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ORIGINAL ARTICLE

Frequency and Determinants of Obesity/Overweight among Undergraduate Students

SAIMA NAZ MOHSIN[1], MUDDASSIR BARKAT[2], ATIQ AHMAD[3], AMBREEN MUDDASSIR[4], RIZWAN JAMEEL[5]
[1]*Research Officer*
[2]*Trainee Research Assistant, NHRC Shaikh Zayed Medical Complex Lahore*
[3]*Assistant Professor, Department of Medicine, M. Islam Medical & Dental College, Gujranwala*
[4]*Assistant Professor,* [5]*Senior Registrar, Department of Medicine, Shaikh Zayed Hospital Lahore*
Correspondence to: Ambreen Muddassir, E-mail: ambreenmuddassir@gmail.com, Cell: 03354848282

ABSTRACT

Objectives: To determine the frequency of overweight or obese among undergraduates and enlist the determinants of overweight or obese among undergraduates.
Study Design: Cross-sectional study
Place and Duration of Study: Shaikh Zayed Medical Complex, Lahore from 1st February 2021 to 31st July 2021.
Methodology: Two hundred undergraduates aged 15-25 years were included who anonymously provide the information related to BMI and information on their life style and dietary and physical habits.
Results: Seventy eight (39%) undergraduates students were found as overweight or obese and 122 (61%) were as normal weight. There was a significant association between gender and overweight or obese being higher among females (p=0.04) and a highly significant association was found between residence in hostel and overweight or obesity (p=0.000). Significant association of physical activity (p=0.000), place of breakfast (p=0.000), soft drink usage (p=0.004), snack taking between breakfast and lunch (p=0.000), tea habit >2 times/day (p=0.001) and sleep duration (p=0.000) were observed among study participants.
Conclusion: High frequency of overweight or obesity was found among undergraduates. Poor dietary habits and inactive physical life were main factors those were associated with overweight or obesity. Counselling can be done for these students for adopting preventive lifestyle in order to prevent overweight or obesity and its consequences.
Key words: Frequency, Determinants, Obesity, Undergraduate students

INTRODUCTION

Obesity is a modifiable factor and is associated with several diseases. Obesity renders increased body mass index which in turn is in direct proportion with occurrence of type 2 diabetes mellitus.[1] Due to rise in childhood prevalence of obesity and overweight, the risk of type 2 diabetes mellitus (DM) in children has increased significantly worldwide.[2] Obesity is considered as one of the main risk factors for multiple diseases like DM, hypertension (HTN), infertility, hyperlipidemia, coronary artery disease and arthritis. Being a vital risk factors for many health disorders, obesity and overweight, are considered globally as public health problem.[3]

Obesity is like an epidemic increasing in almost every part of the world and the factors associated with it among both children and adults include dietary patterns, sedentary lifestyle and decreased physical activity. The problem of obesity and overweight is now increasing in low- and medium-income countries. Since 2000 there is an increase of about 24% in overweight African children. In 2016 about 340 million children and adolescents aged 5-19 years were overweight or obese. In 2019 half of the overweight or obese children under 5 years lived in Asia. Prevalence of obesity and overweight has risen worldwide, United States being at the top where more than two third of adult population is obese.[4] In Canada and Australia about 60% of adults are obese.[5] In European countries about 10-27% of male and 10-38% of females were reported to be obese.[6]

Childhood obesity is now gaining attention in Pakistan[7] after the research on adult obesity.[8,9] Estimation of childhood obesity in Pakistan is about 15-20%.[10] In 2009 there were about 6% obese and 19% overweight children in Karachi.[7] Obesity is an important risk factor for DM and cardiovascular diseases in Pakistan.[11]

Obesity is affected by socioeconomic status. In developed countries it is more in poorer people where family influences more on food eating.[12] In countries like Pakistan, it is more in high socioeconomic status while under nutrition is problem in low socioeconomic status. In urban Pakistan more children are obese because they are exposed to high meat containing food.[13] other contributing factors are lack of association with parents[14], parental obesity and diabetes[15], genetics and environmental issues.[16]

