PREVALENCE AND FACTORS ASSOCIATED WITH OBESITY AND OVERWEIGHT AMONG MEDICAL STUDENTS OF AJMAN UNIVERSITY OF SCIENCE AND TECHNOLOGY

Yara Meni, Farah Laham, Haya Dandashi, Chaza Alleli, Nageeb Hassan and Moyad Shahwan*

Ajman University of Science and Technology, Collage of Pharmacy and Health Sciences, Ajman, United Arab Emirates.

---

*Corresponding Author: Moyad Shahwan

Ajman University of Science and Technology, Collage of Pharmacy and Health Sciences, Ajman, United Arab Emirates.

ABSTRACT

Purpose: to identify the prevalence as well as determine gender differences in overweight and obesity among undergraduate medical students of Ajman University of Science & Technology. **Methods:** Undergraduate medical student (n = 675) of Ajman University, aged from 16 to 27 years, were involved in this study. Height and weight were measured using standard methods and the Body Mass Index (BMI) was calculated. **Results:** Our results showed that out of 675 respondents, 265 are male representing 39.25% while 410 are female representing 60.74% which depicts female gender being higher in number/population than the male. Crude prevalence were: 7.41% underweight, 58.37% normal weight, 26.22% overweight and 8% obese. Further analysis showed that males are in higher percentage of overweight and obesity than females. **Conclusion:** The prevalence of overweight and obesity among medical students sampled is high. Among the overweight and obese there was a slight gender difference with regard to BMI.

KEYWORDS: overweight, obesity, physical activity, diet, BMI.

INTRODUCTION

Food, which is a part of everyday life, is the main source of energy and materials needed to build and maintain all body cells & hence, the growth, repair and maintenance of the body is done by nutrition process.[1] So nutrition is the process of intake of nutrients from food and how the body uses it.[2] Poor dietary practices and increased levels of stress, two common attributes of university life, are strongly linked with ill health or decreased health.[3]

Excess nutrition, especially which fat & carbohydrate rich meals, may lead to one of the most dangerous and continuously developing health problems, which is the overweight and obesity. The recent studies, showed that at least 2.8 million people, throughout the world, die each year as a result of being overweight or obese and an estimated 35.8 million (2.3%) of global delays are caused by overweight or obesity.[4]

Numerous studies showed that overweight and obesity associated with many killing diseases including type-2 diabetes, Coronary Heart Disease (CHD), hypertension, dyslipidemia, osteoarthritis, gallbladder disease and certain type of cancer.[5] Any increasing in the body mass index (BMI), a measure of weight relative to height, will reflect a steadily increases in the seriousness of such conditions.[6]

Sense Overweight and obesity are defined as which is an abnormal or excessive accumulation of fat in the adipose tissue throughout the body fat accumulation that may impair health. So the most useful measure of overweight and obesity is body mass index (BMI), simple index of weight-for-height that is commonly used to classify overweight and obesity in adults. It is defined as a person's weight in kilograms divided by the square of his height in meters [kg/m²].[7]

In the UAE, due to the sedentary lifestyle and the limited awareness or knowledge regarding overweight and obesity, this issue is growing. Thus, the objective of this study was to determine the prevalence as well as gender differences in overweight and obesity among undergraduate medical students.

MATERIALS AND METHODS

The study sample consisted of 675 students involving both male and female and made up of 410 undergraduate female students and 265 male students from medical colleges. There are two medical colleges in Ajman University of science and technology; College of dentistry and college of pharmacy and health sciences. The students were recruited randomly by the researcher from all levels. Data collection took place by asking students to fill out a questionnaire related to

demographic factors, such as what they eat, when they eat it and how they spend their leisure time. Body Mass Index (BMI) was utilized to survey student's health status. The weight was measured with adjusted standard electronic measuring scale. Height was measured by utilizing a portable meter ruler. Body mass index (BMI) was calculated as weight (kg) divided by the square of height (m²) and then categorized according to WHO recommendations to define underweight (BMI ≤ 18.5), normal weight (BMI=18.5–24.9), Overweight (BMI=25–29.9) and obese (BMI > 30) individual. Statistical analysis was performed using Microsoft Excel.

