ORIGINAL ARTICLE

ASSESSMENT OF BODY MASS INDEX AND RELATED RISK FACTORS AMONG MEDICAL STUDENTS

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ABSTRACT

Background: Body Mass Index (BMI) gives information about the relative weight for a given height based upon age and sex. The objective of this study was to assess BMI among medical students and to determine the related risk factors including diet and lifestyle.

Material and methods: This cross-sectional study was conducted in Department of Community Medicine, Gomal Medical College, D.I.Khan, Pakistan from March 15, 2015 to May 15, 2015. A sample of 100 subjects was selected by consecutive technique. Study instrument was a questionnaire. The demographic variables were gender, age groups, dietary habits and stress effect on diet whereas research variable was BMI. Frequencies and percentages were calculated. Data were analyzed by descriptive analysis plan.

Results: Out of 100 subjects, 69(69%) were in normal range, 22(22%) were overweight and 3(3%) obese and 6(6%) were underweight. Males were 50(50%) and females 50(50%). Sixty four(64%) males were normal, 32(32%) were overweight, 4(4%) were obese and none was underweight. Seventy four (74%) of female respondents were normal, 12(12%) were overweight, 2(2%) were obese and 12(12%) were underweight. In the age group 18-20 years, 20(20%) were normal, 4(4%) were overweight and 1(1%) was obese and 3(3%) were underweight. Among the respondents that had no serving per day of fatty food, 44(44%) were normal, 7(7%) were overweight, 3(3%) were obese and 3(3%) were underweight. Among respondents whose diet was not affected during stress 2(2%) were underweight, 12(12%) were normal, none were obese and 5(5%) were overweight.

Conclusion: Female students 21-23 years, having no serving of fatty food per day & whose diet decreased during strees showed better BMI. This study reflects the general trend of weight gain especially in male students.

KEY WORDS: Body Mass Index; Exercise; Feeding habits.

INTRODUCTION

Body Mass Index (BMI) is a medical index that gives information about the relative weight for a given height based upon age and sex.[1,2] BMI is the ratio of an individual's weight (in kilograms) to the square of his/ her height (in meters) i.e. kg/m². According to the WHO guidelines, Individuals having a BMI between 18.5-24.99 kg/m² are classified as normal-weight. Individuals with a BMI< 18 kg/m² are underweight. Pre-obese/ over-weight are further classified as class

I with BMI 30 – 34.99 kg/m², class II with BMI 35 – 39.99 kg/m² and class III with BMI > 40 kg/m² with moderate, severe and very high risk of co-morbidities respectively.

Middle aged adults with high BMI are at a greater risk of hypertension, diabetes worldwide and are associated with twice as much health care expenses than normal-weight people.[3]

A basic characteristic of obesity is abnormal fat deposition in adipose tissue on both subcutaneous and visceral body regions. It acts as an independent risk factor for majority of acute and chronic diseases worldwide including diabetes mellitus, cardiovascular diseases, stroke, dyslipidemia, osteoarthritis, hypertension, non-fatty liver disease and cancer of several sites like endometrium, breast and colon. Obesity among all segments of the population including men, women and children is increasing at a high rate and considered as the second leading cause of preventable death after cigarette smoking in both developed and developing countries. Moreover

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it is now becoming an alarming cause of disability and death in many developing countries.[4,5]

Professional and domestic life-style also contribute highly to the risk of obesity. The risk of obesity worldwide is on a rise as a result of daily increase in number of over-weight people due to the sedentary life-style and changes in dietary pattern.[6]

One of the most important risk factors of obesity is job- oriented stress including giving more time to job to earn more money and adapting negative habits to energize themselves and minimize job stress such as smoking, alcohol intake or any other so called energy drinks etc.[7]

Globally almost 1.5 billion adults above the age of 20 years were found over weight in 2008 with high prevalence in female gender and nearly 43 million children less than age of 5 years were overweight in 2010 .This figure is expected to increase up to 65% by the year 2015 in adult population.[8]

In Asia Pacific, Vietnam and India have the lowest rate of obesity that is 1.7% and 1.9 % respectively while Malaysia has highest obesity prevalence of 14 % and Thailand next in line having prevalence of 8.8%.[9]

In Pakistan 26 percent of women and 19 percent of men are obese. Women are 2-3 times more likely to be obese. Childhood obesity is increasing with an estimated value of 10 percent.[10] In Peshawar the biggest city of Khyber Pakhtoonkhwa, the prevalence of obesity and overweight in females is 26.9% and 53.4% respectively.[11]

Perception of being overweight is a key determinant of medical students nutritional habits and their weight management. Many students who are overweight or at risk of being overweight don't perceive themselves as overweight, therefore, are not likely to engage in any weight reducing practices.

The objective of this study was to assess BMI among medical students and to determine the related risk factors including diet and lifestyle.

MATERIAL AND METHODS

This cross-sectional study was conducted in Department of Community Medicine, Gomal Medical College, D.I.Khan, Pakistan from March 16, 2016 to May 15, 2016. A sample of 100 respondents was selected by consecutive, non-probability technique. All the medical students studying in Gomal Medical College, D.I.Khan were eligible for inclusion in the study. Refusal was the only exclusion criteria. Verbal consent was sought from all respondents and confidentiality of the data was ensured. All respondents were weighed & their heights measured. Detailed history regarding risk factors was sought. Study instrument was a structured Questionnaire. The socio-demographic variables were gender, age groups, dietary habits and stress effect on diet

whereas research variable was BMI.

Gender had 2 attributes of male & female. Age groups were 18-20, 21-23 and 24-26 years. Dietary habits had three attributes; No fat serving per day, one fat serving per day & two fat servings per day. Stress effect on diet had three attributes; No effect on diet during stress, increase in diet during stress and decrease in diet during stress. WHO classification was followed for BMI categorization.

