

ORIGINAL ARTICLE

Relationship of Physical Activity and Eating Practices with BMI; Barriers to Physical Activity and Optimum Eating Practices among Medical Students of Islamabad

MUDDASAR PERVAIZ¹, MUHAMMAD HAMZA², MAHVESH MAHMUD³, AYESHA JAVAID⁴, IRAM YASIR⁵, MUHAMMAD AMMAR⁶

¹Assistant Professor in Community medicine department, Al-Nafees Medical College, Islamabad

²Demonstrator in Community medicine department, Al-Nafees Medical College Islamabad.

³Associate Professor Nephrology Watim Medical College Rawalpindi

⁴Assistant Professor in Community medicine department, Al-Nafees Medical College Islamabad

⁵Family Medicine, Associate Professor in Community medicine department, Al-Nafees Medical College Islamabad

⁶Lecturer in Biochemistry dept, Al Nafees medical college Islamabad

Correspondence to: Muddasar Pervaiz, Email: mpbhatti@yahoo.com, Cell: 03468662376

ABSTRACT

Objectives: To identify levels of the physical activity and patterns of eating habits among medical students of Islamabad and to determine the association of BMI with physical activity and eating habits among medical students of Islamabad.

Study Design and Setting: A cross-sectional survey was done in a private and public medical college of Islamabad.

Methodology: A total of 463 MBBS students of 1st year to 5th year were included and data was collected by non-probability convenience sampling. Before initiating study enrolment an ethical approval for study was gained from the institutional ethical board. After signing the consent form, the questionnaire was filled formally. Data was analyzed by SPSS 22.0. P value < 0.05 was considered as statistically significant

Results: 236 of our population were normal and 117 of our population were overweight, whereas 59 were underweight and 51 were obese. Lack of time for physical activity in time table was the most common occurring barriers of physical activity. The most common occurring barrier to optimum eating practices were lack of money, tasty fast food and don't like home cooked food. Results showed statistically significant relationship between the hours of exercise per week and the BMI status. The Chi-Square value (P-Value) for physical activity and eating habits in association with BMI were 0.228 and 0.570 were insignificant.

Conclusions: Results concluded that bad eating habits and lack of physical activity affects the BMI. Individuals in obese group had increased BMI, lack of physical activity and bad eating habits.

Keywords: BMI, PAL, Obesity, Medical

INTRODUCTION

Worldwide there is a remarkable increase in over-weight population and people in the condition of obesity; the incidence of this has doubled since 1980. This trend can be seen across all age groups and it is responsible for increase in burden of diseases due to its many complications like diabetes, cardiovascular diseases and malignancies associated with obesity. Prevalence of obesity overall in the world above 18 years is 13% and overweight is 39%.¹ Globally survey showed that prevalence of obesity in countries like Egypt- 59.4%, Turkey 47.4%, Malaysia- 30.1% and South Africa- 24% (Ijerp). Regionally the prevalence of obesity is India- 37.5%, Thailand- 31%, China- 14.3% and Bangladesh- 20.8%.² There is a higher prevalence of central obesity among women (42.2%) than among men (14.7%) in Pakistan (national health survey of Pakistan). Obesity along with diabetes mellitus type 2, hypertension, and hypercholesterolemia could be an important contributor to the high burden of CVDs among the Pakistanis.

As obesity occurs the adipose tissue becomes both abundant and increasingly dysfunctional physiologically. Etiologically these complications are due to the overall increase in adipokines and elevated levels of free fatty acids. The elevation of free fatty acids in the circulation result in the metabolic changes like upregulation of

pancreatic insulin secretion, down regulation of insulin sensitivity within muscle, decrease insulin sensitivity in the liver, increase hepatic very light density lipids secretion and induce endothelial dysfunction. Low physical activity leads to cardiovascular disease, malignancies and diabetes.³ WHO recommended that adult of age 18 to 64 should do at least 150-mins moderate intensity or 75 min vigorous activity in a week.⁴

The body mass index is a convenient way of analyzing the amount of tissue is relevant to its nature being fat or lean muscle tissue.⁵ This method generally identifies weight relevant to height. The body mass index method measures kilograms per metre square, offered to healthy individuals. Because of its popularity and its convenience it is the leading method for researchers and scientists do evaluate and group individuals for health based studies. A body mass index off less than 18.5 is considered underweight and ranging from between 18.5-24.9 is considered normal. Where 25.0-29.9 is considered overweight, above 30 ranging to 34.9 is obese, whereas anything above 35 is labeled extremely obese.⁶ The study is designed to determine the association of BMI with physical activity and eating habits among medical students of Islamabad.

