ORIGINAL ARTICLE

Obesity amongst Medical Students - A Cross-Sectional Comparative Study from Lahore, Pakistan, 2022

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ABSTRACT

Background: Doctors wellbeing not only affects them but also it has strong impact on their surroundings as they are considered as role models in community.
Aim: To assess the magnitude and any overtime change of obesity among the medical students.
Methods: This study was conducted at Ameer Ud Din Medical College Lahore from February to April 2022. Informed verbal consent was taken from 159 students selected through simple Random sampling that agreed and were not having any health ailments like ascites or edema artificially increasing body weight and hormonal disorders. Analysis was done using SPSS v 23.
Result: Based on BMI cut-off for Asians 21.38% medical students had BMI ≥25.0 kg/m2, 8.18% were underweight and all females. Significantly greater numbers of males were obese (BMI ≥25) as compared to females 25% (11 of 44) vs. 20% (23 of 115) and as well as in severe obese category (BMI ≥30) 11.36% (5 of 44) for male vs. 3.5% (4 of 115) females.
Conclusion: Medical students have comparatively lesser prevalence than general public and this has improved over the passage of time and in comparison of similar population of the other province but has shown both increase in Pre-obesity prevalence and under nutrition trend in female medical students demanding to search the possible factors for this double burden Malnutrition among female medical students.
Keywords: Obesity, Prevalence, MBBS Students.

INTRODUCTION

Malnutrition a double burden disease occurs as a result of deficient (under nutrition) or excessive intake (over nutrition) of nutrients resulting in health problems at all levels of the populatio[1]. Over nutrition can end up into overweight and obesity. Accumulation of excessive amount of fat that enhances the risk of medical ailments and untimely death[2,3].

Fat accumulation or adipocyte dysfunction leads to metabolic changes and enhances the risk of chronic diseases and malignancy. World Health Organization (WHO) and the National Institute of Health (NIH) uses Body mass index (BMI) which is weight in kg/ height in m2 index[4,5] for Classification of overweight and obesity in adults. A BMI range of 25 to 29.9 is considered as overweight while a BMI ≥ 30 as Obesity which is further divided into Class I–III with the exception of China and Japan using a BMI of 28 and 25 kg/m2 for cut-off respectively. So WHO has used a BMI > 27.5 kg/m2 as cutoff for Asians considering the evidence of risks of adiposity-related issues in Asians even at lower BMIs[2]. Childhood Obesity[6] have a propensity to persist in adulthood with the chances that approximately three-quarters of obese children will retain the disease trend during adulthood[7,8].

Homeostatic, hedonic, and cognitive control systems are regulatory feedback process and their extensive interaction is involved within and across individual's intake of energy and its expenditure. So all 3 systems and their interactions should be considered for understanding complex eating behavior[9]. Interaction between environmental influences and genetic predisposition to weight gain also results in obesity[10] but many behavioral issues attributed to obesity are controllable[11,12]. But depends upon your perceived importance of health specifically in relation to exercise behavior[13,14]. Enhancing the availability and access of healthier foods along with behavior change implementation and regulatory interventions can reduce Fast food consumption ending up in overweight and[15].

Obesity which is one of the most prominent health threats globally[16] is a serious risk factor for chronic diseases, such as type 2diabetes mellitus, Hypertension, cardiovascular diseases, some types of cancer[17,18]. Even poorer performance in physical fitness index has been shown by Underweight, overweight and obese

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students in comparison to healthy normal weight students[19]. Healthy Dietary habits are of significant importance for the health of college students especially Medical students who are expected to have healthier dietary habits and ideal body weight and BMI but study has shown Inadequate food preference with unhealthy dietary habits in spite of satisfactory nutritional awareness[20,21]. Obesity has affected 400 million person all over the world[22]. Pakistan is a developing country and also facing double burden as a result of under nutrition and over nutrition, According to WHO around 26% women while just 19% of the men are obese in Pakistan with urban population more affected comparative to rural. Obesity is also growing at a faster pace in youth[23]. Based on BMI cut-off for Asians study from Multan, Pakistan has shown that 24.55% were underweight while 46% of the people were overweight and obese[24,25]. Physical fitness index has indicated poor performance by Underweight, overweight and obese students than normal weight students[19]. In spite of high prevalence of obesity and related economic burden, it is not being prioritized in medical schools curricula[26-28].

