IOSR Journal of Nursing and Health Science (IOSR-JNHS)
e-ISSN: 2320–1959.p- ISSN: 2320–1940 Volume 5, Issue 2 Ver. III (Mar. - Apr. 2016), PP 40-49
www.iosrjournals.org

The Effect of Dietary Patterns and Psychological Factors on Overweight and Obesity among University Students

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Abstract
Background*: Obesity is a paramount public health problem in both developed and developing countries.*
Objectives: *The aim of the study was to estimate prevalence of obesity among university students and explore its association with dietary patterns and psychological factors* **.**
Methods*: This is a cross-section descriptive study including 849 students selected from the faculties of physical education, education, nursing, sciences, commerce, Kindergarten, engineering, specific education, and high institute of Administration and computer, Post Said University, Egypt. Data was collected through a self-administered questionnaire covering socio-demographic characteristics, assessment of dietary habits, and psychological factors. Weight and height were measured and body mass index was calculated.*
Results: *The overall prevalence of obesity was 12.5.% and overweight was 34.7%. It is significantly higher among male vs. female (13.0 % vs 11.4%), 20 years & more than <20year (14.6% vs 6.1%) and married vs single (28.6% vs 10.9). While, there are no significant relationship between obesity and all psychological factors.*
Conclusion*: The present study concluded that the university students had high prevalence of obesity associated with poor level of dietary pattern and there was no significant relationship between obesity and all psychological factors. Otherwise, in order to generalize the present study results further studies regarding obesity prevention and improvement of nutritional knowledge, dietary pattern, and life style in different geographical areas and large study sample size should be emphasized.*
Key words: *Effect, dietary pattern, Psychological factors, obesity, university, students.*

I. Introduction

One of the most basic needs for human being is nutrition which considered an issue of great importance. Traditionally, hunger and lack of food resources in what is now referred to as low income countries have been a matter of concern, but during the last decades, lots of attention has been paid to the negative consequences of food surplus. The dietary habits have changed considerably during a short period of time due to great economical development, with unhealthy food becoming more accessible and also cheaper than healthy food. This have lead to a great increase in consumption of this type of food, and, in turn, a lot of undesirable health consequences causing a strong and growing concern from health governments and medical specialists **(Henningsen , 2011).**

World health organization (WHO) nutritional recommendations for populations and individuals include the following; achieve energy balance and healthy weight, limit energy intake from total fat and shift fat consumption, away from saturated fat to unsaturated, increase consumption of fruits, vegetables and legumes, whole grain and nuts, limit the intake of free sugar, limit salt consumption from all sources and ensure that salt is iodized. A diet rich in fruits and vegetables not only aids in weight management, but also has been associated with decreased risk of chronic diseases **(CDS, 2008)**.

Most of the world's population live in countries where overweight and obesity kill more people than underweight (this includes all high-income and most middle-income countries (**WHO,2011**, **Ibrahim et al. ,2014**).Obesity is a paramount public health threat in the U.S. Approximately two-thirds of the adult population is overweight**.** A staggering 70 percent of adult Egyptian women and 48 percent of men suffers from obesity and overweight. Obesity affects about two-thirds of urban and one-third of rural men, and over 80% of urban and 56% of rural women) **(Charabel 2009 ,Samy etal.2012)**. Various studies in Egypt blame the problem on bad eating habits, economic prosperity and absence of a health conscious culture Therefore, it is important to understand the relationships between occupational stress, obesity, and dietary habits. However, few research studies have characterized these relationships **(Witten, 2009).** The effect of weight gain on college students may lead to physical and emotional problems that could continue into adulthood. Identifying behavioral, demographic, and psychological factors that impact college student's weight status could aid in developing

programs to help reduce weight and prevent weight gain in overweight and obese college students **(Brooke, 2009).**

College students particularly have the reputation of having poor dietary habits and low activity levels. Healthful eating and obtaining adequate physical activity were not found to be considered high priorities among college students. A national survey performed by the American College Health Association in 2005 found that 3 of 10 college students are either overweight or obese (**Brooke, 2009**). Also , they are a particular population that are at an increased risk for weight gain due to environmental and behavioral changes that are associated with decreased dietary quality and physical inactivity. Preventing weight gain in college students may have a profound impact on prevalence of overweight or obesity later in life. However, only a few studies have documented dietary and physical activity habits in college students, and to date, no studies have examined breakfast consumption.(**McGrath, 2007**).

