

## Obesity and Overweight among Employees of Medical Technical Institute/ Baghdad

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### الخلاصة

الهدف: ان السمنة وفرط الوزن هما عوامل خطيرة معروفة لأمراض الشرايين التاجية، ومتوقع زيادتها في جميع انحاء العالم لذا تم تصميم هذا البحث بهدف معرفة مدى انتشار السمنة وفرط الوزن بين منتسبي المعهد الطبي التقني في بغداد من كلا الجنسين ومن مختلف المستويات الثقافية في المعهد.

المنهجية: دراسة وصفية اجريت في المعهد الطبي التقني بغداد للفترة بين الاول من تشرين الاول ٢٠٠٢ ولغاية نهاية شهر آذار ٢٠٠٦. البحث هم مجموعة مناسبة غير عشوائية من منتسبي المعهد من الكادر التدريسي، التقني، الاداري و من العمال. تم جمع البيانات بطريقة المقابلة المباشرة، و تضمنت البيانات ايضا قياس كتلة الجسم و ذلك بقياس الوزن بالكيلو غرامات و الطول بالمتر ومن ثم قسمة الوزن على مربع الطول بالامتار.

النتائج: تضمنت عينة البحث ٣٠٢ منتسب، ٣٥ ذكر و ٥١ انثى. معدل العمر كان ١٤،٦٩-٢٤،٩ سنة. اما معدل كتلة الجسم فكان  $28.4 \pm 6.72$ .

ان مدى انتشار فرط الوزن و السمنة كان (٠.٠٦،٤٢%) (٢٩ و ٣،٥٤%) على التوالي فيما لا يعاني اي فهم من السمنة من الدرجة الثالثة.

اوضح البحث وجود علاقة معنوية بين زيادة العمر و زيادة كتلة الجسم ( $P=0.006$ )، ( $P$ ) و بين المستوى الثقافي و كتلة الجسد ( $P=0.009$ )، ( $P$ ) و بين نوع الوظيفة و كتلة الجسم ( $P=0.008$ )، ( $P$ ) و بين ممارسة الرياضة و كتلة الجسم ( $P=0.018$ )، ( $P$ ) بينما لم تظهر اي علاقة معنوية بين كتلة الجسم و متغيرات اخرى مثل تناول الحلويات، تناول الطعام ما بين الوجبات الرئيسية تناول الكحول، الحالة الزوجية و بعض الامراض المصاحبة.

استنتج الباحثون وجود انتشار عالي لفرط الوزن و السمنة بين المنتسبين إذ ان اكثر من ثلثي المنتسبين يعانون من فرط الوزن و السمنة، اللذان يعتبران عوامل خطيرة معروفة لعدد من الامراض. و تشير الدراسة ايضا انه حتى الوسط الطبي و الكادر الصحي يعانون من العتكة.

التوصيات: ان الوسط الصحي و الكادر الصحي بحاجة لبرامج وقاية لمواجهة المشكلة.

### Abstract

Objective: Obesity and overweight are well known risk factors for coronary artery disease, and are expected to be increasing all over the world. Therefore, we designed this study with the objective to determine the prevalence of obesity and overweight among the employees of the medical technical institute Baghdad Iraq.

Methodology: A cross-sectional study was conducted in the medical technical institute Baghdad Iraq, between January 2006 and march 2006. The enrolled subjects were a convenient sample of employees of teaching staff, technicians, administrative and labors. Two hundred and three subjects constituted the study sample.

Results: The final total number of members included in the study was 203, comprising 53 males and 150 females. The mean age was 41.9629.47 years. The mean BMI was  $27.36 \pm 4.86$ . The prevalence of overweight and grade 2 obesity among the studied sample was 50(24.60%), and 92(45.3%) respectively, while no one had grade 1 obesity. There was significant association between the age of the studied sample and the BMI grades ( $P=0.006$ ) between the educational level and the increase in BMI ( $P=0.009$ ), between the type of employment and the increase in BMI ( $P=0.018$ ), between positive family history and obesity ( $P=0.000$ ), between practicing exercise and the increase in weight.

The prevalence of overweight and obesity was high, and more than two thirds of both males and females were either overweight or obese, which are well known risk factors for many medical disorders.

Recommendation: The findings of this study indicates that even medical and health staff were in need for a prevention program to tackle the problems of obesity among adult.