RESULTS
Table 1: Distributions based on the gender of respondents

gender	Number of respondents	Percentage (%)
male	265	39.25%
female	410	60.74%
total	675	100%

Table 1 shows that out of 675 respondents, 265 are male representing 39.25% while 410 are female representing 60.74% which depicts female gender being higher in number/population than the male.

Table 2: Distribution based on the gender of respondents

Age range	Number of respondents	Percentage (%)
16-19	241	35.7%
20-23	393	58.2%
24-27	41	6.07%
TOTAL	675	100%

From Table 2 above, the largest percentage (58.8%) representing 393 of the respondents were between 20 and 23 years old, followed by 16- 19 years old respondents which is 35.7% (241 respondents) and the lowest percentage of 6.07% (41 respondents) between 24 and 27 years old.

Table 3: prevalence of obesity based on BMI

Age range	Male (%)								Female (%)							
	underweight		normal weight		Over weight		obese		underweight		normal weight		Over weight		obese	
16-19	1	0.38%	43	16.23%	24	9.06%	10	3.77%	17	4.15%	98	23.9%	39	9.5%	9	2.2%
20-23	6	2.26%	85	32.08%	66	24.91%	15	5.66%	24	5.85%	144	35.12%	40	9.76%	13	3.17%
24-27	-	-	11	4.15%	1	0.38%	3	1.13%	2	0.49%	13	3.16%	7	1.71%	4	0.98%
TOTAL	7	2.46%	139	52.46%	91	34.35%	28	10.56%	43	10.49%	255	62.18%	86	20.97%	26	6.35%

Table 3 shows the percentage of underweight, normal weight, overweight and obesity of respondents between ages 16-27. Out of the respondents that were 20-23 years old, 30.57% of the male were overweight and obese while 12.93% of the female were overweight and obese, which represent the highest percentage compared to whole population. While the lowest percentage of overweight and obesity was 1.51% for male and 2.69% for female of the 24-27 years old.

From this table, it can be inferred that in all, the majority of the students (58.37%) were of normal weight, out of which 62.18% of the female students compared to 52.46% of the male. Based on BMI classification, the prevalence of overweight and obesity was more common among male students compared to female (34.35% and 10.56% vs. 20.97% and 6.35% respectively). But, 10.49% of the female students were underweight as compared with 2.64% males.

Table 4: prevalence of obesity based on physical status of family of respondents

Parent stature	Male (%)								Female (%)							
	underweight		normal weight		Over weight		obese		underweight		normal weight		Over weight		obese	
Both fat	1	0.38%	17	6.41%	11	4.15%	7	2.64%	3	0.73%	28	6.83%	11	2.68%	11	2.68%
non fat	6	2.26%	75	28.30%	46	17.36%	13	4.9%	25	6.09%	137	33.4%	34	8.29%	8	1.95%
One is fat	-	-	47	17.74%	34	12.83%	8	3.02%	15	3.66%	90	21.9%	41	10%	7	1.7%
TOTAL	7	2.64%	139	52.45%	91	34.34%	28	10.56%	43	10.48%	255	62.13%	86	20.97%	26	6.33%

From Table 4 above, it could be seen that 2.68% of the female population who were obese have fat father and mother, the implication of this is that obesity could be genetic. On the other hand, from the male population who were obese only 2.64% have fat parents, in comparing with whom have nonfat parents or only one of the parents is fat (4.91% and 3.02% respectively).