In addition to that, poor eating habits is a major public health concern among young adults who experienced transition into university life, during which, they are exposed to stress and lack of time. These factors pose a barrier against adoption of healthy behaviors. Although these behaviors of students are considered temporary, as part of university life; unhealthy habits picked up at this age generally persist in older adult life (**Ganasegeran et al ,2012**).

Obesity problem has been observed in many lower-income countries during the last decades. China has adopted an open-market policy and experienced explosive economic growth, which has led to less food scarcity at the national level and to a remarkable transition in the structure of the diet of Chinese. The composition of the Chinese diet has been shifting towards a diet higher in fat and meat, and lower in carbohydrates and fiber (**Sakamaki et al ,2005**). According to the most recent World Health Organization statistics issued for the year 2010 , with nearly 70 percent of its adult population overweight or obese, Egypt is the fattest African country. It's also the 14th fattest country in the world . **(Charbel , 2010)**.

Aims of the study:

The aim of this study was to:

1- Estimate the prevalence of obesity among university students.

2- Explore the association between dietary patterns, psychological factors and obesity among university student.

Research Questions:

1- What is the prevalence of obesity among university students?

2- Are there association between dietary patterns, psychological factors and obesity among university students?

Subjects and Methods

Research Design:

A cross-section descriptive study design was used to estimate prevalence of obesity among university students and explore its association with dietary patterns and psychological factors

Setting:

This study was carried out in Physical education faculty, Education faculty, Nursing faculty, Sciences faculty, Commerce faculty, Kindergarten faculty, Engineering faculty, Specific education faculty, High institute of Administration and computer affiliated to Port-Said University in Egypt.

Sample Size:

To achieve the study aim, the sample size was determined by using the following, equation**(Bobko,Philip2001);** equation**(Bobko**, **,Philip2001);**

Sample size(n)= 2+Z $_{\alpha/2}$[(1-r2) / Δ2]

Where:

r:, correlation coefficient between psychological factors and self assertiveness =0.73**(Mueen et al.2006)**

Z $_{\alpha/2}$: a percentile of standard normal distribution determined by 95% confidence level= 1.96

Δ : The width of the confidence interval = 0.035.

The sample size (n)= 2+1.96 [(1-0.73^2) / 0.035^2] = 749 students.

The calculated sample size is 749 students. Due to the expected drop-out rate (10%), the studying sample size was 849 students.

Sampling technique :

All Faculties of Port Said University were included in the study. From each faculty, an identified number of students from each academic year were included in the study. Using systematic sample technique students from academic year were chosen randomly using their faculty student list by calculating the gap

between students selected from the list as follow. The target populations were students (from level 1 to 4) from both sex which the sample size were determined according to the following equation(**(El –Sayad,2010)**:-

$$\frac{\text{Total number of students in faculty} \times \text{Total sample size}}{\text{Total number of all faculties' students}}$$

According to this equation, the sample size of each academic year was classified as follow.

A table illustrates the total numbers of students in all faculties in year

Faculty Name / Number of student	Physical Education	Education	Specific Education	Kindergarten	Nursing	Commerce	Sciences	Engineering	High Institute of Administration and Computer
Number of preparatory year students	---------	---------	--------	-------	-------	--------	-------	790	---------
Number of first year students	494	164	150	70	103	1039	218	776	660
Number of second year students	396	248	210	182	69	889	310	819	750
Number of third year students	150	330	300	200	98	902	211	575	1029
Number of fourth year student	154	585	320	250	105	970	330	640	1151
Number of Internship year students	---------	---------	--------	-------	57	---------	-------	----------	--------
Total number of faculty students	1194	1327	980	702	432	3800	1069	3600	3590

A table illustrates the number of students in each faculty of the studied settings:

