



A CROSS SECTIONAL STUDY ON OBESITY AMONG FIRST YEAR MBBS STUDENTS OF S.NIJALINGAPPA MEDICAL COLLEGE, BAGALKOT

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ABSTRACT

Introduction: World health report introduced the term “risk transition” to describe changes in nutrition, alcohol consumption, and other lifestyles that promote development of non-communicable diseases. Sedentary lifestyle and shift to western food habits has led to development of overweight and obesity worldwide. Objective of the study to know the prevalence of obesity and its associated risk factors among first year MBBS (2013 Batch) students.

Method: A cross-sectional study was carried out from September to October 2013 among 148 first year MBBS Students of S Nijalingappa Medical College Bagalkot, of 2013 Batch.

Results: Prevalence of overweight and obesity was 16.22% & 3.38% respectively. Overall overweight (obesity & overweight) was significantly associated with participation in outdoor games, positive family history of obesity, cardio-vascular disease, type II diabetes mellitus or hypertension and sleep duration of ≤ 6 hrs and ≥ 8 hrs per day.

Conclusion: The study confirmed the findings of earlier studies carried out in other parts of country. This study reinforces the need to promote healthy life style, food habits and regularity of sleep.

Keywords: overweight, obesity, MBBS students, medical college

INTRODUCTION

Obesity is a lifestyle disease. It may be defined as an abnormal growth of adipose tissue due to an enlargement of fat cell size or an increase in fat cell number or combination of both.¹ Overweight and obesity represent a rapidly growing threat to the health of population in an increasing number of countries. It is one of the most serious public health challenges of the 21st century.² World Health Report 2009 introduced the term “Risk Transition” for referring to changes in pattern of nutrition, alcohol consumption and other life styles. This increase in risk factors is

most commonly observed in middle and low income countries. At the same time, changes in living and working patterns have led to less physical activity and less physical labour. The television and the computer are two obvious reasons why people spend many more hours of the day seated and relatively inactive than a generation ago, which leads to overweight and obesity among adolescents³.

Being obese is very commonly seen among professionals the reason most commonly assumed was, due to their busy life style. We hypothesized this is not due to their profession, but is

due to urbanization or westernization. To find that we selected first year undergraduate students, who are fresh from high school and not exposed to professional lifestyle. Hence study was conducted to know the prevalence of obesity and overweight among first year MBBS students of S. Nijalingappa Medical College, Bagalkot Karnataka. With this background the study was done to know the prevalence of overweight & obesity among first year (2013 batch) MBBS students and to assess its associated risk factors.

METHOD

Institutional based cross sectional study was done from September to October 2013 among first year MBBS students (150 students) of S.Nijalingappa Medical College, Bagalkot Karnataka. We decided to include only first year medical students because they are fresh from high school. All 150 students were included in the study. Students who are absent on that particular day were contacted on next working day. Students who were not able to contact even after three consecutive attempts and students who are not willing to participate in the study were excluded. Among 150 students, two students could not be contacted even after three consecutive attempts. Remaining 148 students were included in the study.

After getting permission from college authorities, students were briefed regarding the nature of the study, confidentiality and about the questionnaires. A pre-designed, semi-structured questionnaire were used to collect the data, after obtaining written consent from the students. The questionnaire included two sections. First section includes socio-demographic profile of the students. Modified B G Prasad classification was used for socio-economic status. The correction factor (C.F) = $(239 \times 4.93 \times 4.63) / 100$; 239 is AICPI of December 2013.⁴ Second section includes the food intake pattern and physical activity of the students. Following which anthropometric measurements were noted. Weight and height were measured using standardized weighing machine and height measurement scale. Body Mass Index (BMI) was calculated by dividing the students weight in kilograms by height in meters squared ($BMI = \text{weight (kg)} / \text{Height (m)}^2$). BMI of 18.5 to 24.9 was considered as normal, BMI of less than 18.5 was considered as underweight, a BMI of 25 to 29.9 as over-weight and a BMI of more than 30 was considered as obese.⁵

The data were tabulate using Microsoft excel 2007 and analysed using Open Epi version 2.3.1. Chi square test is used to find the association, for all practical purpose p value less than 0.05 was considered as statistically significant.