MATERIALS AND METHODS

Analytical cross sectional survey was conducted among Medical schools of Islamabad Both private and public only including MBBS students across all years from first year to final year, over 06 months duration. Necessary approvals for carrying out this research were sought from research and development (r&d) department of AFGMI as well as from administration of the concerned medical college.

A multistage cluster sampling technique was used for the study. Data was collected from 463 medical students enrolled in medical colleges across Islamabad. Total of 11 medical colleges in Islamabad out of which 3 were public and 8 were private. One from each was selected from lottery method. First 50 students from all 5 MBBS years of both colleges were included in sample. Across-sectional survey was done by formal questionnaire was filled from the students. Individuals were divided into underweight, normal, overweight and obese. Height and weight parameters were measured of students and body mass index was calculated with the provided measurements as shown below.

$$BMI = \text{weight in kg} / \text{height in m}^2$$

SPSS version 21 was used for analysis after entering the data in an excel sheet. Chi square test was applied to find out any significant association between independent variables and dependent variables for categorical data. The data was presented in the form of tables, pie charts and bar graphs.

RESULTS

The data in this study was neutralized by keeping a 46.2% percentage of individuals from private colleges whereas 53.8% were from public sector colleges. Irrelevant of prejudice or preference as per sampling technique with a greater number of females are included in the sample. 73% of individuals taking part in this study were females whereas the only 27% were males out of the 463 students. 36.9% of the students in the study were hostilities whereas 63.1% were day scholars. The largest number of students were from the 4th year with 167 students whereas the least number of students were from second year which was 9% and the 4th year consisted of 36.1%.

Table 1: Gender, Lodging status and academic year of students

	Frequency	Percent
Gender		
Male	125	27
Female	338	73
Lodging status		
Hostilities	171	36.9
Day scholar	292	63.1
Academic year		
1 year	88	19
2 year	41	8.9
3 year	51	11
4 year	167	36.1
year	116	25.1

The greatest number of individuals was females in the normal BMI group. A discrepancy is seen between the overweight groups where the greatest number is of males. However in both the underweight and the obese groups the percentage of individuals different from normal or

overweight group is relatively small and is statistically insignificant (Fig. 1). The largest number of individuals in the males' subgroup was overweight individuals which accounts for 63 individuals (figure 2A). Unlike the males group in the females group (figure 2B) the largest number of individuals are in normal weight range which accounts for 192 females. Alternatively the number of females in obese group is 42 which is significantly higher percentage when compared with the overall number of males in this group. This implies that the variation in weight for females is significantly less than males and there is more prevalence of normal weight when compared to overweight in the in the female section rather than the male section.

Table 2: Exercise habit in students

Exercise	Frequency	Percent	Valid percent	Cumulative percent
Light	290	62.6	62.6	62.6
Moderate	161	34.8	34.8	97.4
Vigorous	12	2.6	2.6	100

Table 3: Frequency and percentage of eating habits of students and students in variable BMI groups

	Frequency	Percent
Eating Habits		
Unhealthy	29	6.3
Satisfactory	370	79.9
Healthy	64	13.8
BMI groups		
Underweight	59	12.7
Normal	236	51
Overweight	117	25.3
Obese	51	11

Table 4: Frequency of breakfast and fast food

Eating Habit	Underweight BMI	Normal BMI	Overweight BMI	Obese BMI
Breakfast	Never	3	29	3
	2/week	1	9	6
	3/week	2	38	3
	4/week	25	87	26
	>5/week	28	73	13
	Daily	0	18	1
Frequency of fast food	5-6/week	3	14	4
	2-3/week	30	112	34
	1-2/month	17	88	9
	Never	9	4	3