Table 5: frequency of consumption of snacks

Age range	male								female							
	Once daily		Twice daily		Thrice daily		More than thrice daily		Once daily		Twice daily		Thrice daily		More than thrice daily	
16-19	17	6.42%	30	11.32%	22	8.30%	9	3.40%	51	12.44%	60	14.63%	23	5.61%	29	7.07%
20-23	43	16.23%	57	21.51%	49	18.50%	23	8.68%	66	16.10%	91	22.20%	34	8.29%	30	7.32%
24-27	5	1.89%	8	3.02%	2	0.75%	-	-	12	2.93%	7	1.71%	4	0.98%	3	0.73%
TOTAL	65	24.54%	95	35.85%	73	27.55%	32	12.08%	129	31.47%	158	38.54%	61	14.88%	62	15.12%

Table 5 explains the frequency of consumption of snacks of the respondents. A large percentage of the respondents from age 20-23 consumed snacks twice daily among both male and female respondents (21.51% and 22.20% respectively).

Eating habits of the students were compared by gender and age as in the table above. The unhealthy eating practice was indicated by the fact that most of the students reported eating snacks more than twice daily and at any period as well (49.43% and 57.57%) males and females respectively.

Table 6: Period of consumption of snacks

Age range	male								female							
	Before breakfast		Between breakfast and lunch		After dinner		Any period		Before breakfast		Between breakfast and lunch		After dinner		Any period	
16-19	5	1.89%	21	7.92%	11	4.15%	41	15.47%	3	0.73%	42	10.24%	11	2.68%	107	26.1%
20-23	5	1.89%	47	17.74%	37	13.96%	83	31.32%	2	0.49%	81	19.76%	22	5.37%	116	28.3%
24-27	-	-	3	1.13%	5	1.89%	7	2.64%	1	0.24%	8	1.95%	4	0.97%	13	3.17%
TOTAL	10	3.78%	71	26.79%	53	20%	131	49.43%	6	1.46%	131	31.95%	37	9.02%	236	57.57%

From Table 6, it can be noted that all the respondents at one time or the other take snacks but the percentage varies depending on the time or period it was taken before breakfast, between breakfast and lunch, after dinner and some even take it any period and it ranges between (3.78 and 1.46%), (26.79 and 31.95%), (20 and 9.02%), (46.43 and 57.57%) respectively for both male and female.

Table 7: frequency of consumption of junk food

age	male										male More than thrice daily		female										female More than thrice daily	

age	none		Once daily		Twice daily		Thrice daily		More than thrice daily		None		Once daily		Twice daily		Thrice daily		More than thrice daily	
16-19	1	0.38%	22	8.3%	22	8.3%	13	4.91%	20	7.55%	4	0.97%	85	20.7%	42	10.24%	18	4.39%	14	3.41%
20-23	1	0.38%	50	18.87%	44	60.6%	53	20%	24	9.06%	9	2.19%	118	28.7%	50	12.19%	24	5.8%	20	4.87%
24-27	-	-	2	0.75%	6	2.26%	2	0.75%	5	1.89%	-	-	12	2.92%	8	1.95%	3	0.73%	3	0.73%
TOTAL	2	0.76%	74	27.92%	72	71.16%	68	25.66%	49	18.5%	13	3.16%	215	52.32%	100	24.38%	45	10.92%	37	9.01%

Table 7 shows frequency of consumption of junk food of the respondents. A large percentage of the males (71.16%) consume junk food twice daily. And (52.32%) of the females consume junk food once daily.

Male students represent higher percentage compared to female students in consumption of junk food more than thrice daily (18.5% and 9.01% respectively).

