ISSN : (2347-498X)
Journal of Comprehensive Health
Official Publication of The Indian Association of Preventive and Social Medicine, West Bengal Chapter

Original Article

Year: 2015 | Volume:3 | Issue-2

A Study on Overweight & Obesity and its Risk Factors among Undergraduate Students of a Medical College in Kolkata

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Abstract:

Background: Overweight and obesity are recognized as an "escalating epidemic" affecting both developed and developing countries. Medical students working under stress and adopting more sedentary life style, are likely to be the victims of obesity. **Objectives:** To find out prevalence of overweight & obesity and associated risk factors among medical students in Kolkata**. Materials & Methods:** A cross-sectional observational study was carried out among undergraduate students of NRS Medical College, Kolkata with a sample siza-150**. Results**: 18% students were overweight and 2% obese. Mean height & weight of boys were higher significantly than that of girls. 20.7% boys & 17.2% girls were either overweight or obese. 24% boys and only 7% girls have the habit of addition to smoking and or alcohol. 26.7% students, about 23% male & 33% female, not used to perform any exercises. 24% students have family history of obesity. Of them 27.8% developed overweight. No association of overweight with factors like family history, physical exercise, addiction, food habit or stress factor could be statistically established. **Conclusion:** Prevalence of overweight among medical

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students trend to be high. Promotion to adopt healthy lifestyles is urgently required.

Key words: Overweight, Obesity, BMI, Life style.

Introduction:

Obesity perhaps the most prevalent form of malnutrition. As a chronic disease, prevalent in both developed & developing countries, and affecting children as well as adults, it is now so common that it is replacing the more traditional public health concerns including undernutrition.[1] The rate of obesity has tripled in developing countries over the past 20 years as they rapidly become more urbanized, with increased consumption of high calorie foods and adoption of a more sedentary lifestyle.[2] Dietary habits of young adults are affected by easy availability of the fast-food in the market. As a consequence, overweight and obesity are increasingly observed among the young. Obesity in combination with unhealthy life style, such as smoking and physical inactivity, may increase the risk of chronic diseases.[3] The first observed effect of obesity to emerge in the population in transition are hypertension, hyperlipaedimia & glucose intolerance, while coronary heart disease begin to emerge later.[1]

Of the factors contributing to obesity, stress plays a very important role, because stressful conditions lead to irregularity in diet, lack of exercise and addiction, each being considered an independent factor leading to obesity.[4]

Studies among university students in developing countries show high prevalence of overweight and obesity.[2] The professional students, including medical students are in a high risk side when obesity is concerned. This is mainly because medical education is stressful throughout the whole course of training. The amount of material to be absorbed, social isolation, pressure of examination, discrepancies between expectation and reality all can be anticipated to bring psychological stress.[4]

There is paucity of data regarding obesity & its risk factors among medical students in West Bengal. Hence, an attempt was made to find out the prevalence of overweight and obesity and its risk factors among undergraduate medical students in a Medical College of Kolkata.

Objectives:

- To find out the prevalence of overweight and obesity among undergraduate medical students.
- To find out the influence of factors in the development of obesity.

Materials & Methods:

Type of the study- Descriptive observational study

Period of the study: Study was conducted between July 2014 & September 2014

Study setting: The study was conducted in NRS Medical college & hospital among Medical students of 3rd , 5th & 7th Semester admitted between 2011 & 2013

Sample Size: Total 150 students, 50 from each semester, were the selected study subjects.

Study tools: A predesigned pretested questionnaire was used for data collection. A standard weighing scale & a stadio-meter were used to measure weight & height respectively. Standing height was measured to the nearest 0.1 cm without shoes and weight of the participants wearing light clothes, was measured to the nearest 0 .1 Kg. Weighting scale was first calibrated using a standard weight and re-checked daily. **Cohen perceived stress scale**[5] was use to assess stress of the student.