A study from Sudan has shown 22.2% overweight and 6.5% obese medical students[29] while according to another study 31% were overweight or obese and 5% were underweight[30]. According to a study conducted among medical students of Lahore 21% students had BMI ≥25.0 kg/m2 with 30.5% males and 16% females[31].. According to results of a study from Karachi medical colleges the mean ± SD BMI of the study population remained 21.717±4.33 kg/m2, 26.5% were underweight with BMI < 18.5, 40.2% were normal weight with BMI between 18.5 and 24.9, 14.8% were pre-obese with BMI between 25 and 29.9, 11.9% had obesity class I with BMI between 30.0 and 34.9, and 6.5% had obesity class II with BMI between 35.0 and 39.9 and none had BMI beyond 39.9[32]. High prevalence of Obesity across the globe especially amongst the physicians can have negative implications for patients[33] Doctors wellbeing not only affects them but also it has strong impact on their surroundings as they are considered as role models in community.

This study has been designed to assess the magnitude and any overtime change of obesity among the medical students.

METHODOLOGY

This study was conducted among Ameer Ud Din Medical College students, Lahore from February to April 2022. The study design

was Cross sectional comparative. Informed verbal consent was taken from 159 students selected through simple Random sampling that agreed and were not having any health ailments like ascites or edema artificially increasing body weight or hormonal disorders. Data was gathered using structured Performa consisting of different variables like name, age, sex, height and weight. The response rate remained 100%. Respondents were classified on the basis of both international and WHO cut-off points for Asians.

Operational Definitions: Height: distance from the ground to the highest point of standing person. **Weight**: measured with a minimum of clothing using an electronic scale (34). **BMI** Body mass index (BMI) which is weight in kg/ height in m2 index used to calculate nutritional status of an individual[35].

Classification of Adults Nutritional status According To BMI

Classification BMI	kg/m^2
Severely underweight	<16.50
Underweight	<18.50
Normal Range	18.5-24.9
Overweight	25-29.9
Obese I:	30-34.9
Obese II:	35-39.9
Obese III:	>40.00

WHO Asian-BMI classification[36]

Classification BMI	kg/m^2
Underweight	<18.50
Normal Range	18.5-22.9
Overweight	23-24.9
Obese I:	25-29.9
Obese II:	>30

Data entry and analysis was done using SPSS software version 23. Frequency tables and Bar charts were used to present the data. BMI categories presented using Pie chart as percentages**.** Significance between two observed frequencies of male and female BMI were checked using Chi-square ($p < 0.05$ was taken significant).

RESULTS

Out of 159 medical students included in study 96/159 (60.38%) were between the ages of 22-24 (Figure 1). with Median height of 165 cm, Median weight 57 kg and median BMI 21 kg/m2 . Female participants were 99/159 (62.26%) comparative to males which were 60/159 (37.74%) (Figure 2). Majority 112/159 (70.44%) students had normal BMI. Only 13/159(8.18%) were underweight and were all females Table 01. In our

study according to International BMI classification 70.44% students had normal BMI. However 15.72% were overweight, 03.77% were having obesity1, 1.89% had Obesity11 and 08.18% were underweight. **Female** students were 115/159(62.26%) out of which 79/115 (68.70%) were normal, 19/115(16.52%) Pre-Obese, 4/159(3.48%) Obese I and 13/159 (11.30%) were underweight. Male students were 44/159(37.74%) of which 33/44 (75%) were normal, 6/44(13.64%) were pre-obese, 2/44(4.55%) was obese-I and 3/44(6.82%) obese-II. Based on BMI cut-off for Asians only 8.18% were underweight all female medical students and 21.38% medical students were in overweight and Obese category. Significantly larger numbers of males were obese having BMI ≥25 comparative to females 25% (11 of 44) vs. 20% (23 of 115) and as well as in severe obese category (BMI ≥30) 11.36% (5 of 44) for male vs. 3.5% (4 of 115) females.
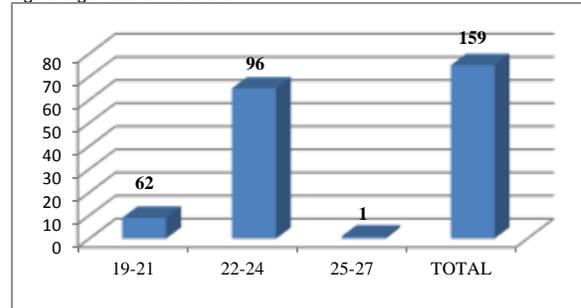
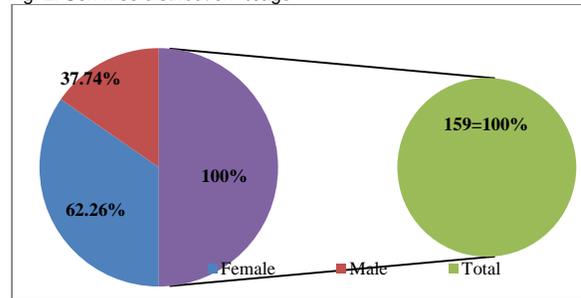Fig. 1: Age wise distribution

