Variation of BMI in Medical Students of Sialkot

Nasreen Hamid[1], Muhammad Sufyan[1], Nouman Shahid[1], Saad Rasool[1], M. Ali Raza[1] and Muhammad Haris Muaz[2]

ABSTRACT

Objectives: To determine the BMI status of undergraduate medical students.

Study Design: Descriptive cross sectional study.

Place and Duration of Study: This study was conducted at the Department of Gynae & Obstet and Surgery, Sialkot Medical College, Sialkot from June to August 2019.

Materials and Methods: Demographic Data, Body weight and height of 1550 students were collected in a survey. Out of 1550 total questionnaires, 78 were discarded. BMI was calculated from the remaining 1472 forms. Underweight, Normal weight, 0verweight, and Obesity were defined using WHO international standard BMI cut-offs. Data were entered and cleaned using SPSS statistics 25.0 computer package. Data was presented in the form of graphs and described in numbers and percentages.

Results: Among the MBBS students, 69.6% were in the age group 20 to 23 years and 62.4% were females. The mean height of the students was 1.663 meters (SD= .0937). The mean weight of the students was 61.15 kg (SD=13.6825). Overall 59.1% of students were within the normal range (53.9 % male and 62.2% females). 20.5% students were underweight (16.7% male and 22.9% females). 15.1 % students were overweight (20.3% male and 12.0% females). 4.6% of students class I obese (7.8% male and 2.72% female). 0.7 % are class II obese (1.4% male and 0.217 female).

Conclusion: Abnormal BMI is a rising problem for male and female medical students. The underweight issue is considerably more common in females and overweight issues are considerably more common in males.

Key Words: BMI, medical students, underweight, overweight, obesity

INTRODUCTION

Pakistan is the 6th most populous country in the world with a total population of 212,742,631 people[1]. One of the most popular non-communicable diseases is cardiovascular diseases. Other than that, cancer, hypertension, and diabetes are also an important cause of mortality and morbidity. The major modifiable risk factors for these major non-communicable diseases are physical inactivity, tobacco and alcohol use and unhealthy diet[2].

Being underweight can represent many health concerns to an individual as being overweight can. Underweight status and micronutrient deficiencies also cause decreases in immune and non-immune host defenses and should be classified as underlying causes of death if followed by infectious diseases that are the terminal

[1.] Department of Obstet & Gynae / Surgery[2], Sialkot Medical College, Sialkot.

Correspondence: Dr. Nasreen Hamid, Associate Professor, Obstet and Gynae, Sialkot Medical College, Sialkot.
Contact No: 0300-4879016
Email: medicalforum@gmail.com

associated causes[3]. Medical students are more prone to obesity because of their lifestyle with less physical activity and disordered eating habits and lack of physical activity among medical students causes less energy expenditure than food intake leading to obesity. Less time available for breakfast/launch in college hour due to busy schedule contributes to a frequent habit of drinking tea/coffee/juices which exacerbate the condition. Other contributing factors include increased junk food consumption and a family history of obesity. Body fat is an essential part of the body. It provides an important energy source, acts as a heat insulator and shock absorber, is the source of estradiol in women, and produces numerous hormones such as adiponectin, resistin, and leptin[4]. Too much or too little fat in the body poses problems. Obesity has been found to correlate with the level of body fat[4]. Obesity and its associated morbidities are leading causes of CVD, Type II diabetes, Hypertension, Osteoarthritis, Anesthesia, Risks menstrual abnormalities, as well as some type of cancer including those of colon and breast. BMI, describes relative weight for height, is not gender-specific and is significantly correlated with total body fat content. It is also the most widely accepted means of assessing obesity measured by dividing the weight by height. Among the many indices used to assess obesity, BMI has shown the strongest correlation with

continuous hypertension in both genders. WHO BMI cut-offs are:
1. BMI of less than 18.5   Underweight
2. BMI 18.5 to 24.9   Normal
3. BMI 25 to 29.9   overweight
4. BMI 30 to 34.9   class I obese
5. BMI 35 to 39.9   class II obese
6. BMI 40 above   class III obese

MATERIALS AND METHODS

A descriptive cross-sectional This study was conducted at the Department of Gynae & Obstet and Surgery, Sialkot Medical College, Sialkot from June to August 2019 and survey was done in three medical colleges of Sialkot with permission from the ethical committee of Sialkot medical college Sialkot and from the ethical committee of Islam Medical and Dental College Sialkot and Khawaja Muhammad Safdar Medical College Sialkot. The study population consisted of all the 1630 MBBS students.