Procedure: Fifty students from each semester were selected randomly from the enlisted role number of attendance register. Care was taken to ensure selection of girls according to their proportion in each semester. Students were approached and briefed up about the study objectives & their verbal consent was obtained. Then, questionnaires were distributed among them. Their weight was taken with a standardised weighing scale and height was measured with a stadiometer available in the department of Community Medicine. Body mass index (BMI) was calculated as weight in kg divided by height in metres squared. Overweight and obesity defined in WHO guidelines [6] as a BMI equal to or greater than 25 kg/m^2 and a BMI equal to or greater than 30 kg/m^2 respectively have been used in this study.

Data analysis: Collected data were put in excel sheet & simple proportion was calculated. As a test of significance Chi square was used & significance was set at 5% level. For logistic regression SPSS 19 version was used.

Result:

Age of the most of the students was between 20 to 22 years with mean age 20.7 years and standard deviation 1.3. Sixty one per cent was male and 84.6 % were Hindu by religion.(Table-1)

Table-1: Demographic characteristics of study subjects

n=150

Characteristics	Number	Percentage
Age (Years)		
<20	29	19.4

20-22	109	72.6
>22	12	8.0
Sex		
Male	92	61.3
Female	58	38.7
Religion		
Hindu	127	84.6
Muslim	19	12.7
Others	4	2.67

Twenty four per cent respondents had family history of obesity & over-weight. Though most of them (82.6%) have no addiction, 14% used to smoke & 9% used to take alcohol. Forty students (26.7%) did not do any forms of exercises. About 33% students used to walking or some light exercises, while 16% had the habit of doing brisk exercises. 39% used to do it at least 3 times a week. Most of them (96.7%) were non-vegetarian. Fifty five per cent students used to take food 2-4 hours interval. About 63% students slept 7 to 8 hours a day. Ten per cent students have to take medicine on different health ground. One-third of the students have high stress score (> 20) with average-17.7, SD-6.1, and range: 5-40. (Table-2)

Table 2: Predicted risk factors of the study subjects

Characteristics	Number	Percentage
Family history		
Yes	36	24.0
No	114	76.0
Addiction		
No addiction	124	82.6
Only smoking	10	6.7
Only alcohol drinking	2	1.3
Both smoking & drinking	10	6.7
Other besides smoking & drinking	3	2.0
Multiple addiction	1	0.7
Physical activities		
No physical activities	40	26.7
Only walking	46	30.7
Brisk walking	17	11.3
Jogging	6	4.0
Walking plus other form of exercise	3	2.0

Brisk walking & Jogging plus other form of exercise	3	2.0
Other exercise	35	23.3
Frequency of Physical activities		
Once a week	39	26.0
Twice a week	13	8.6
More than twice a week	58	38.7
Not applicable	40	26.7
Diet		
Vegetarian	5	3.3
Non-vegetarian	145	96.7
Interval between eating		
2 hourly	4	2.7
4 hourly	79	52.7
6 hourly	52	34.6
8 hourly	15	10.0
Duration of sleep		
< 7 hours	24	16.0
7-8 hours	94	62.7
> 8 hours	32	21.3
Medication		
Yes	15	10.0
No	135	90.0
Stress score		
<10	13	8.7
10-15	44	29.3
16-20	45	30.0
>20	48	32.0

Average weight of boys & girls was 67.4 Kg & 56.7 Kg respectively, difference was statistically significant. Similarly, Mean height of boys was significantly higher than that of girls. But mean BMI of boys (22.8) & girls (22.5) were almost same.(Table-3) Eighty per cent students had normal weight, while 18% were overweight and only 2% obese. No statistical difference in BMI was found among students of different semesters.(Figure-1) 20.7% boys & 17.2% girls were either overweight or obese, but difference was not statistically significant (P-.366).(Figure-2)

Table-3 Anthropometric measurements of the study subjects by gender

	Boys (n=92) Mean± sd	Girls (n=58) Mean± sd	Total (n=150) Mean± sd	t p
Weight (Kg)	67.4±11.2	56.7±9.0	63.2±11.6	6.12, .000
Height (cm)	171.6±7.3	158.7±5.6	166.7±9.2	11.45 .000