RESULTS

Out of total 148 students, most of them (97 students, 65.5%) were 18 years of age. 88 students (59.5%) were male and 60 (40.5%) were female. Majority of students (129 students, 87.2%) belonged to Hindu religion. 112 students (75.7%) belonged to class I, followed by 23 students (15.5%) of class II and 13 students (8.8%) belonged to class III, IV & V of socio-economic status. Overall overweight (combined overweight and obesity) was not significantly associated with age, sex, religion and socio-economic status (Table-1). According to BMI, 24 students (16.2%) were overweight, 5 students (3.4%) were obese, 81 students (54.7%) were normal and 38 students (25.7%) were underweight (Table-2).

Table 1: Distribution of study subjects according to their socio-demographic profile.

Variable	Non overweight (n=119)	Over weight (n=29)	Total (n=148)	X ² , P value
Age				
17yrs	9(69.2)	4(30.8)	13	3.02,
18yrs	81(83.5)	16(16.5)	97	0.38
19yrs	18(81.8)	4(18.2)	22	
>20yrs	11(68.8)	5(31.3)	16	
Sex				
Males	70(79.5)	18 (20.5)	88	0.1,
Females	49(81.7)	11(18.3)	60	0.74
Religion				
Hindu	106(82.2)	23(17.8)	129	2.29,
Muslim	10(71.4)	4(28.6)	14	0.31
Christian	3(60)	2(40)	5	
Socio-economic status				
Class I	90(80.4)	22(19.6)	112	1.78,
Class II	17(73.9)	6(26.1)	23	0.41
Class III to V	12(92.3)	1(7.7)	13	

Table 2: Distribution of subjects according to BMI (n=148)

BMI	Subjects (%)
Overweight	24 (16.2)
Obese	5 (3.4)
Normal	81 (54.7)
Underweight	38 (25.7)

Table 3: Distribution of subjects according to risk factors of overweight & obesity

Factors	Non overweight (n=119)	Over weight (n=29)	Total (n=148)	X ² P value
Participation in outdoor games				
Yes	65(87.8)	9(12.2)	74	5.18,
No	54(73)	20(27)	74	0.02*
Watching TV, Internet & mobiles				
Yes	94(80.3)	23(19.7)	117	0.001,
No	25(80.6)	6(19.4)	31	0.96
Intake of junk foods				
Yes	79(82.3)	17(17.7)	96	0.61,
No	40(76.9)	12(23.1)	52	0.43
Duration of sleep				
≤ 6hrs	28(65.1)	15(34.9)	43	11.47,
6-8hrs	77(89.5)	9(12.5)	88	0.003*
≥ 8hrs	14(73.7)	5(26.3)	19	
Type of Diet				
Vegetarian	60(83.3)	12 (16.7)	72	0.76,
Mixed	59(77.6)	17(22.4)	76	0.38
Family History of Obesity, CVD, DM, HTN				
Yes	57(73.1)	21(26.9)	78	5.62,
No	62 (88.6)	8(11.4)	70	0.01*
Mode of Transport				
Motorised Vehicle	70(79.5)	18(20.5)	88	0.101,
Walking, bicycle	49(81.7)	11(18.3)	60	0.74

(*statistically significant)

The higher prevalence of overall overweight was found among students, not participating in outdoor games (27%), spending time in sedentary activities like watching TV, usage of mobile and internet (19.7%), not consuming junk foods (23.1%), sleep duration of ≤6hours (34.9%) and ≥8hours (26.3%), consuming mixed diet (22.4%), family history of obesity, cardiovascular disease (CVD), type II diabetes mellitus (DM) and hypertension (HTN) (26.9%) and those using motorised transport like motorcycle, four wheeler etc.(20.5%). Participation in outdoor games, positive family history of obesity, CVD, DM or HTN and duration of sleep was significantly associated with overall overweight as revealed by chi-square test. Sedentary activities like watching TV, internet & mobiles, consumption of junk foods, type of diet and mode of transport was not significantly associated with overall overweight (Table -3).

