

Obesity Among Medical Students of The National Ribat University, Khartoum 2008

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INTRODUCTION

Obesity is a condition in which the natural energy reserve, stored in the fatty tissue of humans and other mammals, exceeds healthy limits. It is commonly defined as a body mass index of 30 kg/m² or higher which is calculated by dividing the subject's weight by the square of the height ⁽¹⁾ The prevalence of obesity in the Eastern Mediterranean Region was 3.3%. Changes in lifestyle, dietary habits, physical activity, and the socio cultural environment play an important role in obesity ⁽²⁾; combination of an excessive nutrient intake such as fast-food chains, high soft drinks and a sedentary lifestyle are the main causes in developing obesity ⁽³⁾. Changes in socioeconomic status have had a significant effect on physical activity with the availability of easy transport, the increase in electrical home appliances and more involvement in office work, long periods in watching television and using the internet.

'Stress' embraces the reaction to a multitude of poorly defined factors that disturb homeostasis or allostasis. There is considerable evidence from clinical to cellular and molecular studies that elevated cortisol, particularly when combined with secondary inhibition of sex steroids and growth hormone secretions, is causing accumulation of fat in visceral adipose tissues as well as metabolic abnormalities ⁽⁴⁾.

Stress can influence eating patterns in humans and appears to alter overall food intake, resulting in under- or overeating. Chronic life stress seems to be associated with a greater preference for energy- and nutrient-dense foods, namely those that are high in sugar and fat. Evidence from longitudinal studies suggested that chronic life stress may be causally linked to weight gain, with a greater effect seen in men. Stress-induced eating may be one factor contributing to the development of obesity. ^(5,6)

Some people over eat when feeling down, out and depressed. In developed countries, this is a well recognized and general occurrence, with a consequent epidemic of obesity ⁽⁷⁾.

Glucocorticoids (GCs) act systemically to increase abdominal fat deposits. This allows an increased signal of abdominal energy stores to inhibit catecholamine in the brainstem and CRF expression in hypothalamic neurons regulating adrenocorticotropin. Chronic stress, together with high GC concentrations, usually decreases body weight gain in rats; by contrast, in stressed or depressed humans chronic stress induces either increased comfort food intake and body weight gain or decreased intake and body weight loss. Depressed people who overeat have decreased cerebrospinal corticotrophin-releasing factor (CRF), catecholamine concentrations, and hypothalamo-pituitary-adrenal activity. It was proposed that people eat comfort food in an attempt to reduce the activity in the chronic stress-response network with its attendant anxiety ⁽⁸⁾. These mechanisms, determined in rats, may explain some of obesity epidemic occurring in our society. The results with the aggregated scores showed that lower job control, higher job strain, and higher effort-reward imbalance were associated with a higher BMI. In men, lower job demands were also associated with a higher BMI ⁽⁹⁾.

Many chronic diseases are associated with obesity; around 30% of individuals who are overweight have at least mildly elevated blood pressure as long as increased incidence of strokes and heart attacks with obesity ⁽¹⁰⁾.

The objective of this study was to determine the prevalence of obesity among the National Ribat University medical students, and to verify the effect of social factors and lifestyle on obesity.

METHODS

Study Design

Assessment and predisposing factors of overweight and obesity among students of the National Ribat University was conducted as a descriptive, cross-sectional, community -based study.

Study area and population:

The National Ribat University is one of the new universities in the Sudan which located in Khartoum state. It consists of ten faculties of which seven are medical including Faculty of Medicine. The study population involved all the students of the National Ribat University of both sexes.

Sampling:

Faculties of Medicine, Dentistry, Pharmacy, Radiology, and Laboratory were considered in this study. Students from classes 2, 3 and 4 were selected by systematic sampling according to population size. Sample size was calculated to be 500.

Data collection and analysis:

Pre-tested, pre-coded, self administered questionnaire was used to collect data. The questionnaire contained socio demographic data as long as data on dietary habits. Measurement of weight and height was conducted to calculate the Body Mass Index (BMI). Data was analyzed by the computer using SPSS version 13 soft ware.

Ethical Considerations

Consents were obtained from the students who were enrolled in the study; Permission from the university authority was insured. Confidentiality, respect and dignity were maintained throughout the research process.

RESULTS:

The response rate was 100%.The results showed that 17.8% and 9.2% of the students were overweight and obese respectively.

Table (1): Overweight and obesity among students of the National Ribat University

Nutritional status	Frequency	Parentage
Normal	365	71.2%
Overweight	89	17.8%
Obese	46	9.2%
Total	500	100

Table (2) shows that 25.3% of the students aged 20 years and less were overweight and obese while obesity and overweight among those aged more than 20 years was 28.7%. As regards the relation between obesity and gender, the results showed that overweight and obesity among males and females were 28.2% and 26.5% respectively.