Faculty Name / Number of student	Number of preparatory year students	Number of first year students	Number of second year students	Number of third year students	Number of fourth year student	Number of Internship year students	The total number of students from all the faculty were chosen randomly were
Physical Education	----------	494/17= 29	396/17=23.2 =23	150/17=8.8 =8	154/17=9	----------	69 students
Education	----------	164/9=18.2 =18	248/9=27.5 =27	330/9=36.6 =36	585/9=65	----------	146 students
Specific Education	----------	150/14=10.5 =10	210/14=15	300/14=21. 4=21	320/14=22.8=22	----------	68 students
Kindergarten	----------	70/4=17.5= 17	310/12=25.8 =25	211/12=17. 6=17	330/12=27	----------	86 students
Nursing	----------	103/5=20	69/5=13.8 =13	98/5=19.6 =19	105/5=21	57/5=11.4= 11	84 students
Commerce	----------	1039/54=19. 2=19	88954=16.6/ =16	902/54=16	970/54=17.9=17	----------	68 students
Sciences	----------	218/12=18.1 =18	182/ 4=45	200/4=50	250/4=62.5=62	----------	175 students
Engineering	790/41= 19.3=19	776/41= 18.9=18	819/14= 19.9=19	5752/14=14	640/14= 15.6=15	----------	85 students.
High Institute of Administration and Computer	----------	660/51=12.9 =12	750/51=14.7=14	1029/51=20 .2=20	1151/51=22.5= 22	----------	68 students
The total sample size	19	161	197	201	260	11	849 students

Tools of Data Collection:

Data was collected using adopted tool from **Elansary et al., 2006, WHO report, 2000 , and Abouzied , 2004**. The tool was modified by the researchers to be suitable for student's level, value & perceptions. The tool is consists of four parts ; **Part I :**Socio-demographic data that include age, levels, income, residence, room numbers in the house, family numbers and family history. **Part II:** include 16 questions regarding dietary habits such as usual pattern and preferable foods, sources of fat, protein, carbohydrate intakes and numbers of weekly eating pattern.

Part III : includes 38 questions regarding psychological factors to determine Student's psychological upset regarding if the students faced with psychological problems such as nervousness situation, stress, and conflict. Stressful Situations Questionnaire (SSQ) **Hodges and Felling,1979. Abdel Aziz et al. 2014** was used to

measure stress in the participants. The survey has 38 items that assess the level of reported apprehension or anxiety in various situations relevant to college students.
Last part includes body mass index (BMI) and blood pressure

Content Validity:

Content validity of the study tool was tested by a group of five experts in the field of medical-surgical nursing, medicine community health nursing, and nutrition professors, their opinion and suggestion were taken into consideration .

Pilot Study:

Pilot study was carried out after the development of the tools on 10% (85 students) to test applicability of the tools then necessary modification were done according to the results of pilot study and expertise opinions. Otherwise, these students were then excluded from the sample of research work to assure the stability of answers.

Ethical considerations:

Formal approval was taken from Deans, vice deans and course coordinators of colleges. A brief explanation of the purpose and importance of the study was given to the students and assured that the obtained information will be confidential and used only the purpose of the study. Confidentiality of the information was assured by the researchers.

Methods of data collection:

The structured questionnaire was filled out individually with the students. Data was collected from the selecting settings by the researcher using the constructed tools; the data was collected within 3 months which started at March 2015 until June 2015. Each student was individually filling in the questionnaire; the data was collected from all the students for 2 days /week in Saturday and Sunday while they are in free time of lectures, purpose of the study was explained prior to get the questionnaire sheet, and it distributed to be answered within (20 -30 minutes) then collected.

Statistical analysis:

Data was collected and entered into a database file. Statistical analysis was performed by using the SPSS 19 computer software statistical package. Data was described by summarized tables and figures. For comparing the (obesity and dietary pattern, Psychological factors) with socio-demographic characteristics, Chi – Square test was used. Statistical significance was considered at P-value <0.05.

Limitation of the study

The researcher was made a great effort to found appropriate and available time for students and ensure that no contradiction with student's schedule for lectures

II. Results

Table 1. Distribution of studied sample regarding to their socio-demographic characteristics .

