كلية الآداب - جامعة المنوفية

جامعة المنوفية

مجلة مركز البحوث الجغرافية والكارتوجرافية

مجلة محكمة ربع سنوية تصدر عن
مركز البحوث الجغرافية والكارتوجرافية
بجامعة المنوفية - مدينة السادات

العدد التاسع

مجلة مركز البحوث الجغرافية والكارتوجرافية

العدد التاسع

سبتمبر ٢٠٠٥

ن هذا العدد

المهاجرين وتكيفهم فى مدينة السادات : دراسة جغرافية .

د / إسماعيل يوسف إسماعيل

عاملة فى سلطنة عمان وسياسة التعمين .

د / صبرى محمد حمد

ة الحجمية لسكان القطاع الريفى كمدخل للتخطيط الصحى بالتطبيق على محافظة بنى سويف .

د / علاء عبد الله

شر كتلة الجسم ومحدداتها بين طالبات السكن الداخلى بجامعة الملك عبد العزيز .

د / كاتبه مفرى

س لكتب .

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جامعة المنوفية
مركز البحوث الجغرافية
والكارتوجرافية
بمدينة السادات

مجلة مركز البحوث
الجغرافية والكارتوجرافية

العدد التاسع

Patterns of Body Mass Index (BMI) and its Determinants among Female Students in the Hostel of King Abdulaziz University

أنماط مؤشر كتلة الجسم و محدداتها بين طالبات السكن الداخلي بجامعة الملك عبد العزيز

دكتور

كاتبة مغربي

استاذ مساعد بجامعة الملك عبد العزيز
جدة – السعودية

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Introduction

Medical geography aims at explaining the distribution of health status and disease. It identifies efficient ways to intervene and distribute trained personnel and technology. Every disease has its cultural ecology, its geographic distribution and its patterns of diffusion and change (Meade & Erickson 2000).

The customs, beliefs and behavior that characterize each global culture realm and local ethnic group create the environmental conditions and exposure patterns that result in the differences in geographic distribution of health and disease. Genetics often underlies susceptibility and resistance, but the distribution of genes is also a result of adaptation to environment, population morbidity and cultural selection.

Obesity today is considered to be a complex disorder primarily related to caloric intake and energy expenditure, as well as to the individual's genetic phenotype, hormonal balance, cultural heritage and the effect of the environment (Arch Intern Med 2000). It is considered as one of the most common disorders encountered in clinical practice and has major public health implications (Gadding *et al.* 1996). The key causes of obesity are increased consumption of energy-dense food high in saturated fats and sugar, together with reduced physical activity (WHO 2004). The health consequences of obesity range from a number of non-fatal problems that affect the quality of life such as respiratory difficulties, musculoskeletal, skin problems; to conditions which lead to increased risk of premature death, as a result of non-insulin dependant diabetes mellitus (type 2), gall bladder disease and cardiovascular problems (Douketis

1999). A study estimated that between 280, 000 and 325, 000 deaths could be attributed to obesity annually in the United States. More than 80% of these deaths occur among people with a BMI>30kg/m^2 (Allison 1999).

Almost all countries are experiencing an obesity epidemic. Globally, there are more than 1 billion overweight adults, at least 300 million of them are obese (Abelson 2004). Current obesity levels range from below 5% in China, Japan and certain African nations, to over 75% in urban Samoa. But even in relatively low prevalence countries like China rates are almost 20% in some cities (WHO 2004).

A study in Oman showed that the crude prevalence of overweight and obesity (BMI > 25 kg/ m^2) was 47.5% for the whole sample; 46.2% for males and 49.5% for females (Saudi Medical Journal 2003).

Obesity in Saudi Arabia:

In Kingdom of Saudi Arabia (KSA) a cross-sectional national epidemiological household survey was conducted between 1990-1993. 13177 cases were included with ages ranging from 15 years and over. The prevalence of overweight (defined as BMI 25-30) was higher among male cases than for females (29% vs. 27%), while the prevalence of obesity (defined as BMI > 30) was higher among female subjects than for males (24% vs. 16%). In another study carried out in Riyadh, the prevalence of overweight was 13.8% and obesity was 20.5% among Saudi male adolescents (Saudi Medical Journal 2003).

Several reasons have been suggested to explain the rising prevalence of obesity in the Kingdom; these include the major economic development during the past 30 years,

which had resulted in profound changes in diet (nutrition) and exercise habits. The combination of westernized and high fat diet and reduced physical activity suggests that sedentary lifestyles are the most important factor (Medicine and Science in Sport and Exercise 1999).

