ORIGINAL ARTICLE

An Audit of Overweight, Obesity and Central Obesity Among Students of a Private Medical College

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Author`s Contribution

[1] *conceived the idea and planned the study and finalized the final draft of the article,* [2] *collected the data and help in writing the article.* [3]*, collected the data and helped in writing the draft article.*
[4] *managed the data and analyzed it. He also helped in formatting the article in final shape.*

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A B S T R A C T

Objective: To assess the trend of overweight, obesity andcentral obesity among students of a private medical college.

Setting and duration of study: This Cross sectional study was conducted in Islamabad Medical and Dental College, Islamabad, from 1st March to 1st June 2015.

Materials and Methods: In this study 149 students of Islamabad medical and dental college, selected randomly from 1st year to final year MBBS students were included. In all these students body weight and height were measured and body mass index (BMI) and central obesity was calculated on the basis of waist to hip ratio and waist to height ratio on the basis of WHO standards. The data was entered and analyzed through SPSS v. 20.

Results: The mean age of the students in the study sample was 21.2047 years with standard deviation of 1.387 yrs. There were 20.13%male and 79.87% females participants. The mean weight was 57.345 ± 12.528 kg and mean height was 165.0 ± 8.750 cm.The mean BMI was 20.857±4.4813 with minimum and maximum values of 13.92 and 47.60 respectively. The mean waist circumference was 75.249 ± 10.553 cm and mean hip circumference was 87.790 ±10.317 cm. It was noted that on the basis of BMI 59.7% subjects had normal weight, 28.9% were underweight,9.4% were overweight while just 2.0% were obese. Based on waist to hip ratio, 68.5% were normal while 31.5% had central obesity and according to waist to height ratio 87.2% were normal while 12.8% were centrally obese. There significantly higher proportion of underweight students among female students (34.2% vs. 6.7%, P-value = 0.000) as compared to male students.

Conclusion: According to the results 59.7% subjects under study had normal weight, 28.9% were under weight, 9.4% over weight while just 2.0% were obese. Based on waist to hip ratio, 31.5% and on the basis of waist to height ratio, 12.8% were centrally obese.

Key Words: Body mass index, Obesity, central obesity, college students.

Introduction

College life is a sensational time period which contain extraordinary independence and self-innovation along with excessive responsibility regarding decision making for different aspects of life. One of the aspect is health related decisions which may have long term

consequences. This time can be domineering time for different students. [1]

This age group of 18-25 years has been classified as emerging adulthood by Dr. Jeffrey Jensen Arnett, according to him this is the time of changing from

adolescence to adulthood for every young individual, and everyone starts developing views and behaviors which are carry forward in maturity. [2]

College life is the time of improvement in self-identity, altering in support systems, and changes in communication impressions arise in this period, which set life stage for maturity. This is the time period which is thought to have primestate of affairs related to health and well-being in any one's life. [3]

On the other hand different lifestyles of diet and physical activity may be started in college years which could be the basis for development of chronic diseases. These diseases can be prevented by controlling changeable risk factors like poor nutrition and lacking of physical activity as the Centers for Disease Control and Prevention (CDC) hasrecommended[4]. Similarly other risk factors such as stress, unhealthy weight practices and loss of sleep may affect the health in future. Previous literature shows a high proportion of overweight and obesity up to 40% among college students. [5]

The reasons for this unhealthy weight gain might be the unhealthy practices of eating. It has been found that only 8.5% college students were eating recommended amount of vegetables, fruits and fiber per day.[6, 7]The diversity in eating habits is very important but many college students were found to have similar type of foods every day, which also have a poor impact on health. [8]

Physical activity plays an important role in maintaining physical health and preventing chronic diseases. The trend of physical activity is lacking in college students, it was found that students take part on an average of 2.8 days per week and this trend decreases in older students. Contributing factors for poor physical health and overweight are poor dietary habits, lack of physical activity etc. Sedentary activities like watching television or playing video games stop students from physically active lifestyle.[9]

This period of college life is an important time where effective programs and guidance related to nutrition can have a significant impact on young adult's health behavior. Many universities and colleges have this kind of services regarding health and physical activity programs. But these programs should be organized in such a way that these can be used effectively because due many reasons dietary and physical activity habits of college students are hard to modify and monitor. Currently, this issue of overweight and obesity is rising very wildly. The purpose of this study is to observe the burden of overweight, obese and centrally obese students in a college of private setup. So that better strategies could be develop for students in the colleges.