Socio-demographic data	**N (849)**	**%**
Students age		
<20 years	214	25.2
>20 years	635	74.8
Mean±SD	20.2862±1.19030	
Gender		
Male	560	66.0
Female	289	34.0
Body Mass Index (BMI)		
<18.5 (under weight)	19	2.3
From 18.5 to 24.9 (ideal weight)	429	50.5
From 25 to 29.9 (over weight)	295	34.7
≥30 (obese)	106	12.5
Income Mean ±SD	1117.1708±1067.75101	
Family number Mean±SD	5.1496±1.43326	
Grade:		
Preparatory year	19	2.2
First year	161	19
Second year	197	23.2
Third year	201	23.7
Fourth year	260	30.6
Internship year	11	1.3

Marital status		
Single	772	90.9
Married	77	9.1
Residence		
Urban	367	43.2
Rural	482	56.8
Total	849	100.0

Table one show that most of the studied sample was males and the mean age of them is 20 ±1.19. Additionally, the percent of obese students was 12.5%. on the other hand approximately more than one thirds of students were fourth academic year.

Table 2: The relationship between Obesity of the studied sample and their socio-demographics

	Total	**Obese N(%)**	**Significance test**
Overall	849	106(12.5)	
Age: <20	214	13(6.1)	χ^2=10.8,P=0.001
20 & more	635	93(14.6)	
Sex: Male	560	73(13.0)	χ^2=0.6,P=0.5
Female	289	33(11.4)	
Residence: Urban	367	45(12.3)	χ^2=0.03,P=0.86
Rural	482	61(12.7)	
Income: No response	210	12(5.7)	
Sufficient	399	60(15.0)	χ^2=11.8,P=0.003
Insufficient	240	34(14.2)	
Crowding index: <1	56	12(21.1)	
1-	443	60(13.5)	χ^2=6.7,P=0.035
2 & more	349	34(9.7)	
Marital status: Single	772	84(10.9)	χ^2=20.1,P≤0.001
Married	77	22(28.6)	
Grade: 1st	161	11(6.8)	
2nd	197	25(12.7)	χ^2=9.7,P=0.02
3rd	201	42(20.9)	
4th	260	58(22.3)	

Table (2) shows significant relationship between obesity and age, income, crowding index, marital status and also faculty grade.

Table 3: The relationship between Obesity of the studied sample and their dietary habits.

	Total	Obese N(%)	Significance test
Number of meals: 1& 2	254	6(2.4)	
3	411	9(2.2)	χ^2=293.9,P≤0.001
4	184	91(49.5)	
Regular breakfast: Yes	523	95(18.2)	
Sometimes	126	9(7.1)	χ^2=42.9,P≤0.001
No	200	2(1.0)	
Breakfast source: None	200	2(1.0)	
Home	263	68(25.9)	χ^2=71.3,P≤0.001
College	301	26(8.6)	
Restaurants	85	10(11.8)	
Dietary regime: Yes	228	100(43.9)	
No	621	6(1.0)	χ^2=280.8,P≤0.001
Protein source: Red meat	199	24(12.1)	
Poultry	227	37(16.3)	
Fish	211	17(8.1)	χ^2=7.3,P=0.12
Plant	30	3(10.0)	
Mixed	182	25(13.7)	
Carbohydrate source: Rice	355	42(11.8)	
Bread	193	22(11.4)	
Sweet	100	11(11.0)	χ^2=2.7,P=0.6
Soft drink	62	8(12.9)	
>1 type	139	23(16.5)	
Fat source: Animal	314	59(18.8)	
Plant	269	35(13.1)	χ^2=27.1,P≤0.001
Both	267	12(4.5)	
Milk: 5 times	365	51(14.0)	
3-4 times	157	15(9.6)	χ^2=2.5,P≤0.5
1-2 times	155	21(13.5)	
None	172	19(11.0)	