Inclusion Criteria: All the regular male and female students were included in the study. Students present on the days of study were included, and efforts were made twice to contact absentees. A total of 1550 students participated in the study.

Exclusion criteria: Students who were absent during the days of study were excluded. Data from 78 students were invalid and humorous thus discarded.

A questionnaire was used to collect and record information on age, sex, height in feet or meters, and weight in kilograms, of each subject. Height in feet was later converted into meters. Scales were available for students during each session of data collection in case anybody did not know his/her height or weight. Data were cleaned using SPSS 25.0. BMI was calculated in SPSS using the formula.

     weight in KGs/ Height in meter square (w/h^2).

WHO BMI cut-offs were used to categorize data.
1. BMI less than 18.5   Underweight
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RESULTS

Table No.1: Age Interval

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	16 to 19	429	29.1	29.1	29.1
	20 to 23	969	65.8	65.8	95.0
	24 or Above	74	5.0	5.0	100.0
	Total	1472	100.0	100.0	

Out of 1472 total students who participated, 65.8% were in the age group 20-23 years. 29.1 % were in the age group 16 to 19 and the remaining 5% were in 24 or above age group. 553 (37.6%) students were male and 919 (62.4%) were female.
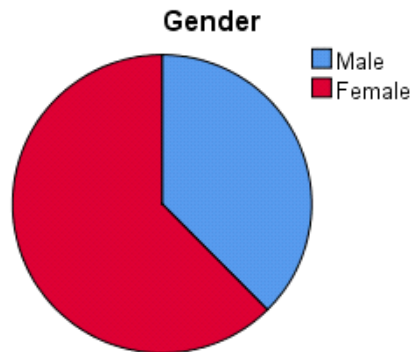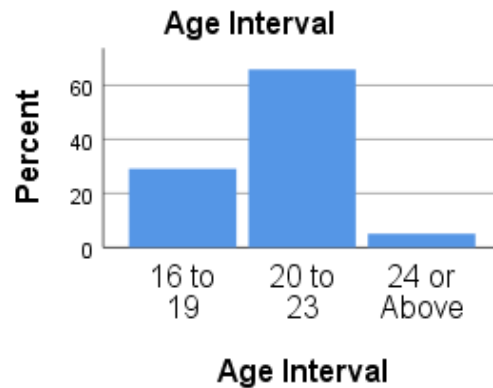

Figure No.1: Gender

Figure No.2: Age Interval with percentage

The mean BMI is 22.03. Among all the 1472 participants, Minimum BMI is 13.02 and the Maximum BMI is 39.14. Out of total participants, 59.1% (870) were in Normal range, 53.9% (298) male and 62.2% (572) female. 20.5% (302) were underweight, 16.6% (92) male and 22.9% (210) female. 15.1% (222) were overweight, 20.3% (112) male and 12.0% (110) female. Generally obesity is 8%. 4.6% (68) were Class I Obese, 7.8% (43) male and 2.7% (25) female. 0.7% (10) were Class II Obese, 1.4% (8) male and 0.2% (2) female acc. WHO criteria.
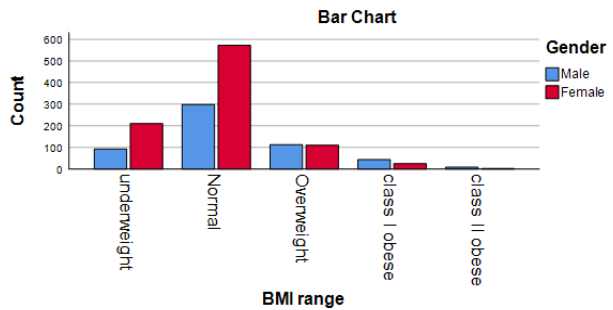
Bar Chart: BMI range with count