BMI(Kg/m^2)	22.8±3.1	22.5±3.2	22.7±3.2	.63 .531

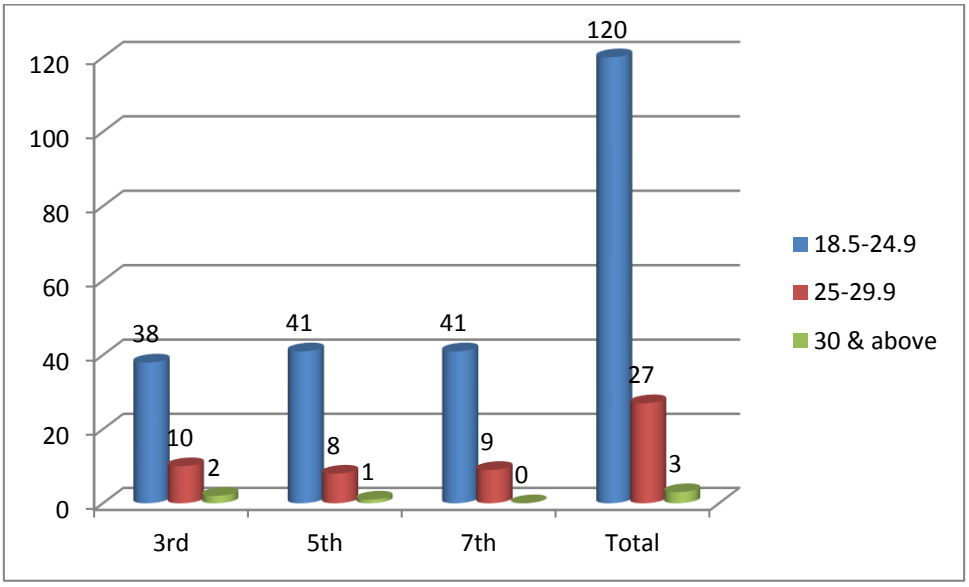

Figure:1: Distribution of study subjects according to Semester & BMI

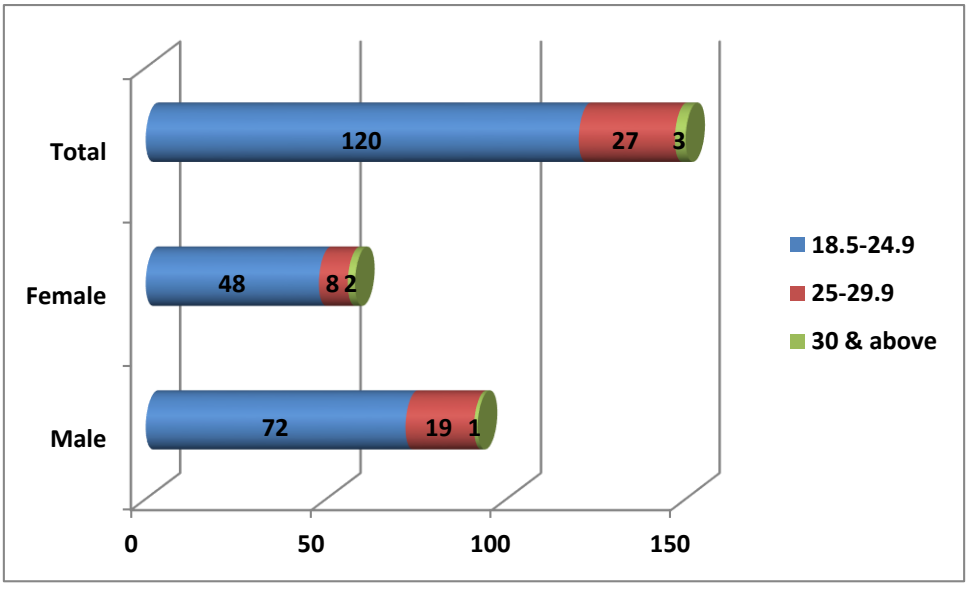

Figure:2: Distribution of study subjects according to Gender & BMI

Only 5 students were vegetarian. Dietary pattern did not have any influence on overweight or obesity. Over-weight/obesity was found among 20%, 30.55% & 12.5% students with habit of no, moderate & brisk exercise respectively; but difference was not statistically significant. Addiction was found to have reverse relationship with overweight & obesity. Fifteen per cent of students having addition and 21% having no addiction developed overweight.