Table (2): Nutritional status in relation to age and gender Among students of National Ribat University
N=500

Age / years	Nutritional status				P. value
	Normal	over weight	Obese	Total	
20 and less	(74.5%)166	(17.5%)39	(8%)18	223	0.102 NS
More than20	196(71.5%)	50(18.2%)	(10.3%)28	274	
Gender					
Male	102(71.8%)	27(19%)	(9.2%)13	142	0.894 NS
Female	263(73.5%)	62(17.3%)	(9.2%)33	358	

NS= Not sig.

Mean age= 20.9 years (SD= 1.82)

The prevalence of overweight and obesity among the students who consumed small quantity of soft drinks (less than 2000 mls/ day) was 24.6%, while among those who drink 2000 mls and more was 29.1%. Overweight and obesity among the students who use private and public transport was 30.9% and 23.% respectively. Concerning the work under stress, the results showed that 36.5% of the obese and overweight students expressed that they work under stressful conditions while only 19% of those who did not express stressful working conditions were overweight and obese.

Table (3): Nutritional status in relation to life style National Ribat University N=500

Life style	Nutritional status		Total	P. value
	Normal	Obese and over weight		
Soft drinks intake/mls				
Less than 2000	175(75.4%)	57(24.6%)	232	> 0.05 NS
2000 and more	190(70.9%)	78(29.1%)	268	
Type of transport				
Private	172(69.1%)	77(30.9%)	249	> 0.05 NS
Public	192(76.5%)	59(23.5%)	251	
Studying under stress				
Yes	148(63.8%)	84 (36.2%)	(46.4%)232	< 0.05 Sig.
No	217(81%)	51(19%)	(53.6%)268	

NS= Not sig.

DISCUSSION:

During May 2008, 500 medical students of the National Ribat University were enrolled in this study in order to assess their nutritional status and to relate obesity to gender, age, and some variables related to life style.

This study revealed prevalence rate of obesity as 26.2% (classified as overweight 16.8%, obese 9.4%). These findings were higher than some reports of the East Mediterranean which revealed obesity as 3.3% (2) and much lower compared with another study carried out in Jordan by Abbas et al. (11), which revealed that the prevalence of overweight was 39%, while that of obesity was 37%, giving a total of 76%.

Concerning obesity in the different age groups, the study revealed that obesity among students aged 16-20yrs were 25.5%, compared to 28.5% in the higher age group (more than 20 years). These findings were in line with a study conducted in Saudi Arabia which revealed that obesity in the ages between 18-21yrs were 25.4% and 43.3% in the ages between 21-31yrs. The higher age group showed a higher prevalence of obesity than our finding (12).

Obesity and overweight among males, according to this study, were higher than females (28.2% versus

26.5%) but the relation between obesity and gender is not significant ($P > 0.05$). These findings were not in agreement with a review conducted in Bahrain, in which it was found that females were more obese than males (13). Again our findings showed lower prevalence of obesity and overweight according to gender than the Jordanian study where obesity among males and females was 32.9%, 37.6% respectively, but in line with this study that males were affected more than females as regards obesity and overweight (11). The relation between age and obesity is not significant ($P > 0.05$).

The study showed that students who take a big amount of soft drinks (2000 mls/ day and more), suffered more from obesity than those who take less (Less than 2000 mls/day). The relation between soft drink intake and obesity is not significant ($P > 0.05$). Obesity among students who use private cars to reach the university were more common than those who use public transport (30.9% versus 23.5%), but the relation between type of transport and obesity is not significant ($P > 0.05$).

The environment of studying medicine is very stressful. The study revealed that students who responded as studying under stressful conditions showed a higher prevalence of obesity than those who gave a negative response towards stressful environment (36.2% versus 19.0%). These findings were in agreement with many studies (7, 8, and 9). The relation between Stress and obesity is significant ($P < 0.05$). The study revealed that stress is a predictor of obesity; if we could alleviate or reduce stress, the prevalence of obesity will be reduced ($F = 23.962, P = 0.000$).

CONCLUSIONS:

The study concluded that more than quarter (26.2%) of the medical students was overweight and obese. Males had a higher prevalence than females,

Obesity and overweight were more common among older age groups but the study did not reveal a statistical significance between obesity and age of the participants.

Stress is the main factor that predicts obesity in the medical students of the National Ribat University. Consumption of big amounts of soft drink and use of private transport were associated with overweight and obesity among the study group.

RECOMMENDATIONS:

Measures are suggested to be undertaken to reduce stress among the medical students; psychologists may be useful to be consulted and involved in any intervention program.

Analytical studies are highly welcome to investigate in depth the relation between obesity and stress among the medical students.

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