Vegetables: 5 times	471	57(12.1)	
3-4 times	126	20(15.9)	χ^2=1.6,P=0.7
1-2 times	148	17(11.5)	
None	104	12(11.5)	
Bread: 5 times	478	52(10.9)	
3-4 times	105	19(18.1)	χ^2=5.2,P=0.16
1-2 times	185	22(11.9)	
None	81	13(16.0)	
Meat/poultry: 5 times	201	24(11.9)	
3-4 times	264	41(15.5)	χ^2=3.5,P=0.3
1-2 times	354	38(10.7)	
None	30	3(10.0)	
Fish: 5 times	207	23(11.1)	
3-4 times	383	43(11.2)	χ^2=3.9,P=0.3
1-2 times	229	37(16.2)	
None	30	3(10.0)	
Rice: 5 times	504	66(13.1)	
3-4 times	191	22(11.5)	χ^2=0.7,P=0.9
1-2 times	94	10(10.6)	
None	60	8(13.3)	
Sweet: 5 times	404	48(11.9)	
3-4 times	194	22(11.3)	χ^2=1.2,P=0.7
1-2 times	151	21(13.9)	
None	100	15(15.0)	
Chocolate: 5 times	396	45(11.4)	
3-4 times	198	25(12.6)	χ^2=1.1,P=0.8
1-2 times	154	22(14.3)	
None	101	14(13.9)	
Chepsi: 5 times	360	52(14.4)	
3-4 times	188	25(13.3)	χ^2=3.8,P=0.3
1-2 times	195	20(10.3)	
None	106	9(8.5)	
Fresh juice: 5 times	235	29(12.3)	
3-4 times	120	15(12.5)	χ^2=0.01,P=1.0
1-2 times	254	32(12.6)	
None	240	30(15.5)	
Canned juice: 5 times	430	60(14.0)	
3-4 times	103	11(10.7)	χ^2=1.8,P=0.6
1-2 times	163	19(11.7)	
None	153	16(10.5)	
Soft drink: 5 times	430	60(14.0)	
3-4 times	103	11(10.7)	χ^2=1.8,P=0.6
1-2 times	163	19(11.7)	
None	153	16(10.5)	
Fast food: 5 times	343	44(12.8)	
3-4 times	106	13(12.3)	χ^2=0.3,P=0.96
1-2 times	209	24(11.5)	
None	191	25(13.1)	
Tea/coffee: 5 times	519	71(13.7)	
3-4 times	46	2(4.3)	χ^2=6.8,P=0.08
1-2 times	110	8(7.3)	
None	174	25(14.4)	

Table (3) shows the relationship between obesity of the studied sample and their dietary habits .Statistically significant relationship between obesity and number of meals, regular breakfast, dietary regime, fat sources and frequency of tea and coffee drinking. However in This table also indicates that there are no statistically significant differences were found between obesity and (protein source, carbohydrate source, milk, vegetables, bread, meat/poultry, fish, rice, sweet, chocolate, chepsi, fresh juice, canned juice, soft drink and fast food).

Table 4: The relationship between Obesity of the studied sample and their Psychological problems

Psychological factors.	**Total**	**Obese N(%)**	**Significance test**
Nervous/ aggressive : Always	688	82(11.9)	
Sometimes	57	6(10.5)	χ^2=2.6,P=0.3
None	104	18(17.3)	
Depression/ frustration : Always	231	35(15.2)	
Sometimes	469	50(10.7)	χ^2=3.3,P=0.19
None	149	21(14.1)	
Stress /anxiety: Always	169	17(10.1)	

Sometimes None	364 316	45(12.4) 44(13.9)	χ^2=1.5,P≤0.5

Table (4) shows no significant relationship between obesity and all psychological factors.

Figure 1. Body mass index in study sample

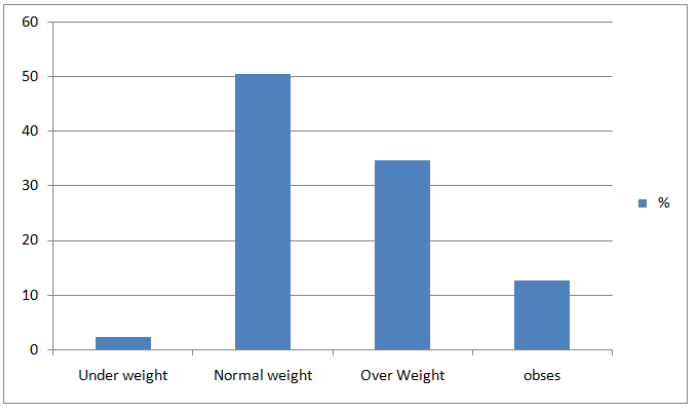

Figure one shows that the highest percent of student have normal or ideal weight followed by percent of student with overweight.