However no statistical relation was seen. Those who had family history of obesity were found to be overweight in 28% cases, compared to 17.5% overweight among those having no such family history. (Table-4)

Table 4: Distribution of the study subjects according to different predictors & BMI

Characteristics	**Body Mass Index (BMI)**			**Percentage**
	18.5-24.9	25-29.9	30 & above	Total
By Diet	No (%)	No (%)	No (%)	No (%)
Vegetarian	4 (80.0)	1 (20.0)	0 (0.0)	5 (100.0)
Non-vegetarian	116 (80.0)	26 (17.9)	3 (2.1)	145 (100.0)
X^2=.115, p=.944				
Interval between eating				
2 hrly	3 (75.0)	1 (25.0)	0 (0.0)	4 (100.0)
4 hrly	61 (77.2)	16 (20.3)	2 (2.5)	79 (100.0)
6hrly	41 (78.8)	10 (19.2)	1 (1.9)	52 (100.0)
8 hrly	15 (100.0)	0 (0.0)	0 (0.0)	15 (100.0)
X^2=4.42, p=.62				
Exercise				
No Exercise	32 (80.0)	7 (17.5)	1 (2.5)	40 (100.0)
Moderate Exercise	32 (69.6)	13 (28.3)	1 (2.2)	46 (100.0)
Brisk exercise	56 (87.5)	7 (10.9)	1 (1.6)	64 (100.0)
X^2=5.66, p=.22				
Addiction				
Yes	23 (85.2)	4 (14.8)	0 (0.0)	27 (100.0)
No	97 (78.9)	23 (18.7)	3 (2.4)	123 (100.0)
X^2=.95, p=.62				
Family history				
Yes	26 (72.2)	8 (22.2)	2 (5.6)	36 (100.0)
No	94 (82.5)	19 (16.7)	1 (.8)	114 (100.0)
X^2=3.82, p=.148				

To explore any relationship between overweight & stress factor, binary logistic regression was done. It was seen that one unit increase of stress score resulted in .992 times increase in odds of being overweight, thus reflecting no statistical relation (p .819) (Table-5)

Table 5: Stress score & over-weight/obesity: Binary logistic regression table

	B	S.E.	Wald	df	Sig.	Exp(B)
Stress score	-.008	.034	.052	1	.819	.992
Constant	-1.249	.629	3.946	1	.047	.287

Discussion:

Overweight and obesity are recognized as an "escalating epidemic" affecting both developed and developing countries. Cardio vascular disease (CVD), type 2 diabetes and several other health problems are the consequences of obesity.[7] The medical students, subjected to stress factors & unhealthy life style were likely to be the victim of obesity. Our study revealed that 18% students were overweight and 2% obese. Mean height & weight of boys were higher significantly than that of girls. 20.7% boys & 17.2% girls were either overweight or obese. Similar trend were elicited in a study conducted among students of Lebanese American University.[2] Among 3rd year medical students in Greece, prevalence was higher. Approximately 40% of boys and 23% of girls had BMI $\geq$ 25.0 kg/m^2.[7] In a study among university students from 22 Countries, overall prevalence of overweight & obesity was found to be 22% with prevalence among male & female were 24.7% & 19.3% respectively.[4] Similar study conducted in Midnapore Medical College among medical students revealed almost same finding. An overall prevalence of overweight was calculated to be 17.5%, prevalence of obesity was 3.4%.[8]

86.2% students did not smoke or drink, rest of them were addicted to either smoking or alcohol or both. 24% boys and only 7% girls have the habit of addition. Similar study done in Lebanese American university showed that 17.2% students reported to consume alcohol two/three times per week and 30.3% were current smokers.[2]

Sedentary life style is a proven risk factor of obesity. In our study, 26.7% students, about 23% male & 33% female, were not doing any exercises apart from their routine sedentary day to day activities. Rest of the students usually did some sort of exercises including walking, jogging etc. Jayaraj et al[3]obseverd that 40.2% of study subjects were doing exercise.