DISCUSSION

In our study, the prevalence of overweight and obesity was 16.2% and 3.4% respectively. Similar result were found in study done by Gupta et al (overweight- 17.5% & obesity- 3.4%) among undergraduate medical students Medinipur, West

Bengal in 2007.⁶ In a community based cross-sectional study done by Brahmabhatt et al in Ahmedabad city in 2009 found overweight and obesity to be 13.3% and 5.4% respectively.⁷ Higher prevalence was found by Hussain et al (overweight-13.22% & obesity-6.8%) in 2009 and Bansal A K et al (overweight-14.83% & obesity-5.69%) in 2013 among students aged 10-15 years.⁸⁻⁹ S Sidhu et al (overweight-10.94% & obesity 5.62%) and Subhash Thakre et al (overweight-9% & obesity-5.5%) found lesser prevalence in their study among school children aged 10-15yrs and 5-16yrs respectively.¹⁰⁻¹¹

Participation in outdoor games was significantly associated with lesser prevalence of overweight and obesity in present study. Similar results were obtained in studies done by Bansal A K et al in 2013, Vohra et al in 2011 and Goyal et al in 2010 among adolescents age 12-18 years.^{9, 12-13}

In this study, no significant association was found between prevalence of overall overweight and sedentary activities like watching TV, internet & mobiles but significant association was found in study done by Subhash Thakre et al in 2011 among students aged 5-16 years in Nagpur city.¹¹ Vohra et al found no significant association between sedentary activities and prevalence of overall overweight, among adolescents aged 10-18 years in Lucknow city.¹²

Positive family history of obesity, CVD, DM & HTN was significantly associated with higher prevalence of overweight and obesity in this study. Patnaik S et al in 2011 found significant association between prevalence of overweight and obesity and family history of obesity among school going students aged 5-15 years.¹⁴ Similar results were obtained by S Kumar et al in a study done among school students aged 10-15 years in Davangere city of Karnataka in year 2006.¹⁵

The prevalence of overweight and obesity was significantly higher in students with sleep duration of ≤6hrs and ≥8hrs per day in present study. In 2011, Subhash Takre et al found significant association between duration of sleep of >7hrs per day in students aged 5-16yrs in Nagpur city.¹¹ Similar results were found by Saraswathi Y S et al among students aged 13-17 years of age in 2009, prevalence of overweight-obesity was significantly higher among students with sleep duration >10hrs/day.¹⁶ Inadequate sleep duration was significantly associated with prevalence of overweight-obesity in a study by Brahmabhatt et al among students aged 10-19 years in 2009 in Ahmedabad city.⁷

In present study, the prevalence of overweight and obesity was higher among students taking mixed diet (22.4% as compared to 16.7%) but this association was not statistically significant. Similar results were found by Pati S et al in Cuttak city among students aged 10-16yrs in year 2013.¹⁷ Vohra et al in year 2011 found marginally higher prevalence (28.9%) of overweight-obesity among those taking mixed diet as compared to students taking vegetarian diet (27.16%) but the difference was not statistically significant.¹² Bharathi et al found similar result in study done in Wardha city in 2006 among students aged 10-17yrs.¹⁸

In our study, the prevalence of overall overweight was higher (20.5%) in among those using motorised vehicle compared to those walking/bicycle (18.3%) as a mode of transport, but the difference was not significant statistically. In year 2013, Bansal A K et al found no significant association between prevalence of overweight-obesity and mode of transport, even though the prevalence was twice as common among those using auto/bus (14.97%) as compared to walking/bicycle (7.56%).⁹ Statistically significant association was found between mode of transport and prevalence of overall overweight in study done by Goyal et al in Surat city in 2010.¹³

CONCLUSION

The major conclusion drawn from this study is that non-participation in outdoor games, sleep duration of ≤ 6 hrs and ≥ 8 hrs per day and family history of obesity, CVD, DM or HTN are associated with higher prevalence of overweight and obesity. Therefore, active participation in outdoor games and regularity of sleep help in reduction of overweight and obesity. Positive family history is also a risk factor, hence periodic screening and regular physical exercise in such individuals should be encouraged. This study reinforces the need to promote healthy life style, food habits and regularity of sleep.

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