Materials and Methods

This cross sectional study was conducted at Islamabad medical and Dental college, Islamabad, from March 2014- June 2015.In this three months' time period a total of 149 students were included by simple random sampling technique based upon roll numbers of the students. This sample was selected from1st year – 5th year students of MBBS who gave consent to be included in the study. Students who did not give consent were excluded from the study. Approval of the study was taken from Institutional ethical committee before start of the study. Sample size was calculated by using WHO sample size calculator with 95% confidence level, anticipated population proportion of 59% (prevalence of normal weight students) and 8% absolute precision level.

In all these students body weight and height were measured and body mass index (BMI) values were calculated by dividing weight with (height)**2. The BMI was categorized as underweight with BMI <18.5, Normal weight with BMI, 18.5 - 24.9, BMI from 25 - 29.9 was considered as Overweight, and BMI $\geq$ 30 was considered as Obese. Overweight and obesity were defined using WHO international standard BMI cut-offs. Similarly central obesity was calculated on the basis of waist to hip ratio and waist to height ratio.

Waist to hip ratio (WHR) is the circumference of the waist (smallest part of the torso, usually slightly above the navel) divided by the circumference of the hips (largest part of the buttocks). Range of waist to hip ratio was considered normal at (0.96 to 1.0) for male and (0.81 to 0.85) for females. The waist-to-height ratio of a person that is the person's waist circumference, divided by the person's height. The normal range of waist to height ratio for male is (46-53) and (46-49) for female. Data was collected on the basis of a pre designed Performa.

All the collected data was entered and analyzed through Statistical Package for Social Sciences (SPSS v. 20). Descriptive statistics was used to analyze data. Mean and standard deviation were calculated for quantitative data. Frequency and percentage were used for qualitative data. Results were presented in table form and graphs.

Results

The mean age of participants was 21.2047 years with standard deviation of 1.387 yrs. The maximum age was 24 and minimum 17 years. The male participants were

20.13% (n=30) and females participants were 79.87% (n=119). The maximum weight was 98.00 kg and the minimum was 39.00 kg with a mean value of 57.345 ± 12.528 kg. There were 38.9% students having <50 kg, 47.7% students having 50-70kg, 13.4% students having >70kg weight. The minimum 140 cm and the maximum height was 190 cm with mean of 165.0 ± 8.750 cm.(Table I)

In study sample, the mean BMI was 20.857±4.4813 with minimum and maximum values of 13.92 and 47.60 respectively. The mean waist circumference was 75.249 ± 10.553 cm. The maximum waist circumference was 96.50 cm and the minimum 29.00 cm. The maximum and minimum values of hip circumference were 114.30 and 63.00 cm respectively with mean of 87.790 cm and standard deviation of 10.317 cm. (Table 1)

According to the results of this study it was noted that 59.7% subjects under study had normal weight, 28.9% were under weight, only 9.4% over weight while just 2.0% were obese. Based on waist to hip ratio, 68.5% were normal while 31.5% had central obesity and according to wait to height ratio 87.2% were normal while 12.8% were centrally obese as elaborated in table

Table 1: Descriptive statistics for age, weight, BMI, waist and hip circumferences

Characteristics	Min.	Max.	Mean	Std. Deviation
Age in years				
	17	24	21.2047	1.3877
Weight in kg				
	39	98	57.3456	12.5282
Height in cm				
	140	190	165.022	8.75098
Body Mass Index				
	13.92	47.6	20.857	4.48135
Waist Circumference in cm				
	29	96.5	75.2495	10.5531
Hip Circumference in cm				
	63	114.3	87.7905	10.3173

Table II: Distribution of Weight, Obesity and Central Obesity on the basis of BMI, Waist to hip ratio and Waist to height ratio

Parameters	Frequency	Percentage
Body Mass Index		
Under weight	43	28.9
Normal weight	89	59.7
Over weight	14	9.4
Obese	3	2
Waist to Hip ratio		
Normal	102	68.5
Central Obese	47	31.5
Waist to Height Ratio		
Normal	130	87.2
Central obese	19	12.8
Total	**149**	**100**

On the basis of the results it was noted that females were significantly underweight as compared to male students. The proportion of underweight female students was 34.2% and male students was recorded to be 6.7% only. This difference was statistically significant with p-value <0.05 as given in table III.