Obese persons, usually, have a strong family history. Out of 36 students having family history of obesity, 10 (27.8%) developed overweight, whereas those having no family history 17.5% developed overweight/obesity. Though this difference was not statistically significant, Jayaraj et al[3], in their study among undergraduate medical students in South India could establish a relationship between family history and obesity.

Studies[3,8] undertaken among medical students elsewhere in India also corroborated our findings in respect of type of diet, its frequency, addiction and

physical exercise establishing no relevant association with overweight and obesity.

Medical students have to pass through different stressful situation, which in turn contributes physical as well as psychological problem including overweight & obesity. In our study, average stress score among the students was 17.7, male 17.3 and female 18.3. Binary logistic regression proved no association between stress score & overweight. S Gupta et al[8] found positive correlative for male, but no correlation in case of female.

No association could be established between overweight and risk factors like family history, addiction, food intake, physical activities or stress factors. This might be due to small sample size.

Conclusion:

Overweight and obesity among medical students trend to be high. Necessary health promotional activities are suggested to adopt healthy life style including regular physical exercises. We can carry out a multi-centric study with adequate sample size to explore the role of different risk factors contributing overweight & obesity among medical students

Limitations:

The findings of this study might not be generalised for medical students of other colleges.

Acknowledgement: We express our sincere thanks to the Principal of NRS Medical College, Kolkata for giving permission to conduct the study. We are equally thankful to all students participating and co-operating to complete the study.

Reference

1. K Park. Park's Textbook of Preventive and Social Medicine (22nd edition). Jabalpur(MP), India:M/s Banarsidas Bhanot publishing; 2013
2. Yahia1 N, Achkar A, Abdallah A and Rizk S. Eating habits and obesity among Lebanese university students. Nutrition Journal 2008; 7:32 http://www.nutritionj.com/content/7/1/32
3. Jayaraj, Nair PP, Napolean R, Stephen J, Nishanth K, Suresh D. Prevalence of Overweight and Obesity Among Students of a

Medical College in South India: A Pilot Study. Indian Journal of Clinical Practice 2014; 25(4):333-7

4. Peltzer K, Pengpid S, Alafia Samuels T, Keser Özcan N, Mantilla C, Rahamefy OH et al. Prevalence of Overweight/Obesity and Its Associated Factors among University Students from 22 Countries. Int J Environ Res Public Health. 2014 Jul; 11(7): 7425–7441
5. Cohen S , Kamarck T and Mermelstein R. A Global Measure of Perceived Stress. Journal of Health and Social Behavior 1983; 24 (4): 385-396 http://www.mindgarden.com/132-perceived-stress-scale#horizontalTab1 accessed on 25.7.2015
6. Overweight and Obesity fact sheet | Department of Sustainable Development and Healthy Environments | September 2011 WHO, regional Office for South East Asia http://www.searo.who.int/entity/noncommunicable_diseases/media/non_communicable_diseases_obesity_fs.pdf?ua=1 accessed on 25.7.2015
7. Bertsias G, Mammas I, Linardakis M and Kafatos A. Overweight and obesity in relation to cardiovascular disease risk factors among medical students in Crete, Greece. BMC Public Health 2003, 3:3 http://www.biomedcentral.com/1471-2458/3/3 accessed on 25.7.2015
8. Gupta S, Guha Ray T, and Saha I. Overweight, Obesity and Influence of Stress on Body Weight Among Undergraduate Medical Students. Indian J Community Med. 2009 Jul; 34(3): 255–257.
9.