Keywords: Obesity, overweight, employees

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## **Introduction**

It is ironic that as people continue to suffer from malnourishment and starvation in some poor parts of the world, others have gone to the other extreme of being overweight or obese particularly in developed as well as developing countries (1). Obesity is now considered as an epidemic all around the world, globally, it is estimated, that there is one billion overweight or obese adults, at least 300 million of them clinically obese, the prevalence has steadily increased over the years among both genders, all ages, all racial and ethnic groups, all educational levels, and all smoking levels (2). In Iraq the extrapolated prevalence of obesity is 3712914 in 25374691 estimated population (3), and according to a 2006 WHO survey, 26% of Iraqi men and 38% of Iraqi women aged 25-65 years were obese with BMI of 30 or more (4). Obesity has substantial health effects, and is considered the second leading cause of preventable deaths after tobacco (5). A clearly increased risk of death with increasing weight. For individuals aged between 30 and 42, the risk of death increases by 1% for each 0.5 kg weight rise. For individuals between the ages of 50 and 62, this figure becomes 2% for each 0.5 kg weight rise. Weight gain has many complications like type 2 diabetes mellitus, hypertension, stroke, coronary artery disease, gallstones, and others. Problems of morbidity increase steadily as the body mass index (BMI) increases above 25. In a few cases of obesity, specific causal factors can be identified and treated. However for the most part, the etiology of obesity arises from a complex interplay of behavioral factors like (decrease in activity levels, high fat or carbohydrate intake, snacking, alcohol consumption), and genetic factors (6).

Obesity and overweight are well known risk factors for coronary artery disease, and are expected to be increasing all over the world. Therefore, we designed this study with the objective to determine the prevalence of obesity and overweight among the employees of the Medical Technical Institute in Baghdad Iraq, of both gender, and of different educational level.

## **Methodology**

This study was descriptive, cross-sectional and retrospective in design. The study was conducted in the Medical Technical Institute in Baghdad Iraq, between January 2006 and March 2006. The enrolled subjects were a convenient sample of employees of teaching staff, technicians, administrative and labors from different departments of the Institute. Two hundred and three subjects constituted the study sample.

Data was extracted from individual person by direct interview. Extracted data included body mass index (BMI), which is calculated by dividing weight in kilograms(kgs) by the square of height in meters(m<sup>2</sup>) (6). BMI grading was according to (Yekeen et al 2003) (7) classification which includes under-weight (<18.5), non-obese(18.5-24.9), overweight(25-29.9), grade 2 obese(30-39.9) and grade 3 obese(>40). Weight was measured with ordinary scales (non-electronic portable balance) with indoor clothing on without shoes on to the nearest 500gm. Height measurement was carried out in the standing position, without footwear, to the nearest mm by using measuring tape that is part of the weighing scale. Weight and height were measured using standardized techniques and equipments (1). To be precise, the investigators were trained, for the purpose of this study, to use the same techniques of weight and height measurements for all subjects of the study population. The data also included demographic informations (like age, gender, education, job etc) clinical history like family history of obesity and taking sweets.

snacks, alcohol intake, marital status , some associated diseases like hypertension, and diabetes mellitus.

Data analysis was performed using the statistical package for social sciences (SPSS), for windows version 10. The main analysis included descriptive statistics, however relationships were explored using cross tabulations.

**Results:**

The final total number of members included in the study was 203, comprising 53 males and 150 females. The mean age was 41.96+9.47 years.

The association of some variables with BMI Grading was not significant like taking sweets (P=.128), snacks (P=.226), alcohol intake (5%), marital status (P=.198), some associated diseases s, like hypertension (65% )diabetes mellitus (P=.422) respectively.

**Table (1) Frequency and Percentage of the studied sample according to BMI grades**

BMI grades	N	%
Underweight (<18.5)	5	2.5
Non-obese (18.5-24.9)	56	27.6
Overweight (25-29.9)	50	24.6
Grade 2 obese (30-39.9)	92	45.3
Grade 3 obese (≥ 40)	0	0
Total	203	100.0

This table shows that the prevalence of overweight and grade 2 obesity among the studied sample was 50(24.60%), and 92(45.3%) respectively, while no one had grade3 obesity

**Table (2) Frequency and Percentage of studied sample by age & BMI grades**

BMI grades	Age in Tears		
	N	Mean	SD
Underweight (< 18.5)	5	30.8000	10.3296
Non-obese (18.5-24.9)	56	39.9643	8.9527
Overweight (25-29.9)	50	42.3800	9.3413
Grade 2 obese (30-39.9)	92	43.5652	9.3283
Total	203	41.9655	9.4792