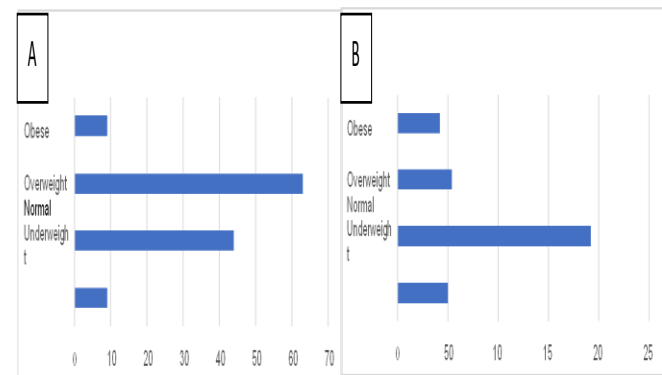


Figure 1: weight frequencies of students

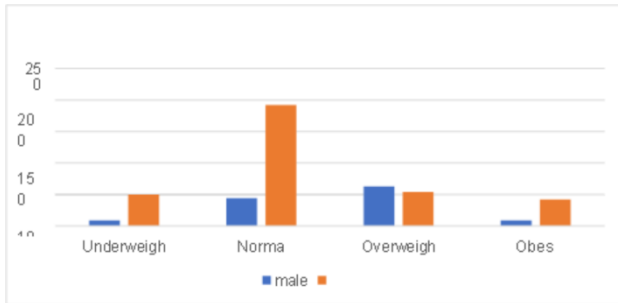


Figure 2: Sub group weight distribution A) Male B) Female

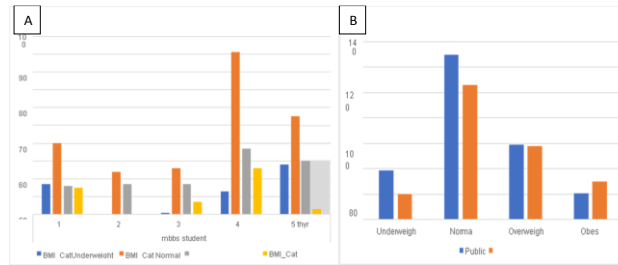


Figure 3: A BMI per year of students B) weight distribution across colleges

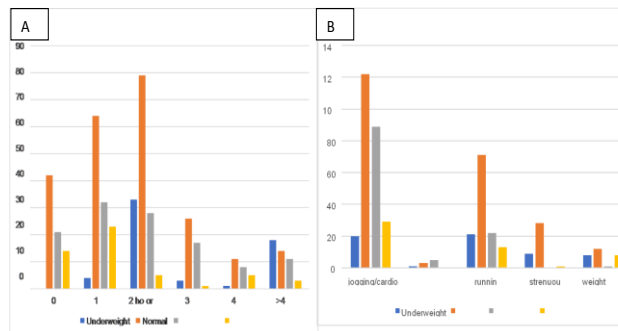


Figure 4: A Number of student's vs hour per week activity B) types of activities and number of students

The largest numbers of obese individuals are seen in 4th year however in the same year there is also the greatest number of normal weight individuals. There are no underweight or obese individuals in the second year which is a discrepancy from the rest of the pattern across the other four years (figure 3). Clinically seen there is a greater number of obese individuals in private colleges and a greater number of underweight individuals in public colleges (figure 3). The largest numbers of students only do light or mild form of physical activity during the course of each day which accounts more than half of our sample population which is 290 individuals out of a total of 460 (Table.2).

A chi squared test indicates that there is a statistically significant relationship between the hours of exercise per week and the BMI status (figure 4). The most popular form of exercise is jogging or cardio exercises and the second most popular form is running. A chi squared test also indicates that there is statistically significant difference in BMI status of individuals and the type of activity they indulge in the p value is 0.00 (figure 4). There is also a

statistically significant relationship between in activity per day and BMI status. The largest number of normal weight individuals has claimed that coming to the University has been a source of reduced physical exertion. Of normal weight 52 students were who prefer 15min of cycling and walking. Whereas most of students despite being obese or overweight didn't prefer to walk or cycle more than 15 minutes.

Only 6.3% of individuals suffer a habitual unhealthy eating lifestyle. This 6.3% accounts for a total of 29 individuals in a set of 463 which implies that the eating habits are not particularly at fault here as suggested in table. 3. The largest number of individuals is in the normal category of their BMI (Table.3). Frequency of breakfast and fast food in groups are described in table.4.

The students who were not having breakfast the largest number of them suggested that lack of money which accounted for 40% of the population that was not having breakfast. 75% of the students indicated that their favorability towards unhealthy food is due to its good taste the second most prevalent group. 29% claimed that the monotony of taste is the reason why they had to fast food 22% stated that being hostilities it was a choice of convenience a home cooked food is unavailable and just 8% claimed that home cooked food is not available in their houses.