III. Discussion

Nutrition as the science of food and its relationship to health has been recognized in recent years as the cornerstone of socioeconomic development. Adequate nutrition is important for a variety of reasons, including optimal cardiovascular function, muscle strength, respiratory ventilation, protection from infection, wound healing and psychological well-being (**Ibrahim et al ,2014**).

The present study founded that most of the studied sample were males with mean age of 20 ±1.19 years old. Additionally, the percent of obese students was 12.5%. On the other hand, more than one thirds of students were fourth grade. Also, there are a significant relationship between obesity and age, income, crowding index, marital status and also faculty grade. These findings goes in the same way with **Camieh et al , 2015** who discovered that the prevalence of obesity among Lebanese adults was 26.1%. Gender differences in obesity estimates were observed across age groups and the three obesity classes, men showing higher prevalence rates at the younger age groups (20–49 years), and women showing higher prevalence rates in older age groups (50 years and above). Obesity showed significant associations with socio-economic status in women; it decreased with higher educational attainment greater household assets and lower crowding index, not of the effect of other covariates.

Regarding the relationship between obesity and number of meals, the present study revealed that there was a significant relationship between obesity and number of meals, regular breakfast, dietary regime, fat sources and frequency of tea and coffee drinking. These findings goes in the same line with **Kifle, 2012** who highlighted on that fast food consumption among office workers is a common phenomenon. Moreover, frequent consumption of fast food is linked to cardiovascular risk factors. The pervasiveness of these risk factors has debilitated the office workers' health and contributed to low performance and absenteeism. However, there is a significant gap in the current literature regarding the health impacts of frequent fast food consumption behavior of office workers. Additionally, consuming large portions of fast food has been associated with obesity. Also, a significant correlations of moderate strength between fast food portion size and obesity (rs = .37) and between frequent fast food consumption and hypertension (rs = .40). These results constitute an important contribution to the existing literature and can be used by the health professionals and management to design workplace health intervention which focuses on the office workers and the social environment. Thus, implications for positive social change include reducing the prevalence of obesity and hypertension are needed While, **Xiannu, 2012** indicated that food addiction is one of several hypotheses currently used to explain recent increases in the prevalence of obesity. Attribution theory describes an individual's locus of control over behavior. 34.4% of obese individuals had a high risk for food addiction and 27.9% of obese individuals had a moderate risk of food addiction. The odds of obesity for individuals with high and moderate food addiction risk were respectively 7.225 times ($p < .001$) and 2.684 times ($p = .03$) the odds of obesity among individuals with low food addiction risk. Also, high and moderate risk for food addiction was statistically significantly associated with obesity.

In Jonesboro, **Hillarie , 2012** stated that the nationwide increase in obesity rates has led to growing interest among academics and policy makers to identify factors related to obesity rates. A significant negative relationship was found between obesity rates and number of supercenters which holds after controlling for

poverty rate and population size. The qualitative analysis indicates a variation in food selection between supercenters, supermarkets and grocery stores. The implication for positive social change include knowledge and guidance useful to researchers, policy makers, parents, school administrators, and the community to help to make school lunches healthier but with fewer calories and to design interventions aimed at the prevention and management of overweight or obesity (**Rose,2011**).

In Malysia , most of the students had healthy eating habits except in frequency of meals, fruit consumption, water intake and consumption of fried food. Social and psychological factors were important determinants of eating habits among medical students. Nutritional education among medical students should be encouraged to promote healthier eating habits and lifestyles, as well as adherence to the healthier traditional food **(Ganasegeran et al , 2012**).