Table 8: Types of activities engaged in during leisure period
Male:

Age	Sleeping		Reading		PE		T.V		Social network		Video games	
16-19	9	3.39%	4	1.51%	25	9.43%	7	2.64%	13	4.91%	20	7.55%
20-23	27	10.19%	20	7.54%	38	14.34%	22	8.3%	31	11.69%	34	12.83%
24-27	4	1.51%	2	0.75%	5	1.89%	1	0.37%	2	0.75%	1	0.37%
total	40	15.1%	26	9.8%	68	25.6%	30	11.32%	30	17.36%	55	20.76%

Female

Age	Sleeping		Reading		PE		T.V		Social network		Video games	
16-19	38	9.27%	25	6.1%	13	3.17%	20	4.88%	53	12.3%	14	3.41%
20-23	31	7.56%	25	6.1%	30	7.32%	44	10.73%	88	21.46%	3	0.73%
24-27	7	1.71%	2	0.49%	3	0.73%	6	1.46%	7	1.71%	1	0.24%
Total	76	18.54%	52	12.69%	46	11.22%	70	17.07%	148	35.47%	18	4.38%

Table 8 shows types of activities engaged in during leisure period by the respondents. A large percentage of the male involved themselves in physical exercises and play video games (25.60% and 20.76% respectively), while for females larger percentage spend their time surfing social network and sleep (36.1% and 18.54% respectively). From the table, it could be seen that more male students engage in physical exercise as compared with female. This table revealed that a large percentage of the respondents (both male and female) engage in surfing social network. This might be one of the reasons for the high prevalence of overweight and obesity.

Table 9: prevalence of obesity based on parents educational status

Parent stature	Male (%)								Female (%)							
	underweight		normal weight		Over weight		obese		underweight		normal weight		Over weight		obese	
Both educated	7	2.64%	122	46.04%	81	30.57%	26	9.81%	42	10.24%	251	61.22%	84	20.48%	21	5.12%
Both none educated	-	-	5	1.89%	4	1.51%	-	-	1	0.24%	1	0.24%	1	0.24%	3	0.73%
One is educated	-	-	12	4.53%	6	2.26%	2	0.75%	-	-	3	0.73%	1	0.24%	2	0.49%
TOTAL	7	2.64%	139	52.46%	91	34.34%	28	10.56%	43	10.48%	255	62.19%	86	20.96%	26	6.34%

Table 9 shows that a large percentage of the male with normal weight have educated parents, only a small percentage have illiterate parents and so for the female respondents.

DISCUSSION
The prevalence of overweight was 34.35% and 20.97% in males and females respectively, while the obesity is 10.56% and 6.35% in males and females respectively. This finding is inconsistent with several studies. For example, (Akinpelu, Oyewolu and Oritogun, 2008) who reported in their studies that females are more likely to be overweight and obese than males.[8] Also it contrast to a study conducted among Tai Solarin University of Education which report higher prevalence of obesity among female university students.[9]

Our study show similarity to a study conducted among 749 students (68% females and 32% males) enlisted from the State University of the Basque Country, prevalence rate of overweight and obesity was 25% in males compared to 13.9% in females.[10] In the United Arab Emirates, a cross-sectional survey directed among 300 male students reported that the prevalence rate of obesity was 35.7% in males and this figure was higher than the female's rate.[11] in a study conducted in Kuwait University among 842 students, high prevalence rate of overweight and obesity was reported, male and female (32% and 8.9%, respectively).[12]

In terms of eating habits, university students usually do not follow healthy eating habits. The typical university student diet is high in fat and low in fruits and vegetables. Students often select fast food due to its availability, palatability and convenience.[13]

This study shows (17.36% males and 35.47% females) spent their leisure time surfing social networks, (11.32 and 17.07%) spent it by watching TV. A study conducted by (American Academy of Pediatrics, 2011) indicate that media clearly play an important role in the current epidemic of childhood and adolescent obesity.

There are a number of ways that watching TV could be contributing to obesity: (1) increased sedentary activity and displacement of more physical pursuits; (2) unhealthy eating practices learned from both the programming and the advertisements for unhealthy foods; (3) increased snacking behavior while viewing; and (4) interference with normal sleep patterns.[14]

The higher rate of normal weight among female understudies is normal since girls are more careful about their weight status than guys, because of societal observation which urges girls to be slim. This assumption was supported by the fact that only 10.49% female students were underweight when contrasted with 2.46% of guys in the studied sample.