DISCUSSION

Irrelevant to the academic year a majority of students seemed to have poor dietary habits. This trend is seen across both genders as well. However, because the individuals range in an age between 18 to 28 years of age a high BMI is not as yet the source of no communicable disease. This study clearly shows that a large number of students have claimed that the academic stress from coming to a Medical College is the reason that they have reduced time and will-power to engage in physical activities. The study also suggests that poor dietary habits are extremely prevalent and major number of students' indulgent poor dietary choices every single day. Majority of students claimed the taste of fast food and the pocket friendliness is the reason why it is so common. This leads us to understand that in fact the high pricing of wholesome food is one of the reasons that the students are unable to consume it. A lot of students said that healthy food is also entirely unavailable in the places where the shop. Asghari et al.^[7] described that Obesity was found to be inversely related to Healthy Eating Index, while diversity-based indices were found to be favorably related to obesity. The breakfast habit is another interesting variable and eating behaviors. The largest number of individuals said that lack of money is a source of this problem. The largest number of individuals also had satisfactory eating habits compared to very few that had unhealthy habits. A very short fraction actually believed in healthy eating practices will fully. Obesity appears to be linked to dietary fat intake, according to epidemiological studies. Obesity is caused by high-fat diets not just in humans but also in animals.⁸

In this study, largest number of individuals who do not do walking or bicycling in a typical day has more percentage of obesity. So, we may claim here that the inability in doing day to day tasks has led to obesity in

these individuals which we recommend should be further studied. Hills et al.^[9] suggested that obesity prevention begins with children and teenagers participating in physical exercise and sports. As study conducted by Nola et al.^[10] suggested only 47% of medical students in Zagreb were involved in regular exercise. Studies have been done in the past by other groups which have also yielded similar results one example of such study is a Lithuanian study.^[11] On average, 3.6 days per week, the adolescents in the study met the physical activity recommendation of 60 minutes of moderate-to-vigorous physical exercise.^[11]

CONCLUSION

The survey concluded that no time assigned for physical activity in time table is the most common occurring barriers of physical activity. Most of the medical students were overweight, light physical activity and poor eating habits. Bad eating habits and lack of physical activity affects the BMI. Individuals in obese group had increased BMI, lack of physical activity and bad eating habits. So, it is suggested that increase physical activity and improve eating habits can lead to reduce obesity.

Acknowledgements: The author(s) acknowledged no financial embrace for the survey study.

Conflicting Interests: No conflicts of interest among authors

REFERENCES

1. Gupta N, Goel K, Shah P, Misra A. Childhood obesity in developing countries: epidemiology, determinants, and prevention. *Endocrine reviews*. 2012 Feb 1;33(1):48-70.
2. Haire-Joshu D, Tabak R. Preventing obesity across generations: evidence for early life intervention. *Annual review of public health*. 2016 Mar 18;37:253-71.
3. Li Y, Schoufour J, Wang DD, Dhana K, Pan A, Liu X, Song M, Liu G, Shin HJ, Sun Q, Al-Shaar L. Healthy lifestyle and life expectancy free of cancer, cardiovascular disease, and type 2 diabetes: prospective cohort study. *bmj*. 2020 Jan 8;368.
4. Mushtaq MU, Gull S, Mushtaq K, Shahid U, Shad MA, Akram J. Dietary behaviors, physical activity and sedentary lifestyle associated with overweight and obesity, and their socio-demographic correlates, among Pakistani primary school children. *International Journal of Behavioral Nutrition and Physical Activity*. 2011 Dec;8(1):1-3.
5. Nuttall FQ. Body mass index: obesity, BMI, and health: a critical review. *Nutrition today*. 2015 May;50(3):117.
6. World Health Organization. Obesity: preventing and managing the global epidemic.
7. Asghari G, Mirmiran P, Yuzbashian E, Azizi F. A systematic review of diet quality indices in relation to obesity. *British Journal of Nutrition*. 2017 Apr;117(8):1055-65.
8. Nisar J, Mustafa I, Anwar H, Sohail MU, Hussain G, Ullah MI, Faisal MN, Bukhari SA, Basit A. Shiitake culinary-medicinal mushroom, *Lentinus edodes* (Agaricomycetes): a species with antioxidant, immunomodulatory, and hepatoprotective activities in hypercholesterolemic rats. *International journal of medicinal mushrooms*. 2017;19(11).
9. Hills AP, Andersen LB, Byrne NM. Physical activity and obesity in children. *British journal of sports medicine*. 2011 Sep 1;45(11):866-70.
10. Nola IA, Doko Jelinić J, Matanić D, Pucarín-Cvetković J, Bergman Marković B, Senta A. Differences in eating and lifestyle habits between first-and sixth-year medical students from Zagreb. *Collegium antropologicum*. 2010 Dec 30;34(4):1289-94.
11. López-Sánchez GF, Emeljanovas A, Miežienė B, Díaz-Suárez A, Sánchez-Castillo S, Yang L, Roberts J, Smith L. Levels of physical activity in Lithuanian adolescents. *Medicina*. 2018 Nov;54(5):84.