This table shows that the BMI increases with the increase of age .The mean age of overweight group was 42.380039.3413 and for the grade 2 obese group was 43.5652-9.3283. There was significant association between the age of the studied sample and the BMI grades by anova test

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**Table (3) Frequency and Percentage distribution of studied sample by BMI grades & gender**

Gender	BMI grades				Total
	Underweight <18.5	Non-obese (18.5-24.9)	Overweight 25-29.9	Grade 2 30-39.9	
Male N	2	14	17	20	53
O	40.0%	25.000	34.0%	21.70	26.10
Female N	3	42	33	72	150
O	60.0%	75.00	66.0%	78.3%	73.90
Total	5	56	50	92	203
	100.0%	100.00	100.00	100.00	100.00

$X^2 = 3.060$  NS  $P = .382$

This table shows that both overweight and grade 2 obesity were more among females 66% and 72% respectively than in males 34% and 21.7% also respectively, but the association between gender and BMI grades does not reach significance ( $p=0.3820$ ).

**Table (4) Frequency and percentage distribution of studied sample by BMI grades & Education level.**

Education level	Under weight (<18.5)	Non - obese (18.5-24.9)	Overweight (25-29.9)	Grade2 Obese (30-39.9)	Total
Illiterate & primary N	0	1	1	7	8
%	0.0%	1.8%	2.0%	12.5%	3.90/
Intermediate & secondary' N	0	7	3	12	22
%	0.0%	12.5%	6.0%	13.00	108
University N	5	39	22	42	108
%	100.00	69.60	41.0%	45.0700	53.20
Postgraduate N	0	9	24	9	65
%	0.00	16.1%	48.00/	16.1%	32.0%
Total N	5	56	50	92	203
O	100.00	100.00	100.0%	100.00	100.0%

$X^2 = 22.009$  Sig.  $P = 0.009$

This table shows that the prevalence of overweight was higher among the university level (technical diploma and baccalaurias), and the postgraduate group 22(44%), and 24(48%) respectively. The same for grade 2 obese 42(45.7%), and 32(34.8%) respectively, and there is significant association between the educational level and the increase in BMI ( $p=0.009$ ).

**Table (5) Frequency and Percentage distribution of the studied sample by BMI grades and Employment.**

Employment	BMI grades				Total
	Ender weigh (<18.5)	Non-obese (18.5-24.9)	Over weigh (25-29.9)	Grade 2 obese (30 -39.9)	
Labor N	0	1	1	4	6
O	0.0%	1.8%	2.00	4.3%	3.00
Administrative N	0	8	3	16	27
O/	0.0%	14.3%	6.0%	17.4%	13.30/
Teaching staff N	0	15	26	41	82
O	0.00	26.8%	52.0%	44.60	40.40
Technician N	5	32	20	31	88
%	100.0	57.1 %	40.0%	33.7%	43.30
Total N	5	56	50	92	203
O	100.00	100.00	100.00	100.00	100.0%

$\chi^2 = 19.949$  Sig.  $P = 0.018$

In this table and on comparing the BMI grades with employment the highest frequency of overweight was among the teaching staff 26(52%). followed by the technicians 20(40%), administrative 3(6%). and lest frequency was for labors 1(2%).

The same for grade 2 obese, teaching staff 41(44%), technician group 31(33.7%), administrative 16(17.4%). and least frequency was among the labors 4(4.3%), and on testing significance the investigators found significant association between the type of employment and the increase in BMI (P<.05).

**Table (6) Frequency and percentage distribution of studied sample by 111 grades and Family history of obesity.**

Family history	BMI grades				Total
	Under weigh (<18.5)	Non-obese (18.5-24.9)	Over weigh (25-29.9)	Grade 2 obese (30-39.9)	
Negative N	5	52	42	56	155
O	100.00	92.9%	84.0%	60.9%	76.4%
Positive N		4	8	36	48
%		7.100	16.0%	39.10	23.60
Total N	5	56	50	92	203
%	100.0%	100.0%	100.00	100.00	100.00

$\chi^2 = 23.833$  HS  $P = .000$

The results of this table shows that also the frequency of positive family history among grade 2 obese was 36(39%), and the association proved to be significant between positive family history and obesity (P=.000).