The Problem of the Study:

The researcher realized that there was noticeable prevalence of obesity among female students. A lack of physical activities together with change of dietary habits are common predisposing factors to obesity in female students. In addition, obesity is a common problem related to risk factors such as diabetes and hypertension and since female students are the future mothers, they are supposed to be acquainted about normal body weights and healthy food habits.

The Aim of the Study:

The present study evaluates the pattern of Body Mass Index (BMI) and its determinants among female students in the hostel of King Abdulaziz University.

To achieve that aim, a cross-sectional analytic study was conducted on female students living in the hostel using a self-administered questionnaire. The questionnaire included mainly socio-demographic data: weight in kilograms, height in centimeters, in addition to food habits and regular physical exercises. All collected data were entered and analyzed using SPSS statistical package, version 11.5. Frequency distributions and chi-square were used. P values less than 0.05 were considered insignificant.

Results:

The results showed that the age of the female student in the hostel ranged between 18 and 30 years, with a mean age accounted for 21.3 ± 1.9 years. Almost all of them were coming from areas outside Jeddah and 3.6% were from outside the Kingdom who were mostly from the GCC countries. The family monthly income ranged between SR 700-50,000, with a mean income SR 9545.9 ± 7387.7.

As regards to food habits, it was noted that the majority of female students who had come from Medina (75%) were taking less than three main meals daily, while only 8.3% of them were taking three main meals daily, compared to 40% of female students from the northern regions who were taking three main meals daily. However, these differences were not statistically significant $p > 0.05$. Table 1 and Figure 1 show that most of the students take less than three meals daily. Students from Northern and North Eastern regions registered the highest percentages regarding the number of meals.

Table (1). Number of daily main meals taken by female students according to their home origin.

Home origin	Number of daily main meals			Total
	Less than three meals	Three meals	More than three meals	
Riyadh	2 (50%)	1 (25%)	1 (25%)	4 (100%)
Eastern Province	11 (47.8%)	7 (30%)	5 (21.7%)	23 (100%)
Northern	1 (20%)	2 (40%)	2 (40%)	5 (100%)
North Eastern	20 (42.6%)	6 (12.8%)	21 (44.7%)	47 (100%)
Western	51 (59.3%)	17 (19.8%)	18 (20.9%)	86 (100%)
Medina	18 (75%)	2 (8.3%)	4 (16.7%)	24 (100%)
Southern	55 (48.2%)	19 (16.7%)	40 (35.1%)	114 (100%)
Total	158(52.1%)	54 (17.8%)	91 (30%)	303 (100%)

Chi square= 20.044 df= 12 p= .066

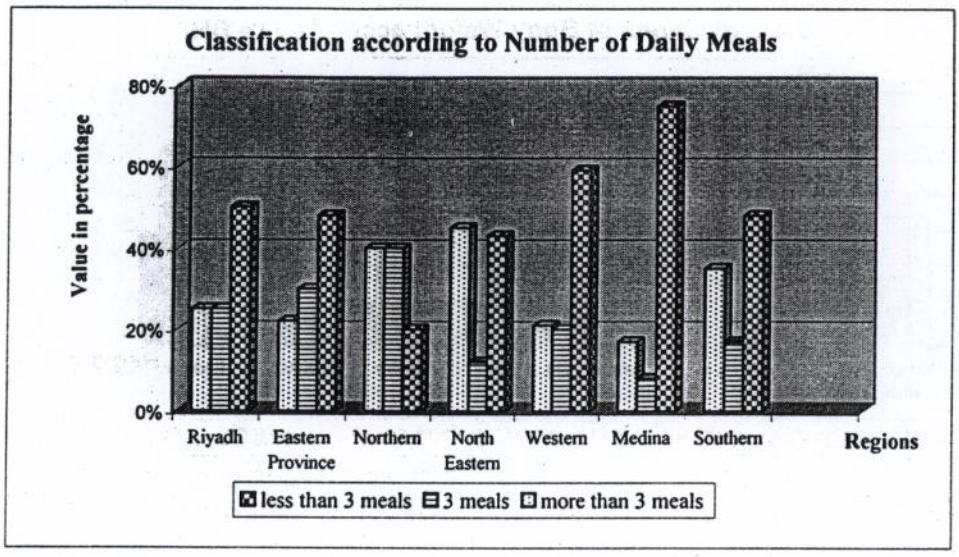

Figure 1

The highest prevalence of low body weight was recorded among female students who came from south regions (29.7%), while the prevalence of obesity was higher in female students who came from western region (6.7%) if compared to those who came from other regions. However, these differences were not statistically significant p> 0.05.