Concerning the relationship between obesity and psychological factors, the current study revealed that there was no significant relationship between obesity and all psychological factors. In contrast of the present findings **Harrington, 2012**which founded that there are a relationship between mental health conditions, such as depression, and obesity development. In addition to that, little is known about the association between mental health factors and children's health behaviors, cognitive factors which have been found to have a prominent role in behavior change, may also be correlated with health behaviors. These cognitive factors may also interact with mental health factors to predict health behaviors. Also, **Morera , 2008** suggest that psychopathology is positively correlated with obesity in several areas.

As regard , the distribution of sample body weight , the present study revealed that the highest percent of student have normal or ideal weight followed by percent of students with overweight. These findings clarified by **Morera , 2008** as he indicated that BMI percentile is not related to resiliency in children and adolescents; this is encouraging and suggests that some at-risk for overweight and overweight youth may be as resilient as their peers of average weight.

Additionally, an individual's diet and physical activity habits are influenced by their knowledge and attitudes towards these behaviors. Investigation of these variables in a population provides an insight into the factors that may be mediators of motivation to change behavior. Theories from health psychology, sociology and social psychology have been proposed to explain the link between knowledge, attitudes, skills, social and environmental influences, and human behavior **(Roberts and Marvin, 2010).**

Moreover , **Wardle et al ,2000** stated that Health literacy, a set of skills necessary to function adequately in the health care environment, has been defined as the ''capacity to obtain, process, and understand health information and services needed to make appropriate health decisions and acquired health knowledge. In addition to, low health literacy is recognized as a serious public health problems due to its widespread prevalence and significant impact on human or patient health outcomes.

Finally, from the forgoing discussion it could be concluded that unhealthy lifestyle contributes to many of the leading causes of death worldwide. Additionally from one to three faulty health-related behaviors such as cigarette smoking, dietary habits, substance abuse, and exercise patterns develop at the time of puberty and in adolescence **(Al-Almaie, 2005).**

IV. Conclusion

From the present study , it can concluded that the university students had high prevalence of obesity associated with poor level of dietary pattern and their psychological status , also, there are a significant relationship between obesity and age, income, crowding index, marital status and also faculty grade , there are a significant relationship between obesity and number of meals, regular breakfast, dietary regime, fat sources and frequency of tea and coffee drinking. While, there was no significant relationship between obesity and all psychological factors.

V. Recommendation

1-Further research studies should be undertaken on the prevention of obesity among university students in large sample size to generalize the result of study to improve their knowledge and attitude regarding the life style, ideal dietary pattern among university students in many geographical areas to investigate the confounding factors that hinder optimal health.

2-Encourage mass media program to help all population in the same field.

3-Distribution of pamphlet for university students or brief guideline booklet for instruction about prevention and control of weight.

4- The ministry of education should add the effect of dietary habits and psychological factors on overweight and obesity in the school curriculum.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

Maha Moussa conceived the study idea, collect data, designed the review methodology, conducted the critical appraisal of the studies and drafted the manuscript.

Eman Shahin collect data, wrote the first draft of the manuscript, revision of the manuscript for important intellectual content and approved the submitted draft.

Shereen Qalawa collect data and analysis and interpretation of data critical, the final version of the manuscript was critically reviewed by all authors read and approved the final manuscript.

Acknowledgment

I wish to express my deepest appreciation and sincere gratitude to everyone who has contributed to this work. I'm exceedingly grateful and immensely thankful with deepest appreciation and indebtedness to Prof. Dr. Nazik Ibrahim Abdel - Ghani Prof of Community Health Nursing ,Faculty of Nursing , Alexandria, for his great help, direction, continuous encouragement and supervision throughout this work. And I can't forget to thank with sincere gratitude, respect and indebtedness to my guide Prof. Dr Abdel-Hady El-Gilany, Professor of Public Health, Faculty of Medicine Mansoura University Port said University, Egypt for her expert guidance and his valuable suggestions which have laid the foundation stone for building up the present study, and for his effort, time, constant encouragement, patience and motivating attitude that have always been a source of inspiration. And also, I would like to thank all students in nursing College who so generously offered their experiences and so willingly answered all questions as well as Dean, vice dean and coordinator of courses in nursing college for helping in gathering this study.

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