Table No.2: BMI range * Gender Cross tabulation

			Gender		
			Male	Female	Total
BMI range	Underweight	Count	92	210	302
		% within Gender	16.6%	22.9%	20.5%
	Normal	Count	298	572	870
		% within Gender	53.9%	62.2%	59.1%
	Overweight	Count	112	110	222
		% within Gender	20.3%	12.0%	15.1%
	class I obese	Count	43	25	68
		% within Gender	7.8%	2.7%	4.6%
	class II obese	Count	8	2	10
		% within Gender	1.4%	0.2%	0.7%
Total		Count	553	919	1472
		% within Gender	100.0%	100.0%	100.0%

DISCUSSION

Abnormal BMI, whether it is obesity or underweight, causes many non-communicable diseases. The best method till now to assess obesity or underweight is by calculating BMI.[2,3]

In the present study, 60% of the students are in the normal range. Studies in Lahore medical and dental college[5,6] and Islamabad Medical and Dental college[7] showed similar results with 60% of students in the normal range. Another study in Dow medical college showed similar results with 59% of students in normal range[8]. In another study at Khyber university, 51.2 % population had normal BMI[9]. In another study among students of 22 countries, 64.4% had normal BMI[10]. In a study in Haryana, India, 73.1% population had normal BMI. The difference in our study and Khyber university can be attributed to the increased level of physical activity and harsh environment in KPK areas and racial differences. Similarly, the difference with the study in Haryana can be attributed to the cultural and racial differences between the Hindu and Muslim population i.e. non-vegetarian diet of Muslims and the vegetarian diet of Hindus.

In this study, 8% Population is obese (class I + class II + class III). Studies at LMDC, Lahore showed 7% of students obese[6]. A study from Malaysia reported 8% of the population in obese range[11]. In another study among students of 22 different countries[10], 5.8% were obese. Similarly another study at Ribat University, Khartoum, India[12] reported obesity to be 9%. In other studies such as the study at Islamabad only 2% population were obese[7] while in another study conducted at Dow medical college, only 0.6% population were obese[8]. This can be attributed to a better level of awareness, as can be said about students of Islamabad medical and dental college and different socioeconomic status of students in government and private sector.

In the present study, 20.5% of students were underweight. In a study from Islamabad Medical and Dental College, 28.9 % of students were underweight[7]. The underweight category has a high variation among different medical colleges. In a study at Dow medical college, 29.9 % of the population was underweight[8]. According to a Malaysian study, 15% of the students were underweight[11]. A similar study in Oman also showed a 15% population to be underweight[13]. In a study among students of 22 different countries 10.8%, students were underweight[10]. A study at LMDC showed a 6% underweight.

It has been seen in almost all the studies that the trend of underweight is more common in females, which require special attention as it can lead to various problems in pregnancy and fertility.[14]

15.1% population is overweight in our study. In a study at 22 different countries[10], the overweight population is 18.9%. In a study in Malaysia, 12.9% were overweight[11]. In studies at Islamabad Medical and Dental College and LMDC, Lahore[9], overweight population was 9.4% and 27% respectively. This shows too much variation of the overweight population in different studies. A study in medical students at Ribat University, Khartoum, India, 18% population was found overweight[12s].

CONCLUSION

This study suggests that obesity and underweight are both very common in the medical students of Sialkot. Obesity is relatively more common in males and underweight is more common among females. It is therefore suggested that a study should be conducted to find out the major causes of obesity among the medical students of Sialkot and seminars should be conducted for medical students as well as for the general population to increase the awareness of obesity and obesity-related issues.

Author's Contribution:

Concept & Design of Study:	Nasreen Hamid, Muhammad Sufyan
Drafting:	Nouman Shahid, Saad Rasool
Data Analysis:	M. Ali Raza, Muhammad Haris Muaz
Revisiting Critically:	Muhammad Sufyan, Nouman Shahid
Final Approval of version:	Muhammad Sufyan, Nasreen Hamid

Conflict of Interest: The study has no conflict of interest to declare by any author.

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