**Table (7) Frequency and Percentage distribution of the studied sample by BMI grades & practicing exercise**

Practicing Exercise	BMI grades				Total
	Inder weight (<18.5)	Non-obese (18.5-24.9)	Over weigh (25-29.9)	Grade 2 doses (30 -39.9)	
Do not practice exercise	2 40.0%	23 41.1%	21 42.0%	57 62.0%	103 50.7%
Practice irregularly	3 60.00	24 42.9%	15 30.00/	26 28.3%	68 33.50
Practice regularly	0 0.0%	9 16.10	14 28.0%	9 9.8%	32 15.80/
Total	5 100.0%	56 100.0%	50 100.00	92 100.00	203 100.0%

$\chi^2 = 15.257$  Sig. P 810<sup>1</sup>

Regarding practicing exercise, table(?) shows that, 21 case (42%) of the overweight group do not practice exercise at all, while 15 case (30%) practice it irregularly, and only 14(28%) of them practice exercise regularly. In the grade 2 obese group 57 case (62%) not practice exercise at all, 26 case (28.3%) practice it irregularly, and only 9case (9.8%) practice exercise regularly, with significant association between practicing exercise and the increase in BMI(P=.018).

## Discussion

The BMI, expressed as body weight in kilograms divided by the square of height in meters (kg/m:), is the standard method for obesity assessment in adults, and it provides reasonable index of adiposity<sup>(1,2)</sup>. The result has a high specificity (correctly classifying those not obese) and variable sensitivity ( Proportion of subjects truly at risk of being overweight and obesity based on analysis of several ethnically diverse sample) <0.

The data obtained from this study showed an overall grade 2 obesity prevalence of 45.3%. The prevalence of overweight is 24.6% that makes 69.9% of the studied sample either overweight or obese. Considering the health hazards associated with overweight and obesity, our sample is facing real health problems that may be avoided if we just maintain normal body weight. In Saudi Arabia, obesity is a common health problem among all age groups<sup>11,62</sup>

Excess weight gain starts when individuals are aged between 20 and 40, with maximum body weight being achieved in middle age<sup>(6)</sup>. In the present study the mean age for the overweight and obese group was higher than that for the normal weight group, and this was statistically significant, and goes with the finding of 5 study from Spain reported a high rate of obesity among elderly adult Spanish population<sup>(10)</sup>

The prevalence of overweight among the males of the studied sample was 34%, while among females it was 66%, This does not go with the finding of other studies in that overweight is more prevalent among males<sup>(1)</sup>, this discrepancy can be explained may be by the small sample size of the studied sample, and the number of females being much higher than the males in the studied sample.

Regarding obesity the male obesity prevalence 21% is much lower than the female one 78.3%, this may be attributed to, females being less physically active in comparison to males but it does not reach significance, may be because of the small sample size. In other studies female obesity prevalence was significantly higher than male obesity prevalence (2). However both obese men and show there are generally at higher risk for adverse healthy events than those who are considered overweight (14).

In the present study there is significant association between educational level and the increase in BMI (Table 4), this may be explained by the better economic status of the higher educational level although those with higher educational level should be more concerned with their health status and keeping their BMI <25 kg/m<sup>2</sup>.

Adopting modern life style with less physical activity and unhealthy eating habits are the most likely causes of increasing the prevalence of obesity(1), this is in agreement with the finding of the present study of significant association between practicing exercise and the increase in BMI.

On comparing the BMI grades with employment we found significant association between the type of employment and the increase in BMI. The highest degree of BMI was among the teaching staff, which could be explained by their sedentary life style, and their higher economic status.

In summary, the prevalence of overweight and obesity was high, and more than two thirds of both males and females were either overweight or obese, which are well known risk factors for many medical disorders. The findings of this study indicates that even medical and health staff were in need for a prevention program to tackle the problems of obesity and eating disturbances among adults • These programs must be based on dietary education toward more healthier eating habits, promoting exercise as dietary interventions in combination with physical activities have been reported to have better outcomes compared with dietary modulation alone.

## Recommendations

The study recommended that:

1. Initiation of health education program and prenatal education courses can be designed and constructed for pregnant women toward preterm labor to promote their knowledge and practices to assume an optimal level of self-management within the parameters of their problem.
2. Improving health personnel knowledge especially the nurses to take their role in teaching and giving advice and instructions through prenatal care, and encouraging them to take a leader role in implementing health education.
3. Emphasizing on the mothers to attend PHCC from the first month of pregnancy for check and discover any abnormalities in mother & their family.

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