CONCLUSION
It can be concluded from our result that male students spend double the time in doing physical exercises than female students, although they represented slightly higher percentage of overweight and obesity as compared to female students. The lower rate of obesity and overweight among female students due to the possibility that they are more cautious about their weight status due to societal perception which encourages females to be slender. Another possibility, male students show irregular eating habits compared to female students which reflect the rate of male obesity. The findings of this study are limited by the use of a sample of students from just two collages which may not be a representative of all undergraduate students in Ajman University.

RECOMMENDATION
Primary health-care services, universities and families are all useful for the prevention and management of obesity and overweight in students. The University with health agencies should provide awareness on the health implication and preventive measures of obesity. Strategies of public health to prevent obesity should start with schools and reach out to the whole community. Ministry of Health should provide more materials such as journals pamphlets to school libraries on overweight and obesity. Improving students' knowledge about nutrition and healthy eating habits may promote healthy body weight management among students and reduce the prevalence of overweight and obesity, In this manner, creating nutrition education programs promote healthy eating habits for university students should be encouraged.

REFERENCES

1. Wardlaw and M. Kessel, 2002. Perspectives in Nutrition. 5th Edn., McGraw Hill Publisher, USA.
2. Ajala, J.A., 2005. Understanding Food and Nutrition. Maybest Publications, pp: 2-3.
3. Olusanya, J., & O. O. (2011). Prevalence of Obesity among Undergraduate Students of Tai Solarin University of Education, Ijagun, Ijebu-Ode. Pakistan J. of Nutrition Pakistan Journal of Nutrition., 10(10): 940-946.
4. WHO, Obesity. (n.d.).http://www.who.int/gho/ncd/risk_factors/obesity_text/en/ Retrieved March 15, 2016.
5. Suleiman, A. A., Alboqai, O. K., Yasein, N., El-Qudah, J. M., Bataineh, M. F., & Obeidat, B. A. (2009). Prevalence of and Factors Associated with Overweight and Obesity among Jordan University Students. Journal of Biological Sciences, 9(7): 738-745.
6. WHO, Obesity. (n.d.).http://www.who.int/gho/ncd/risk_factors/obesity_text/en/ Retrieved March 15, 2016.
7. WHO, Obesity and overweight. (n.d.).http://www.who.int/mediacentre/factsheets/fs311/en/. Retrieved March 15, 2016.
8. Akinpelu, A.O., Oyewolu, O.O. and Oritogun, K.S. (2008). Overweight and obesity: does it occur in Nigerian adolescence in an urban community? Lot J. Blomed and H/thscience, (1): 11-17.
9. Olusanya, J., & O. O. (2011). Prevalence of Obesity among Undergraduate Students of Tai Solarin University of Education, Ijagun, Ijebu-Ode. Pakistan J. of Nutrition Pakistan Journal of Nutrition., 10(10): 940-946.
10. Arroyo Izaga, M., A.M. Rocandio Pablo, L. Ansotegui Alday, E. Pasual Apalauza, I. Salces Beti and E. Rebato Ochoa, 2006. Diet quality, overweight and obesity in universities students. Nutr. Hosp., 21: 673-679.
11. Musaiger, A.O., O.L. Lloyd, S.M. Al-Neyadi and A.B. Bener, 2000. Lifestyle factors associated with obesity among male university students in the United Arab Emirates Nutrition and Food Science.
12. Al-Isa, A.N., 1999. Obesity among Kuwait University Students: an explorative study. The J. Royal Soc. Promotion Health, 119: 223-227.
13. Galore, S.R., C. Walker and A. Chandler, 1993. Brief communication: Dietary habits of first-year medical students as determined by computer software analysis of three-day food records. J. Am. Coll. Nutr., 12: 517-520.
14. American Academy of Pediatrics, 2011. Policy Statement—Children, Adolescents, Obesity and the Media., 128(1): 201–208.