Obesity is becoming the main cause of many health disorders in undergraduate students of Pakistan. Many factors are responsible for this upcoming problem in students. In Pakistan very negligible data is available regarding obesity, its complications, and its causative factors in undergraduate students. In this study we shall try to get some statistical figure about frequency of obesity and its causative factors along with its complications in undergraduate students of Pakistan

MATERIALS AND METHODS

This cross-sectional study was conducted at Shaikh Zayed Medical Complex, Lahore from 1st February 2021 to 31st July 2021. Two hundred undergraduates were included. Written informed consent was taken from participants for using their data for research purpose, they were ensured about confidentiality of their information. Participants were asked to fill the proforma comprising of demographic information like, age, gender and residential status. Weight

and height were measured of each candidate. BMI was categorized as overweight if BMI 25.0-29.9 or obese≥30.0 as mentioned in operational definition. To identify factors each candidate was asked in detail about eating habits including tea habits (≤2 times/day, >2 times/day) place of breakfast (home, outside/college), place of lunch (home, outside/college), snacks between breakfast and lunch (yes/no), use of soft drinks (≤2 times/week), daily physical activity (≤30mins/day, >30 mins/day), duration of sleep (optimal sleep, abnormal sleep).

All the collected information was entered and analyzed using SPSS-20. Association of overweight or obesity with demographic variables and factors was assessed by applying Chi-square test.p≤0.05 was considered as significant.

RESULTS

The mean age was 23.32±2.24. Eighty eight (44.0%) were males and 112(56.0%) were females. One hundred and twenty one (60.5%) were day scholars and 79 (39.5%) students were living in hostels (Table 1).According to WHO categorization of overweight (BMI: 25.0-29.5) and obese (≥30.0), 78 (39.0%) candidates were found as overweight or obese and 122 (61.0%) were as normal weight (Table 2).

When our study participants were asked about their daily habits to identify factors leading to overweight or obese, 89 (44.5%) of candidates were found as physically active while 111 (55.5%) were physically inactive. Ninety two (46.0%) were living in their homes and 108(54.0%) were hostelites. Daily dietary habits were asked to these students, 108 (54.0%) and 127 (63.5%) used to have their breakfast and lunch outside their home while 92 (46.0%) and 73 (36.5%) were having their breakfast and lunch in home. One hundred and thirty one (65.6%) were using soft drinks >2 times/day and 69 (34.5%) were using it ≤2 times/day. 136 (68.0%) students were taking snacks between breakfast and lunch and 64 (32.0) were not in this habit. 83 (41.5%) candidates were taking tea ≤2 times/day and 117 (58.5%) were taking tea >2times/day. Sleeping hours were asked to our participants and it was observed that 68 (34.0%) were having optimal sleep while 132 (66.0%) were having abnormal sleep (Table 3).

Table 1: Demographic characteristics of the participants (n=200)

Variable	No.	%
Age (years)	23.32±2.24	
Gender		
Male	88	44.0
Female	112	56.0
Residential status		
Day scholars	121	60.5
Hostelite	79	39.5

Table 2: Frequency of overweight or obesity in university students (n=200)

BMI	No.	%
Overweight/Obese	78	39.0
Normal Weight	122	61.0

When overweight or obesity were compared, there was a significant association between gender and overweight or obese (p=0.04) and a highly significant association was found between residential status and overweight or obesity (p=0.000) [Table 4].

Table 3: Factors leading to overweight or obesity in university students

Factors	No.	%
Physical activity		
Active	89	44.5
Inactive	111	55.5
Place of breakfast		
Home	92	46.0
Outside/College	108	54.0
Place of lunch		
Home	73	36.5
Outside/College	127	63.5
Soft drinks		
≤2 times/week	69	34.5
>2 times/week	131	65.5
Snacks between breakfast and lunch		
Yes	136	68.0
No	64	32.0
Daily tea habits		
≤2times	83	41.5
>2times	117	58.5
Sleep duration		
Optimal sleep	68	34.0
Abnormal sleep	132	66.0

