

## Effects of physical activity and its barriers on overweight/obesity, among medical students of Rama medical college Kanpur (U.P.)

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### Abstract

**Introduction:** Obesity is emerging as a serious problem throughout the world, not only among adults but also children, teenagers and young adults. Of the factors contributing to obesity, stress seems to be particularly important as stressful condition leads to irregularity in diet, lack of exercise and addiction, each being considered an independent factor leading to obesity.

**Objectives:** To find out the prevalence of overweight and obesity among medical students. To study the effects of physical activity on over weight /obesity and its Barriers among medical students of Rama Medical College Mandhana (Kanpur).

**Study Design:** A cross-sectional study was conducted among total 200 subjects included by simple random sampling method out of 480 medical students

**Material and Methods:** Anthropometric measurements (height and weight) were taken as per WHO criteria. Body mass index were calculated and classified accordingly as under weight normal weight, over weight and obese. Details of factors influencing BMI were obtained using a pretested questionnaire in a pilot study.

**Results** The study revealed high prevalence of overweight/Obesity (33.6% with 95% CI 33.5%-40%). Out of 200 subjects (25.5%) were overweight and (8.1%) found obese respectively rest 61% subjects with Normal weight and 5.5% were under weight. In our study only 106 (57%) subjects were physically active and 94 (47%) were physically not active having deferent barriers to physical activity. Among those who were physically not active, 22(23.40%) students reported personal barriers as a cause for physical inactivity. 23(24.46%) were having psychological barriers. But majority of subjects 49 (52.13%) were having social cognitive behavior related barriers to physical activity.

**Conclusion:** Increased prevalence of overweight and obesity among medical students were observed. The importance of regular physical activity and certain aspects of healthy life style are to be stressed. Social cognitive behavior related barriers to physical activity should be removed among future doctors who are not physically active.

**Keywords:** Obesity, overweight, BMI, Physical activity, Barriers to physical activity.

### Introduction

Obesity is emerging as a serious problem throughout the world, not only amongst adults but also in children, teenagers and young adults. Of the factors contributing to obesity, stress seems to be particularly important as stressful condition leads to irregularity in diet, lack of exercise and addiction, each being considered an independent factor leading to obesity.<sup>1</sup>

A cross-sectional study on a random sample of medical students was carried out to find the frequency of physical activity, barriers to physical activity and the BMI (Body Mass Index). The students hailed from middle to upper middle class households and represented the growing affluence of urban Indian society.

Estimates from developed countries indicate that only 15% of the population older than 18 years of age get regular vigorous activity (three times a week for at least 20 min), and 60% report no regular leisure time activity at all, with 25% not active at all.<sup>2</sup> There is also evidence that habits developed in younger ages are likely to track through to later life.<sup>3</sup> There are indications that we may be fast catching up with the sedentary lifestyles of developed countries.<sup>4-6</sup> Costs and barriers associated with a behavior have been recognized as important influences on that behavior

since theories about how people make decisions began to proliferate in the 1950s (Janis and Mann 1977). Most barriers that are known can be categorized as personal factors, environmental factors, social factors, or features of physical activity (Dishman and Sallis 1994).

**Objectives:** 1- To find out the prevalence of overweight and obesity among study subjects. 2- To study the effects of physical activity on over weight /obesity and its Barriers among study subjects.

### Materials and Methods

**Study area -** Study was carried out at the campus of Rama Medical College Hospital and Research centre.

**Type of Study –**Cross sectional.

**Period of Study October –** (1month) November 2016

**Sample Size:** Sample size was calculated on the basis of prevalence of over-weight and obesity  $P= (32.9\%)^7$  (for present study with 20% precision and CI 95%. The calculated sample size was  $N=200$ ). For present study random sampling was done among 480 medical students studying at Rama Medical college Kanpur aged 19 to 25 years.

**Measurements:** Height and weight of all 200 study subjects (students) using same equipment were measured in successive sessions at the beginning of

study and readings were recorded by same observers for height and weight respectively data entered by rounding off the figure value in(Kg) and height in (Meters) upto two decimal.

**Data Collection:** Study subjects were interviewed and related statements were recorded on predesigned and pretested formats. Written consent for participation signed by subjects before subjecting to Anthropometric -measurements (height and weight only). Do you exercise? If yes;

**Table 1a:**

Does any of your parents exercise? ( N=200)	Yes	No	Total
Yes	60	41	101
No	46	53	99
Total	106	94	200

**Table 1b:**

Type(s) of exercise/games/sports you prefer* (n=106)	n =106 Number (%)	factors behind physical inactivity (Barriers)?(n=94)	n = 94 Number (%)
Jogging	16(15.06%)	<b>Personal</b> Smoking Obesity, self-efficacy/ confidence, injury, menstruation	22(23.40%)
Badminton	11(10.37%)		
Swimming	3(2.83%)	<b>Psychological</b> Self-interest, Motivation, Environmental	23(24.46%)
Football	9(8.49%)		
Basket ball	8(7.54%)		
Tennis	7(6.60%)	<b>Social cognitive behavior related</b> Learning, reinforcement, leisure time, Available facilities	49(52.12%)
Brisk Walking/Running	19(17.92%)		
Yoga, Aerobics and Others	25(23.58%)		
Total = 200	106(100%)		