Table 2. Classification of body weight according to BMI of female students by their home origin.

Home origin	Classification of body weight according to BMI				Total
	Low body weight	Normal weight	Overweight	Obesity	
Riyadh		1 (33.3%)	2 (66.7%)		3 (100%)
Eastern Province	3(21.4%)	6 (42.9%)	5 (35.7%)		14 (100%)
North Eastern	3 (10.7%)	20(71.4%)	4 (14.3%)	1 (3.6%)	28 (100%)
Western	5 (11.1%)	31(68.9%)	6 (13.3%)	3 (6.7%)	45 (100%)
Medina	2 (14.3%)	9 (64.3%)	3(21.4%)		14 (100%)
South	11 (29.7%)	21(56.8%)	4 (10.8%)	1 (2.7%)	37 (100%)
Total	24 (16.9%)	89(62.7%)	24(16.9%)	5 (3.5%)	142(100%)

Chi square = 19.768 df = 18 p = .346

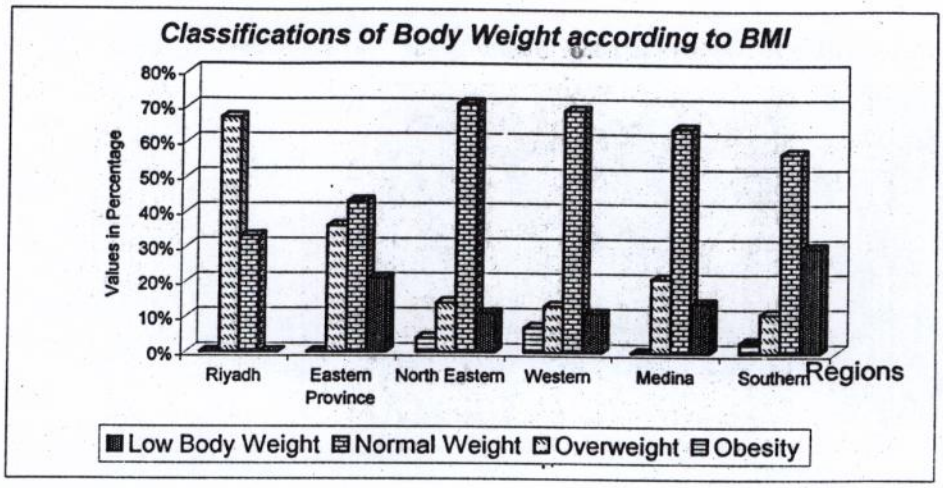

Figure: 2

Table 2 and figure 2 show the following:

1. Students from Southern region registered the highest percentage in low body weight, followed by students from Eastern province. However, the lowest percentage in low body weight was registered in students coming from Medina region.
2. The highest percentage of students with normal weight was recorded in the North Eastern region, followed by the Western region, while students from Riyadh recorded the lowest percentages.
3. On the opposite, overweight students mainly came from Riyadh region, followed by the Eastern province. The lowest percentages were recorded in students from Southern region.
4. Western region recorded the highest percentage of obesity followed by the North Eastern, while Riyadh, Eastern province and Medina did not record any cases of obesity.

To compare the different categories of body weights according to monthly income of the students, table (3) shows that the prevalence of obesity was higher among female students who had family monthly income equal to SR 10000+ (6.8%), in addition to 18.2% who were categorized as overweight. The table shows also that the majority of female students who had family monthly income (5000-9999) had normal body weights (78.3%). However, these differences were not statistically significant $p > 0.05$.

Table (3). Classification of body weight according to BMI of female students by their family monthly income.

Family monthly income in Saudi Riyals	Classification of body weight according to BMI				Total
	Low body weight	Normal weight	Over-weight	Obesity	
Less than SR 5000	3 (21.4%)	8 (57.1%)	3 (21.4%)		14 (100%)
From SR 5000-9999	4 (8.7%)	36(78.3%)	5 (10.9%)	1 (2.2%)	46 (100%)
SR 10000+	10(22.7%)	23(52.3%)	8(18.2%)	1 (6.8%)	44 (100%)
Total	17(16.3%)	67(64.4%)	16(15.4%)	4 (3.8%)	104(100%)

