OBESITY/OVERWEIGHT AMONG HEALTHY ADULT MALES SEEKING EMPLOYMENT IN PAKISTAN ARMY

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ABSTRACT

Objective: To calculate the frequency of individuals having overweight / obesity as determined by body mass index.

Study Design: Descriptive study.

Place and Duration: Medical Inspection Room Engineer centre Risalpur and Department of Pathology Combined Military Hospital, Risalpur from 1st March 2010 to 30th September 2010.

Material and Methods: Five hundred males between 17-23 years of age who were physically fit and had height within their 95th confidence interval, were enrolled in the study by non-probability convenience sampling.

Results: Among 500 males, mean age was 20 ± 1.2 years, and age range was 17 to 23 years. Among them 418 cases belonged to rural areas and 82 candidates belonged to urban areas. Ninety seven (19%), belonged to group 1, 347 (69%) individuals belonged to group 2, 44 (8.8%) individuals belonged to group 3 and 12 (2.4%) individuals belonged to group 4. Blood pressure and pulse was recorded under standardized conditions. In group 2 (n= 347) only 8 individuals had BP > 120/80 and < 140/90 mmHg whereas in group 3 and 4 (n=56), 7 individuals had BP >120/80 and < 140/90 mmHg and 2 individuals had BP > 140/90 mmHg, however none of the individual had any irregularity of pulse among all groups. Among the 500 individuals, a questionnaire was distributed, 93% knew that overweight was related to diseases. About losing weight; 10% individuals replied dieting, 16% individuals replied exercise, 67% individuals replied both exercise and dieting, and 7% individuals did not know the way to lose weight.

Conclusion: Frequency of overweight / obesity was 11.2% among healthy adult males. Comprehensive health care awareness campaigns involving food intake, regular aerobic exercise and maintaining weight is strongly recommended in younger population so as to promote public health.

Keywords: BMI, Obesity Overweight.

INTRODUCTION

Obesity is one of the most common disorders seen in medical practice which is very frustrating and difficult to manage and assessed by excess of adipose tissue. Accurate quantification of body fat requires sophisticated techniques not usually available in clinical practice[1]. More quantitative evaluation to detect excess body fat is preformed by calculating the body mass index (BMI) by dividing measured body weight in kilograms by the height in meter squares i.e kg/(m^2)[2,3].

In the developing world, prevalence of overweight and obesity has increased dramatically in recent years[4-6]. In Pakistan obesity is one of the major nutritional problems. It peaks increases with advancing age, at 45-64 years for both men and women in urban and rural settings and then decreases after 65 years[7]. The National Health Survey of Pakistan (NHS) 1990-1994 revealed that 1% of the population in Pakistan was reported to be obese and 5% overweight in the 15-24 years age group[8]. Studies from Pakistan have given figures of 25% people having overweight and obesity[9].

It is to be emphasized that in South Asia, including Pakistan, social and environmental changes are occurring rapidly, with increasing urbanization, changing lifestyles, higher energy density of diets, and reduced physical activity[10]. Obese individuals differ not only in the amount

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of excess fat, but also in the regional distribution of fat within the body and both general and abdominal adiposity are associated with the risk of death[11]. Similarly obesity has numerous social consequences in later life such as lower wages, less likelihood of marriage, and less education[12].

World Health Organization has recommended different BMI cut-off points for South East Asia because they have more morbidity for any given BMI[13]. Indo-Asian specific definition of obesity is set as BMI ≥ 25 kg/ (m^2) and overweight as BMI ≥ 23 kg/ (m^2)[14].

In Pakistan the obesity pattern is currently in a transition from acute to an increase burden of chronic disease[15]. So present study was conducted to find out the frequency of overweight and obesity in healthy adults by measuring their BMI kg/ (m^2) in our setup.

MATERIAL AND METHODS

A descriptive study was carried out at Medical Inspection room Engineer Centre Risalpur and Department of Pathology Combined Military Hospital, Risalpur from 1st March 2010 to 30th September 2010. Five hundred males were enrolled in the study by non-probability convenience sampling between 17-23 years who were physically fit and had height within their 95th confidence interval. A questionnaire was given to each candidate asking whether he knew that overweight is related to diseases and how can weight be lost; whether by dieting, exercise, by both or he didn't know.