**Table 1c:**

Why do you exercise? (n=106)	
Proper health	41(38.67%)
Physically fit	44 (41.50%)
For fun/Others	21(19.81%)
Total	106(100%)

**Table 1d: Descriptive Statistics**

Variables	N	Minimum	Maximum	Mean $\pm$ S.D.
Age	200	19.00	25.00	22.2150 $\pm$ 1.96164
Weight	200	48.00	82.00	66.6900 $\pm$ 8.48906
Height	200	1.51	1.80	1.6659 $\pm$ 0.6556
BMI	200	16.97	32.03	23.9535 $\pm$ 3.81202

Mean BMI in our sample is 23.9535  $\pm$ 3.81202 with a 95% CI=(23.4 - 24.5)

In present study out of total 200 students 119(59.5%) were male and 81(40.5%) were female Aged between 19yrs to 25 yrs (mean age 22.2  $\pm$  1.96 yrs). Weight of study subjects was 48 to 82Kgs (mean wt 66.69  $\pm$  8.48) and height between 1.51 to 1.80 mtrs (mean Ht 1.66  $\pm$  .06) calculated BMI value of subjects was ranging between 16.97 to 32.03 (mean value 23.95  $\pm$  3.81) with 95% C.I.23.42-24.48. [Table 1d]

### Data Analysis

For Age, height, weight and BMI. Descriptive statistical analysis was applied range, mean and standard deviations were calculated. For nominal variables i.e. physical activity and barriers to physical activity nonparametric test of significance (chisquare test) was applied using SPSS version 21.

### Result

Among Total 200 students 11(5.5%) Under weight, 122(61%) students were normal weight, 51(25.5%) over weight and 16 (8%) were obese. [Table. 2 Fig. 1]

Gender wise distribution of total (N=200) study subjects 106(53%) were under going defined level of physical activity rest 94 (47%) were physically not active. Among 106 physically active respondents 72 (67.9%) were male and 34 (32.1%) female respectively, rest among 94 physically non active respondents there were equal number of male and female subjects each 47(50%). This deference in gender distribution among physically active and not physically active subjects was found statistically significant (Chisquare = 6.64, p Value=.010). [Table 3]

Distribution of respondents according to their body mass index (BMI)<sup>8</sup> and physical activity shows number of subjects 106 (53%) who were under going defined level of physical activity and 94 (47%) who were not physically active. Among these only 11 (having BMI>18.5) were under weight, out of which 6(54.5%) physically active and 5 (45.5%) subjects not physically active were under weight.

Total 122 having (BMI between 18.5-24.9) subjects fall under normal weight group, out of which 77 (63.1%) physically active and 45 (36.9%) not physically active.

Of the total 51 subjects having (BMI 25-29.9) were over weight, among these 17(33.3%) physically active and 34 (66.7%)not active physically.

Only 16 subjects having (BMI ≥30) were obese. Among these 6 (36.5%) physically active and 10 (63.5%) physically not active. All these differences in BMI among physically active and physically not active were found statistically significant (Chi square= 14.48 p value= .002) [Table 4, Fig. 2]

Out of total(N=200) study subjects 94 (47%) who were not under going defined level of physical activity due to various barriers to physical activity according to

respondents 22subjects were having personal barriers 6 (27.3%) male and 16(72.7%) female.

There were 23 subjects stated that they had psychological barriers out of which 8(35.2%) male subjects and 15 (64.85%) were female subjects.

Maximum number of 49 subjects who were not under going defined level of physical activity were stated they were having social cognitive behavior related barrier to physical activity among these most of them 33 (67.3%) male and 16 (32.7%) were female respondents respectively. This deference in barriers to physical activity<sup>9,10</sup> among physically not active subjects was found statistically significant (Chi -square =17.98, p= .000) [Table 5, Fig. 3]

**Table 2: BMI grading (N = 200)**

BMI grading	Frequency	Percent
BMI < 18.5 Under wt	11	5.5
BMI 18.5-24.9 Normal wt	122	61.0
BMI 25 - 29.9 Over wt	51	25.5
BMI ≥30 Obese	16	8.0
Total	200	100.0

**Table 3: Gender physical activity cross tabulation**

Physical Activity	Sex		Total
	Male	Female	
Yes	72 (67.9%)	34 (32.1%)	106 (100.0%)
No	47 (50.0%)	47 (50.0%)	94 (100.0%)
Total	119 (59.5%)	81 (40.5%)	200 (100.0%)

Chisquare =14.48, p value =0.002

**Table 4: BMI grading physical activity cross tabulation**

BMI grading	Physical Activity		Total
	Yes	No	
BMI < 18.5 Under wt	6 (54.5%)	5 (45.5%)	11 (100.0%)
BMI 18.5-24.9 Normal wt	77 (63.1%)	45 (36.9%)	122 (100.0%)
BMI 25 - 29.9 Over wt	17 (33.3%)	34 (66.7%)	51 (100.0%)
BMI ≥30 Obese	6 (37.5%)	10 (62.5%)	16 (100.0%)
Total	106 (53.0%)	94 (47.0%)	200 (100.0%)