Fig. 2: Sex wise distribution %age

Table 1: Nutritional status based on BMI distribution for male and female Medical Students

BMI	Male Medical Students	Female Medical Students	Medical Students
<18.5 kg/m^2.	00.00(00.00%)	13.00 (11.30%)	13.00(8.18%)
18.5 to 24.9 kg/m^2	33.00 (75.00%)	79.00 (68.70%)	112.00(70.44%)
25 to 29.9 kg/m^2	06.00 (13.64%)	19.00 (16.52%)	25.00 (15.72%)
30 to 34.9 kg/m^2	02.00 (4.55%)	04.00 (03.48%)	06.00 (03.77%)
35 to 39.9 kg/m^2	03.00 (06.82%)	00.00 (00.00%)	03.00 (01.89%)
≥40 kg/m^2	00.00 (00.00%)	00.00 (00.00%)	00.00 (00.00%)-
Total	44.00 (100%)	115.00 (100%)	159.00 (100%)

Fig. 3: Nutritional status based on BMI distribution for male and female Medical Students according to WHO BMI International classification
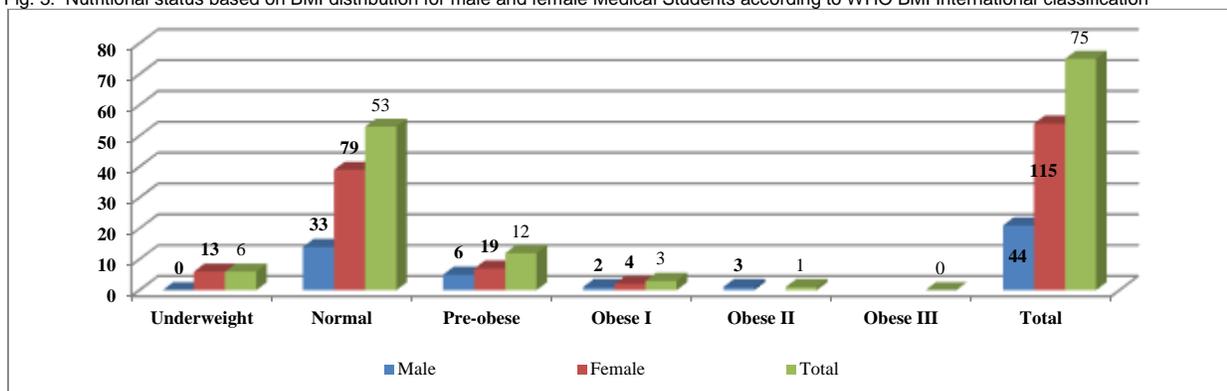
DISCUSSION

Majority 112/159 (70.44%) medical students included in this study had normal BMI but 13/159(8.18%) were underweight and were all females higher than 5% according to another study conducted in medical studen[30]. Comparison of male to female in less than 25 BMI categories has shown 75%:80% but 13/115(11.30%) female BMI falls below 18.5 (underweight) and 19/115(16.52%) were Pre-Obese with BMI 25 to 29.9 in accordance with the study on a double burden disease Malnutrition occurring as a result of deficient (under nutrition) or excessive intake (over nutrition) of nutrients resulting in health problems at all levels of the population[1]. Based on BMI cut-off for Asians only 21.38% students had BMI ≥25.0 in accordance with the findings of a study conducted among medical students of Lahore[31]. According to international BMI 15.72% were overweight and 5.66% were obese which is far less than findings of Sudan Medical student statistics in which 22.2% overweight and 6.5% obese student[29] likewise findings of another study showing 31% overweight or obese[30]. According to results of a study from Karachi medical colleges 26.5% were underweight far higher than current finding of 8.18%, same study has shown 40.2% normal weight students far less than current study finding of 70.44% , 14.8% were pre-obese lesser than current finding of 15.72%, 11.9% had fallen in class I far higher than current finding of 03.77% and 6.5% in obesity class II far higher than 1.89% but none had BMI beyond 39.9 in accordance with current finding[32]. According to a study conducted among medical students of Lahore 30.5% males and 16% females had BMI ≥25.0 in comparison to our findings of 25% (11 of 44) males vs. 20% (23 of 115) females with BMI ≥25[31] reflecting more obesity in male comparative to females but comparatively lower obesity prevalence trend in males and increase in obesity prevalence trend in female medical students.

CONCLUSION

Medical students have comparatively lesser prevalence than general public and this has improved over the passage of time and in comparison of similar population of the other province but has shown both increase in Pre-obesity prevalence and under nutrition trend in female medical students demanding to search the possible factors for this double burden Malnutrition among female medical students.

Conflict of interest: Nil

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