In order to compute BMI, the height and weight of each individual was measured after completion of the questionnaire. For this purpose standardized weighing scales and measuring tapes were used. The formulae utilized during the data collection process are as follows:

BMI=weight(kg)/ height$(m)^2$

The cutoff criteria used for the BMI: BMI<18 kg/$(m)^2$-underweight, 18-22.9 kg/$(m)^2$-normal weight, 23- 24.9 kg/$(m)^2$- overweight and ≥ 25 kg/ $(m)^2$-obese[16,17]. On the basis of BMI, individuals were divided into four groups as;

Group 1- BMI<18 kg/$(m)^2$

Group 2- BMI 18-22.9 kg/ $(m)^2$

Group 3- BMI 23- 24.9 kg/ $(m)^2$

Group 4- BMI ≥ 25 kg/ $(m)^2$

Simultaneously their blood pressure (BP) and pulse was recorded after individuals had rested for 5 minutes with back supported in sitting position, by the same calibrated sphygmomanometer.

Statistical analysis

Statistical analysis of data was done by using statistical package for social sciences (SPSS) version 11.0. Descriptive statistics were carried out to summarize the data. Frequency and percentages were calculated for obesity and BP. Mean and standard deviation (SD) was calculated for numerical data including age, height, weight and BMI. Data was compared by student 't' test among different groups. p value < 0.05 was considered significant.

RESULTS

Among 500 males mean age was 20 ± 1.2 years. Age range was 17 to 23 years. Among 500 candidates, 418 cases belonged to rural areas and 82 candidates belonged to urban areas (Fig-1). Province wise maximum candidates 437 (87%) belonged to Punjab out of which 46 individuals (10.5%) had BMI ≥ 23 kg/ $(m)^2$. Candidates from Sindh, Khyber Pakhtunkhwa, and Kashmir and Northern Areas were 6, 45 and 12 respectively.

Ninety seven (19%), 86 rural and 11 urban individuals belonged to group 1, 347 (69%) individuals belonged to group 2, whereas 44 (8.8%) individuals belonged to Group 3 and 12 (2.4%) individuals belonged to Group 4 as shown in fig-2. Out of 56 individuals in group 3 and 4, 43 belonged to rural (10.2% of total rural cases) and 13 belonged to urban areas (15.8% of total urban cases).

In group 1 (n=97) all the individuals had BP < 120/80 mmHg, in group 2 (n=347) 8 individuals (2.3%) had BP > 120/80 < 140/90 mmHg, whereas in group 3 and 4 (n=56), 9

individuals (16%) had increased BP including 7 individuals with BP >120/80 < 140/90 mmHg and 2 individuals with BP ≥ 140/90 mmHg (Table-1). No individual had any irregularity of pulse in all four groups.

Table-1: Blood pressure record in various groups categories based on body mass index (BMI) (n=500).

S/no	Blood pressure mmHg	Group 1 (n=97)	Group 2 (n=347)	Group 3 (n=44)	Group 4 (n=12)
1	<120/80	97	339	40	7
2	>120/80 <140/90	0	8	4	3
3	≥140/90	0	0	0	2

Among 500 individuals to whom the questionnaire was administered, no refusals were encountered, 93% knew that overweight was related to different diseases. About losing weight; 10% individuals replied dieting, 16% individuals replied exercise, 67% individuals replied both exercise and dieting, and 7% individuals did not know the way to lose weight.

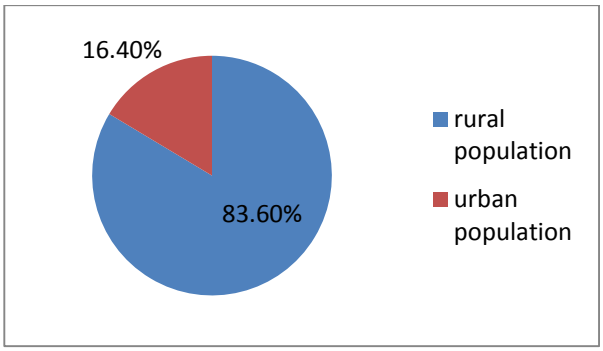

Figure-1: Rural and urban distribution of the participants (n=500).