Chisquare = 19.68p value = .000

**Table 5: Barriers to Physical Activity \* Sex Cross tabulation**

Barriers to Phy. Activity	Sex		Total
	male	female	
No Barriers /Physically active	72 (67.9%)	34 (32.1%)	106 (100.0%)
Personal Barriers	6 (27.3%)	16 (72.7%)	22 (100.0%)
Psychological Barriers	8 (34.8%)	15 (65.2%)	23 (100.0%)
Social cognitive behavior related Barriers	33 (67.3%)	16 (32.7%)	49 (100.0%)
Total	119 (59.5%)	81 (40.5%)	200 (100.0%)

Chisquare = 19.68p Value = .000

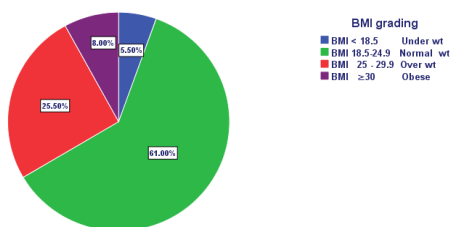


Fig. 1:

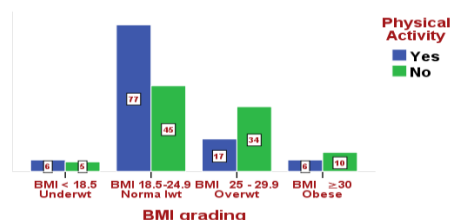


Fig. 2:

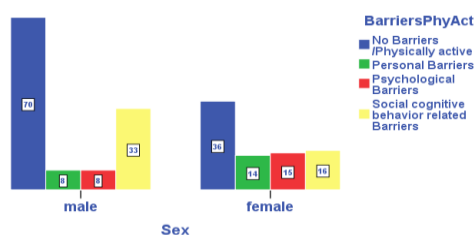


Fig. 3:

## Conclusion

Our study concluded with the fact that the prevalence of over weight and obesity is increasing at an alarming rate of 51(25.8%) and 16(8%) obese out of 200 medical students of Rama Medical College Hospital and Research Centre Mandhana (Kanpur). This fact is really distressing because the health status of future doctors of our country, who in turn should lead our country into the lights of better health, is at risk. They should be the role models, but when their health status itself is at stake it is really a matter of disappointment. Regions behind the above conditions may be the factors such as stressful untimely long duty hours, patient load, constraint of time for proper recreation and working schedule for Doctor's which leads to their dependence on fast foods. This adds to woes and farms vicious cycle of over weight and obesity. it is recommended that facilities must be provided to the professionals for physical activity, leisure time and modified working schedule which will be helpful to over come the condition in future.

## References

1. Kjonniksen L, Torsheim T, Wold B. Tracking of leisure-time physical activity during adolescence and young adulthood: A 10-year longitudinal study. *Int J Behav Nutr Phys Act* 2008;5:69.
2. Banerjee A. Coronary heart disease: Awareness of risk factors and lifestyle among school-going adolescents. *Indian J Med Sci* 2007;61:474-6.

3. Kohl HW, Blair SN, Paffenbarger RS, Macera A, Kronenfeld J. A mail survey of physical activity habits as related to measured physical fitness. *Am J Epidemiol* 1988;127:1228-39.
4. WHO (2014), Obesity and overweight fact sheet no. 311, May 2014  
[http://www.who.int/dietphysicalactivity/factsheet\\_adults/en/](http://www.who.int/dietphysicalactivity/factsheet_adults/en/)
5. <http://www.who.int/mediacentre/factsheets/fs311/en>.
6. Park JE, text book of community medicine 22<sup>nd</sup> Edition, 367, 600.
7. National Journal of Research in Community Medicine. Vol. 2. Issue 2. July-Sep. 2013 (079-148) A Study on the Prevalence of Overweight and Obesity among Medical Students of Kanchipuram District Kokila Selvaraj1, P.Sivaprakasam2.
8. [https://www.cdc.gov/healthyweight/.../bmi/adult\\_bmi/english\\_bmi.../bmi\\_calculator.htm](https://www.cdc.gov/healthyweight/.../bmi/adult_bmi/english_bmi.../bmi_calculator.htm)...May 15, 2015.
9. [www.who.int/dietphysicalactivity/physical-activity-recommendations-18-64 years.pdf](http://www.who.int/dietphysicalactivity/physical-activity-recommendations-18-64-years.pdf).
10. Individual barriers to physical activity influence behavior this is an excerpt from Physical Activity Epidemiology, Second Edition, by Rod Dishman, Gregory Heath, and I-Min Lee. Wong ND, Bassin SL. Physical Activity. In: Wong ND, editor. Preventive Cardiology. New York: McGraw Hill; 2000. p. 287-317.