Gender was nominal, while BMI, age groups, stress effect on diet and dietary habits were ordinal. Frequencies and percentages were calculated for nominal and ordinal data. Data were analyzed by descriptive analysis plan through IBM SPSS version 20 (IBM SPSS Corp., Armonk, New York).

RESULTS

The response rate was 100%. There was no missing data. Males were 50 (50%) and females 50 (50%) with male to female ratio of 1:1. In the age group 18-20 years, 20 (20%) were normal, 4 (4%) were overweight and 1(1%) was obese and 3 (3%) were underweight. Those of age between 21-23 years, 38 (38%) were normal, 16 (16%) were overweight and 2 (2%) were obese and 3 (3%) were underweight. Those aged between 24-26 years, 11 (11%) were normal, 2 (2%) were overweight, neither of the respondent was obese or underweight. (Fig. 1)

Among the respondents that had no serving per day of fatty food, 44 (44%) were normal, 7 (7%) were overweight, 3 (3%) were obese and 3 (3%) were underweight. Those respondents that had one serving per day, 22 (22%) were normal, 15 (15%) were overweight and none was obese and 3 (3%) were underweight. Those who had two servings per day all the 3 (3%) were normal. (Fig. 2)

Among respondents whose diet was not affected during stress 12 (12%) were normal, 5 (5%) were overweight and none was obese and 2 (2%) were underweight. In respondents whose diet increased with stress, 21 (21%) were normal, 5 (5%) were overweight and 1 (1%) obese with 2 (2%) underweight. In respondents whose diet decreased were 36 (36%) were normal, 12(12%) were overweight and 2 (2%) were obese and 2 (2%) were underweight. (Fig. 3)

DISCUSSION

According to our study 69% were in normal range, 22% are overweight, 3% are obese and 6% are underweight, while in a study conducted in Faisal abad, Pakistan, 6% were underweight, 60% were within normal range, 27% were overweight, 7% were obese, the results being comparable.[12]

In our study 64% males are normal, 32% are overweight, 4% are obese and none are underweight while in a study conducted by Gopalakrishnan S, 39% males were normal, 13.7% were overweight, 32.5% were obese and 12.2 % were underweight
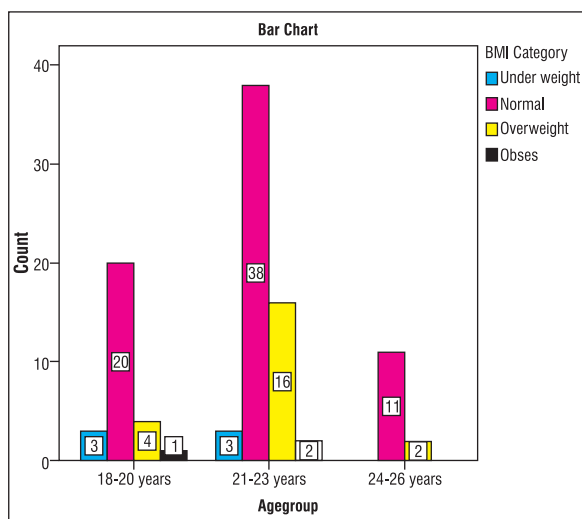
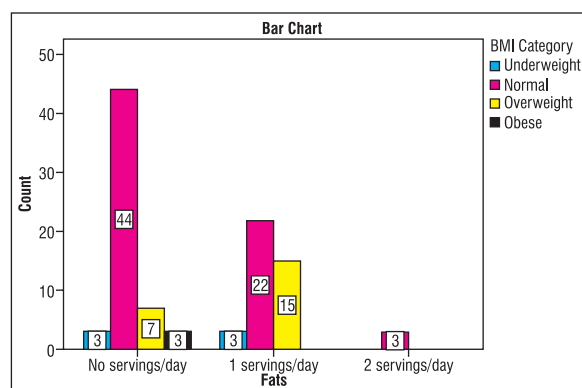Figure 1. Age-group distribution of BMI among medical students (n=100).

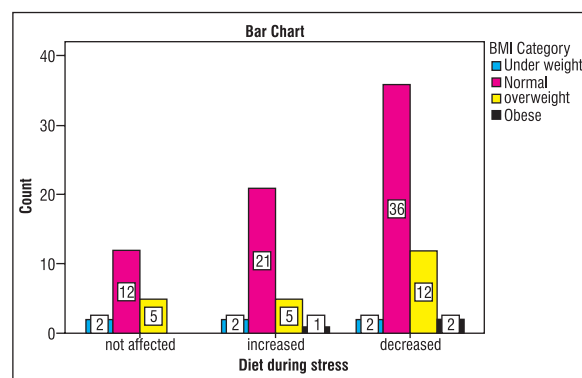Figure 2. Distribution of BMI by Dietary habits among medical students (n=100).

Figure 3. Distribution of BMI by Diet during Stress among medical students (n=100).

which shows there is an increased trend of obesity in study of Gopalakrishnan S as compared to our study.[13]

In our study 74% of female respondents are normal, 12% are underweight and 2% are obese and 12% are overweight, while in a study conducted by Gopalakrishnan S, 51.6% female were normal, 15.7% were overweight 15.7% were obese and 17% were underweight. [13,14]

CONCLUSION

Female students 21-23 years, having no serving of fatty food per day & whose diet decreased during strees showed better BMI. This study reflects the general trend of weight gain especially in male students.

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AUTHORS' CONTRIBUTION

Conception and Design:	NN, MM, SZ
Data collection, analysis & interpretation:	NN, MM, IA, IA
Manuscript writing:	NN, MM, ZS, TZ, IA