Chi square = 8.504 df = 6 p = .203

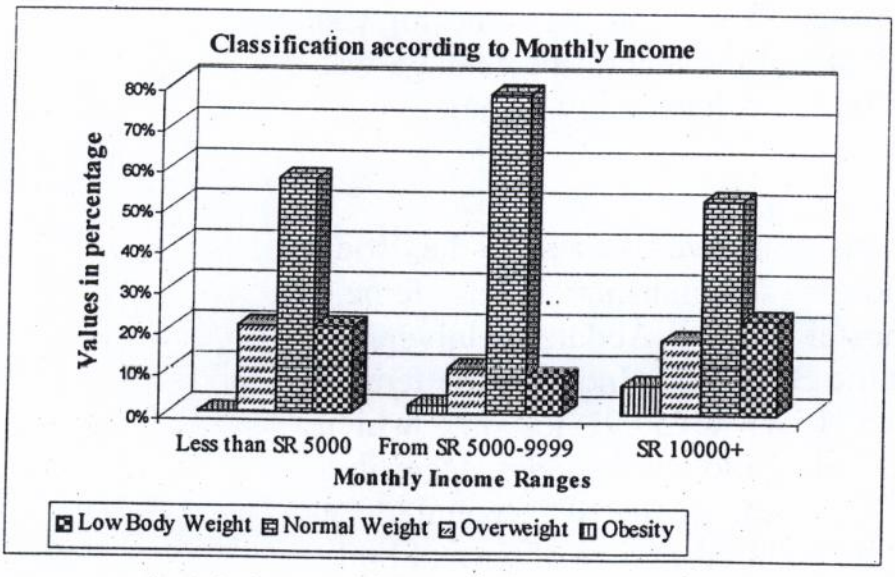

Figure 3

From table 3 and figure 3, we obtain these results:

1. There is an evident relationship between family monthly income and the body weight.
2. The highest percentage of obesity was recorded in students from families with a monthly income > SR 1000, while in students with a monthly income < SR 5000 did not record any case of obesity.
3. High percentages of overweight students were recorded among students with the lowest family income and students with the highest family income. Such discrepancy is due to different dietary habits. The diet in the former category depends mainly on carbohydrates, while in the latter category, diet depends on new westernized food habits rich in fats and sugar.
4. Normal weight recorded the highest percentage in the three categories of income in comparison with the three other categories of weight. However, the lowest percentage was recorded in students with the highest family income (52.3%) and the highest percentage was recorded in students with medium family income.

Discussion:

The current study was conducted to assess the Body Mass Index (BMI) and its determinants among female students living in the hostel of King Abdulziz University. The results showed that the Body Mass Index of the female students ranged between 15.43 to 33.91 kg/ m^2, which ranged between low body weight to obesity class, according to WHO[1] classification. The mean BMI ± SD accounted for 22.2 ± 3.7 kg/m^2, which lie within the range of normal body

[1] WHO Classification mentioned in page 1.

weight according to the WHO classification. It was evident that the prevalence of overweight (16.9%) and obesity (3.5%) among females in the current study were much lower than that recorded in the general population in nearby Arabic countries such as Bahrain, Kuwait and Jordan, where the prevalence of obesity was recorded as high as 35% (Musaiger, Al-Mannai 2001), 42% (Al-Awadi, Amine 1989) and 49.7% (Ajlouni, Jaddou, Batieha 1998)[15] respectively. However, the recorded prevalence of obesity in the current study was slightly lower than that in most western European countries were it ranged between 10% and 20%. In 2002, a recent editorial for Yanovski and Yanovski stated that 34% of adults in the United stated have a BMI between 25 and 29.9 (overweight), and another 27% obese with a BMI of over 30. These figures are also higher than that recorded in the females of the current study.

It was obvious that only (17.8%) of female students used to take three main meals daily. Also, it was realized that more than half of the students used to intake less that three main meals daily, and it was noted that neither the monthly income nor the home origin had significant impact on food habits and body weights.

The prevalent unhealthy food habits, which were observed in the current study could be explained, in part, by the lack of knowledge of the students which was reflected on their faulty behavior. Moreover, the unhealthy habits could be attributed to the difficulties in obtaining regular balanced diets, e.g. the unavailability of fresh fruit or vegetables in the groceries inside the hostel, or the lack of tasty food offered in the restaurant of the hostel.

Recommendations:

Based on the results of the present study, the researcher recommends the following:

1. Social awareness of the problems of obesity and overweight is needed.
2. The role of media in informing citizens and especially youth with the danger of obesity and bad food habits.
3. The importance of depending on balanced food rich in vitamins.
4. The importance of practicing physical exercises to maintain a better body fitness.

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