unemployed	83.8	51.4	9.6

Table 15: Association income with the weight status of the subjects

Income	Percentage of subjects according to BMI		
	Normal	**Overweight/ obese**	**Underweight**
High	60.2	38.0	1.8
Low (less than 500 LD)	55.0	36.3	8.8

Table 16: Association of marital status with BMI of the subjects

Marital status	Percentage of subjects according to BMI		
	Normal	Over weight	Underweight
Single	32.9	58.5	8.7
Married	85.7	14.3	0

Table 17: Association of academic stream with weight status of the subjects

Academic stream	Percentage of subjects according to BMI		
	Normal	Over weight	Underweight
Medical	42.5	52.4	5.2
Public Health	31.4	61.6	7.0
Dental	8.6	80.2	11.1

Table 18: Association of eating out with weight status of the subjects

Eating out	Percentage of subjects according to BMI		
	Normal	Over weight	Underweight
Yes	16.7	63.9	19.4
No	34.9	59.6	5.5

Table 19: Association of degree of self-related activity level with the nutritional status of the subjects

Activity level	Percentage of subjects according to BMI		
	Normal	Over weight	Underweight
Sedentary	52.0	38.2	9.8
Moderate	63.2	35.0	1.7
Low active	63.7	34.7	1.6

Table 20: Association of the presence of disease with the weight status of the subjects

Presence of chronic disease	Percentage of subjects according to BMI		
	Normal	Over weight	Underweight
Yes	55.4	37.6	7.0
No*	100	0	0

Table 21: Comparison of mean scores of the components of the daily activities and the overall BMI score among the subjects according to their weight categories

Components of daily activity	Mean ($\pm$ SD) scores of subjects		
	Normal	Over weight	Underweight
Watching TV	28.90* (1.30)	17.73* (1.90)	16.60* (2.93)
Sleeping Time	16.80* (2.63)	13.42* (2.78)	5.70* (1.73)
Studying at University	18.07* (2.40)	14.76* (3.40)	2.46* (2.98)
Studying at home	18.20* (2.14)	8.89* (2.84)	12.67* (2.72)
Rest Time	8.53* (1.58)	10.60* (2.75)	7.78* (3.04)
Total	**88.64* (5.96)**	**67.15* (7.97)**	**45.66* (4.14)**

* ANOVA test where $p < 0.05$ is significant.

DISCUSSION

The present study focus on body weight and socioeconomic variables in medical students of Benghazi University. Accordingly, BMI was calculated, and shown more than 50% of participants have normal weight. In our study, overweight amounted to 37% and obesity was 36%. Male and female were shown slightly difference in overweight and obesity because our study population where have been found more female than male (1:5, 95 and 484 male and female respectively).

This result of our study might be shaded the significant different. This high figure can be explained in view of the predominance of unhealthy dietary behaviors and life style of participants as demonstrated in Tables (5, 6, 8 and 10). These findings were shown much higher prevalence than other Arab Golf regions include Saudi, EAU, Jordan and Kuwait [1, 4,5, 23].

It's so hard to compare such numbers with local studies because according to our knowledge there was no data published in regarding body weight among

Libyan Universities students. The other reason among differences in body weight among male and female could be related to differences in socio-demographic composition between the genders including age composition, percentage of married and the level of education. The observation that married females showed significant higher value of overweight and obesity than singles is expected due to fact that hormonal changes.

Overall, the percentage of overweight or obesity of the present study was more less than that in USA, where 35% of the College students were reported to be overweight or obese. Contrary to the present study and in spite of the high rate of economic growth in Asia especially Thai and Malaysia, overweight and obesity among university students was 2.9% only [3,19].The evident difference between the Chinese study and this study is not surprising and could be explained in the view of dietary habits among adolescent Libyan males and female.

Presence of obesity among family members increased the risk of obesity by 2 to 4 times. It is worth-mentioning that familial obesity is not only due to genetics, behavioral and environmental factors [24] are also important.

The association of marital status and obesity could be explained in the point of hormonal changes and changes in the life style of married females in the oriental culture. In our study there were found more male than female underweight (2:1), and this could be probably more male involved in extra job, physical activity and less free time Table(14, 16 and 21) which put them in critically undernourished.

Therefore which have been pointed out in the majorities of studies carried out for measuring body weight status were involved overweight and obesity [24, 25, 26, 27]. Although, we can not compared our data to local studies because for the same reason mentioned above.

In the next we investigated the effect of age one the weight status. According to our data, in which they were classified as adolescence those in range between 18- 24 and 25 age old and over as adult [1]. We found that malnourish affected those who were adolescence than adults as 64 and 7.1 obesity and 7 and 0 Underweight (Table 12).

Classification of body mass index among our medical faculty branches shown significant increase in obese students with highly prevalent in dental followed by public health and medical and the reason beyond this is not clear.

Our socio-demographics revealed that our study population was mostly unmarried 95.5%. Socioeconomic variables are strongly associated with body weight status include family income, occupation and marital status play an important role in body weight modification [22, 24]. Therefore we aimed to investigate such factors on weight status.

Our study revealed that the great impact of socioeconomic factors on weight of participants, in which those with low family income, unemployment were shown underweight Table (14, 15). In contrary high family income and parental occupation students have shown high body weight. Our study is in agreement with other studies where socioeconomic factor implies [21, 24,27].

There also another factor have been implicated in change body weight is physical activities. The participants with low physical activities were shown have more body weight in compared to those with less physically active [20].

Interestingly, our students from different medical backgrounds, by which medical, dental and public health. All different students' colleges were shown higher percentage of obesity which accounts more than 52% which mean less percentage of normal weight 42%. The good glue for this is could be due to age of the students which mean in adolescence rather than adults. In adolescences there are something so called growth spurt accompany with physiological changes [11].

In our study we also involved study of chronic disease as a parameter could influence body weight. The surprising unexpected in this those with chronic diseases have significant higher body weight that those with none. The reason beyond that could be chronic diseases may impede the physical activity of the individual which place them as a sedentary life style that lead to more fat accumulate. Our study need to be further investigated in big population to exclude biases

CONCLUSION

Our study has shown that among university students in medical faculties, the majority of the participants were at normal weight and the prevalence of being underweight is comparatively low. While overweight or obesity were modest high. There was significant association between BMI with family history and marital status in contribute of obesity. Despite socioeconomic variables were strongly associated with increase body weight. Furthermore we found that chronic diseases which are another factor have a positive impact on weight by which increase body weight rather than decrease.

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