Table III: Comparison of BMI status with respect to Gender

Body Mass Index	Gender		Total	P-Value
	Male	Female		
Under weight	2	41	43	
Normal weight	16	73	89	0.000
Over weight	9	5	14	
Obese	3	0	3	
Total	30	119	149	

Discussion

This study was designed to evaluate the distribution of weight on the basis of body mass index (BMI), waist to hip and waist to height ratio of the students of a private medical college. In this study a total of 149 participants were included, out of which there were 20.13%male participants and79.87% female participants. The mean weight was 57.34 kilograms with a mean height of 165.02 cm and the mean body mass index (BMI) was recorded as 20.857. The mean of waist and hip circumference were 75.25 and 87.79 respectively.

According to the results of our study most of the students (59.7%) had a normal BMI. These results have an agreement with other studies conducted in different medical colleges like in a study conducted at LMDC Lahore 60% students in the study sample had a normal BMI. [10] In a similar study in students of Omani medical college 59% were had BMI in normal ranges[11]. Similarly in another study conducted at Dow medical college[12] showed similar results with 59% of students having normal BMI.

Some studies showed higher proportion of students having weight in normal ranges alike a study conducted at a Malasian medical school showed (68.8%) students had BMI in normal range[13]. In another study among students of 22 countries 64.4% had normal BMI [14].Similarly a study from Malaysian medical college it was reported that 69% of students had a normal BMI[15].

In the present study 28.9% were under weight, which is quite high proportion of students in this range of BMI. The results regarding underweight students in different medical colleges have fairly highvariation. In study at a Malasian medical school it was noted that 15.0% of the students were underweight [13]. Another study at LMDC Lahore showed that only 6% students were underweight [10]. In a similar study among medical students in Oman 15% were underweight [11]. In another study among students of 22 countries 10.8 were underweight [14].

In a study of BMI status of students in Dow Medical College which was conducted to calculate frequency of different BMI categories it was observed that the overall prevalence of underweight students was 29.9% that is almost same as recorded in this present study.

In category of underweight students girls were predominant, which requires special attention because this is a serious health issue in

The trend of underweight student was especially noted in girls, which should be considered as a serious health problem among teen age students requiring extraordinary attention to tackle.[16]Since this disorder of being underweight could produce psychological and physical ailments including infertility which has been reported by different studies. [17-19]

In our study 9.4% students were noted to be overweight, which is a fairly less proportion of students in contrast to other studies which showed quite high proportion of students falling in overweight category of BMI. A study managedat Malasian medical school 12.9% were overweight.[13] A study at LMDC Lahore showed 27% students were overweight,[10]another study among students of 22 countries 18.9 were overweight. [14] Being over-weight is coming up as a significant problem in both male and female students. The frequency of students falling in overweight category in the students of Dow Medical College is 2.7%.[16]A study on medical students of Ribat University, Khartoum, India reported overweight to be 18%.[20]

In our study sample it was noted that only 2% of the students were obese, which is similar to other studies like a study at Malasian medical school 3.3% were obese

[13]and in another study among students of 22 countries 5.8% were obese.[14] Some studies have shown a high proportion of obesity among students of medical colleges like a study at LMDC Lahore 7% were obese [10] similarly a study in Malaysia reported rate of obesity among medical students to be around 8% (5% in males and 2% in females).[15]A study conducted at Dow Medical College showed a very low rate of obesity among student only 0.6% students were obese[16]which may be due to difference in the socioeconomic status between students of public and private sector medical college. A study on medical students of Ribat University, Khartoum, India reported obesity to be 9%.[20]

In our study the percentage of students with central obesity(according to waist to height ratio) is 12.8%.In a similar study done in Greece the percentage of central obesity among student using waist to height ratio is 12.8%.[21]

Conclusion

This study suggests that obesity and being overweight is not a major problem among students of a medical college but being under-weight is coming up as a significant problem among students of medical college it is therefore suggested that another study should be carried out to find the reasons of being underweight among the students of medical college.

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