Table: 4 Association of demographics with overweight or obese

Variable	Overweight or obese		P value
	Yes	No	
Gender			
Male	32 (38.6%)	56 (29.5%)	0.04
Female	44 (39.3%)	68 (60.7%)	
Residential status			
Day scholars	28 (23.1%)	93 (76.9%)	0.000
Hostelite	52 (65.8%)	27 (34.2%)	
Duration of practice (years)			
≤ 10	47 (52.2%)	143 (70.8%)	0.002
> 10	43 (47.8%)	59 (29.2%)	

Table: 5 Association of various factors with overweight or obesity

Variable	Overweight or obese		P value
	Yes	No	
Physical activity			
Active	14 (15.7%)	75 (84.3%)	0.000
Inactive	67 (60.4%)	44 (39.3%)	
Place of breakfast			
Home	19 (20.7%)	68 (73.9%)	0.000
Outside/College	59 (54.6%)	49 (45.4%)	
Place of lunch			
Home	23 (31.5%)	50 (68.5%)	0.132
Outside/College	55 (43.3%)	72 (56.7%)	
Soft drink			
≤2 times/week	17 (24.6%)	52 (75.4%)	0.004
>2 times/week	61 (46.6%)	70 (46.4%)	
Snacks between breakfast and lunch			
Yes	67 (49.3%)	69 (50.7%)	0.000
No	11 (17.2%)	53 (82.8%)	
Daily tea habits			
≤2times	21 (25.3%)	62 (74.7%)	0.001
>2times	57 (48.7%)	60 (51.3%)	
Sleep duration			
Optimal sleep	8 (13.2%)	60 (86.8%)	0.000
Abnormal sleep	71 (53.8%)	61 (47.8%)	

There was significant association of physical activity (p=0.000), Place of breakfast (p=0.000), soft drink usage (p=0.004), snack taking between breakfast and lunch (p=0.000*), tea habit >2 times/day (p=0.001) and sleep duration (p=0.000) were found as significant. No association between place of lunch and overweight or obesity was observed in our study (Table 5).

DISCUSSION

Obesity is a non-communicable disease with prevalence as epidemic in Developed countries. Now it's approaching as endemic in urban population of underdeveloped regions of world. Obesity is a leading cause of many chronic diseases which would ultimately put burden on economy of any country. In our study of young population of undergraduate students, dominantly female (39%) p=0.04 and students residing in hostel (65%) p<0.000 are significantly more obese or overweight. This same evidence was supported in a study done in Saudi Arabia and India among university students inclusive of medical institute.[17,18]

Physical inactivity is a main factor in general population. Our study found this contributory factor of weight gain in students with high significance (physically inactive = 65%) p<0.000. Our results were consistent with the study done in Egypt where physical inactivity proved in another study in t with rate in students.[19] Along with lack of active lifestyle high caloric food especially Dine out for breakfast, in between snack intake and soft drink intake are found contributory factors for increase body weight leading to obesity. Snack with regular daily two meals increase body fat and leads to obesity studied in Saudi students.[20] Breakfast is independent risk among obese student in our overweight student living in hostels in our study.Skipping breakfast along with snacks intake is found a risk factor of gaining weight in a study done in Cameron among students.[20] Likely the type of food in breakfast during dine out in hostelite in our study need to be investigated further. Caloric rich diet during breakfast can be factor of weight gain for those residing outside in our population. Soft drink and tea intake among student has important relation with overweight; this factor is already studied & showed significance.[20]

Another factor of good health is sleeping habit. Our data suggest potential relationship between abnormal sleep habit and increase weight with statistically high significance among our students. Sleep pattern and poor sleep habits has been studied in general population as well in other studies and showed strong relation with weight gain.[22]

Abnormal sleep leading to obesity which later on affect sleep with obstructive sleep apnea is a proven factor of poor health and morbidity factor.[22] This relation need to be investigate further to find out its reason in our young students.

All the contributing factors are modifiable in our study. Our study signifies the need to take measures in academic institutes for awareness among students. Many strategies can be adopted by cooperation among government and institute to deal this upcoming pandemic of obesity to relieve health burden on economy of our country.

CONCLUSION

The frequency of overweight and obesity was high among undergraduate students. Having lunch outside the home, snacks between meals, tea intake and lack of physical activities were identified to be the associated factors of obesity. There is the necessity of a multi-layered intervention including students and institutional management to work together with the aim of intervening obesity and to prevent its possible consequences.

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