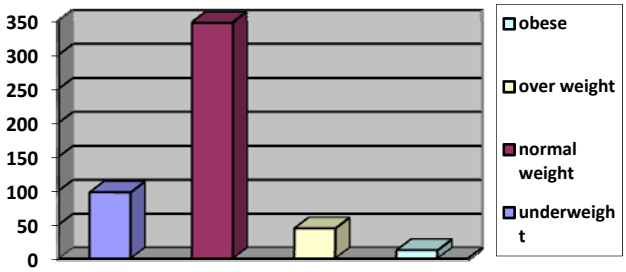

Figure-2: Body mass index (BMI) distribution of the participants (n=500).

DISCUSSION

Developing countries are increasingly vulnerable to the worldwide epidemic of obesity, which affects all segments of the population[18]. In return obesity/overweight, is a significant risk factor for arteriosclerosis, ischemic heart disease and diabetes; all of which are major causes of morbidity and mortality[19,20].

Present study has shown that 8.8% participants were overweight and 2.4% were obese which is in accordance with NHS 1990-94 and Al- Tawarah YM et al who has shown that nearly 12% participants were overweight or obese in Jordan[21]. Whereas Asif SA et al have reported the higher prevalence of obesity in males in our set up as 7% and overweight as 34%[22]. Similarly the Metroville study in Karachi (2006) reported that 34% of men in the lower socio-economic group were obese/ overweight[23] and Jafar et al has noted that 1 out of 4 Pakistani over the age of 15 years is overweight or obese[17].

International Association for the Study of Obesity and the International Obesity Task Force have suggested lower BMI cutoff values to define overweight (23.0–24.9 kg/m^2) and obesity (25.0 kg/m^2 or greater) in Asian populations[24,25]. We have used a BMI cutoff values (23 kg/m^2) to define overweight in accordance with the study of Jafar et al who had concluded that for identification of those at risk of hypertension and diabetes and healthy targets may require the use of even lower BMI cutoff values (<23 kg/m^2), than those already proposed for an Indo-Asian population[17]. Similarly Nanan D compared the prevalence of overweight for adults aged 25 to 64

years in the United States (US) and Pakistan and concluded that BMI ≥25 was a good indicator of overweight in the US context but BMI ≥ 23 might be a better indicator for Pakistanis[26]. It must be kept in mind that using data from the same survey, prevalence of obesity can vary 2-7 folds depending on whether national reference data or the international approach is taken[27].

In this study we found that in group 3 and 4 (n=56 cumulatively), 16% individuals had increased BP including 7 individuals with prehypertension and 2 with stage 1 hypertension as defined by seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure, which is significantly higher than group 2 (n=347) in which 2.3% individuals had prehypertension (p value < 0.05)[28]. This finding of rise in BP in group 3 and 4 is attributable to overweight / obesity and is in accordance with studies conducted earlier[19,23].

Our study has shown no significant difference among adult age group between rural and urban population which is contrary to Hakeem R et al who have shown that urbanization contributed to obesity (*p* value > 0.05)[29]. There is another important finding that presence of 11.2% overweight/obese individuals in this study in which majority of participants were from rural settings, in presence of higher food prices and growing poverty in Pakistan, suggests that other factors, like lack of regular physical activity is a major contributory factors towards overweight / obesity[9,23]. Province wise maximum cases belonged to Punjab (n= 437) and out of them 46 individuals (10.5%) had BMI ≥ 23 kg /m^2.

In our study most of the participants (93%) knew that overweight was related to different diseases. When asked about what one can do to lose weight, majority of the respondents (83%) listed exercise and dieting among their answers and 77% mentioned dieting to lose weight thereby suggesting that participants had fair idea about effects of weight on health and healthy life style. However considering this scenario of overweight / obesity, it is recommended that health awareness programs directed towards controlling weight including dedicated and sustained life style modification should be properly developed, promoted and fully implemented.

It is important to highlight here that presence of overweight / obesity in younger population predominantly belonging to rural setting in the background of inflation of food prices is of great concern and it is alarming sign to have 11.2% frequency of overweight/obesity among otherwise healthy adult males.

Limitation of the present study is that subject population was not evenly distributed among provinces and predominantly belonged to rural settings.

Further research is recommended to find etiological factors, trends of obesity, its correlation with metabolic abnormalities and means to effectively control weight in different age groups in larger scale studies, thereby promoting healthy lifestyle.

CONCLUSION

Frequency of overweight/obesity was high among healthy adult males. Comprehensive health care awareness campaigns involving food intake, regular aerobic exercise and maintaining weight is strongly recommended in younger population so as to promote public health.

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