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RESEARCH ARTICLE

LIFE STYLE RISK FACTORS FOR OBESITY AND HYPERTENSION AMONG MEDICAL STUDENTS OF MEERUT DISTRICT

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ABSTRACT

Background: In recent years obesity has become very common health concern worldwide. Much debate has been generated regarding the increasing incidence of obesity among children and adolescents with respect to their long term health benefits. The life of professional students is stressful throughout the whole course of training. Types of food intake, lack of exercise, psychological depression due to study burden, pressure of examination, discrepancies between expectation and reality all can be anticipated in bring psychological stress. The purpose of the study was to assess life style related risk factors for obesity and hypertension among medical students.

Methods: Current study was a cross-sectional study, conducted among 200 randomly selected medical students of 3rd and 4th year out of 300 students. The Study Period was from Jan 2014 to March 2014. A Pre-designed and Pre-tested questionnaire related to life style factors was introduced among the medical students. The Data thus collected was entered in Microsoft Excel and analyzed further using SPSS-version 21.

Results: In this study, consumption of non-vegetarian diet , fast food , smoking & tobacco chewing and consumption of alcohol were seen and these risk factors are significantly associated with overweight/ obese and hypertension among students.

Conclusion: Medical students were not much conscious to make extra efforts to choose a healthier lifestyle. Healthy lifestyles among medical students are even more important as they are future doctors and the students who personally ignore healthy lifestyle are more likely to fail to establish health promotion opportunities for their patients.

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INTRODUCTION

Medical students were not much conscious to make an extra effort to choose a healthier lifestyle. Most medical students do not get proper time to exercise and eat healthy food due to lack of time in their busy schedule of studies and clinical rotation. Healthy lifestyle among medical students is even more important as they are future doctors and the students who personally ignore healthy lifestyle are more likely to fail to establish health promotion opportunities for their patients. A focus on creating healthy life style will be beneficial to the medical students as much as the general population. The life of medical students is stressful through out the whole course of trainings. Types of food intake, lack of exercise, psychological depression due to study burden, pressure of examination, discrepancies between expectation and reality all can be anticipated of bringing psychological stress.

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(Srinivasan *et al*., 2005) In recent years obesity has become very common and an increasing health burden worldwide. Obesity is an increase in body weight as the result of excessive accumulation of body fat. The body weight depends on the balance between caloric intake and utilization of calories. Obesity results when the caloric value of food intake exceeds energy output. A person is considered obese if they have a Body Mass Index (BMI) - of 30 or greater. Raised BMI is the risk factor for chronic diseases such as hypertension, Type II diabetes mellitus, infertility, hyperlipidemia and increased risk for coronary disease (Theresa *et al*., 2001).

Coronary heart disease risk associated with obesity is higher in younger age groups and also in people with abdominal obesity, than in those with excess fat around the hips and heights (Arno *et al*., 2010). The relationship between BMI and BP has long been the subject of epidemiological research. Positive association between BMI and BP have also been reported among Asian population (Global Recommendations on Physical Activity for Health, Han *et al*., 1995). Both systolic

and diastolic blood pressure increases with BMI and the obese are at higher risk of developing hypertension than lean individuals (Murray and Lopez, 1996). Prevention of obesity is always better than its treatment. Colleges can play a significant role in encouraging healthy behavior in students. There are few studies on the problem of overweight/obesity in college going students. Medical students are exposed to various factors, known, unknown for overweight/obesity. Therefore, this study was undertaken with the objective to find the proportion of overweight/obesity and hypertension among medical students and to identify various correlates associated with it.

Obesity and overweight in medical students is gradually becoming a health problem in many developing countries, including India as obesity appears to increase the risk of subsequent morbidity. It is difficult to reduce excessive weight in adults once it becomes established.

AIMS AND OBJECTIVES

The objective of this study was to explore lifestyle risk behaviour and its consequences on health in terms of overweight/obesity and hypertension and we aimed at finding out the related factors like Non vegetarian food, fast food and lifestyle of a person contributing to the occurrence of these phenomenon among medical students.

MATERIALS AND METHODS

A cross- sectional study was conducted among students of Subharti Medical College Meerut UP, between the period of January 2014 to March 2014. Among 300 students of 3rd and 4th year, 200 were randomly selected for the study. The purpose of this study was to find out the life style related risk factors for obesity and hypertension among medical students. The study included self-administered questionnaire, which included questions about their life style, dietary habits, type of diet, consumption of fast food/ junk food and soft drinks, habit of smoking, gutkha chewing, alcohol drinking and physical activity. For the health status, body mass index was calculated. Weight and height were measured and collected by the participants. Body mass index (BMI) was calculated as weight in kilograms divided by the square of height in meters. Body weight was recorded with the help of an adult portable weighing machine. These BMI values were then categorized into four categories, that is, 'under weight with BMI less than 18.5', 'normal weight with BMI between 18.5 to 24.9', 'overweight with BMI from 25 to 29.9', and 'obese with BMI more than 30'. (Gupta *et al*., 1995) Height was measured with stadiometer attached to horizontal platform. The blood pressure was recorded with the help of Sphygmomanometer and by using a standard cuff of 12.5 cm wide and sufficiently long to surround at least 2/3rd of upper arm in sitting position.

Sphygmomanometer was placed on a horizontal surface at a level of heart. In case blood pressure was above normal value, two readings were taken at an interval of 1 minute. Systolic blood pressure & Diastolic blood pressure were recorded at the brachial artery in the left arm. Adequate daily physical activity was defined as moderate to severe the physical activity of at least 60 min/day as recommended by Global recommendations on physical activity for Health, World Health Organization publication 2010 (Stamler *et al*., 1978). Data collected was entered in Microsoft Excel and analyzed further using SPSS version-21.

RESULTS

A total of 200 medical students studied. Out of them, 85 (42.50%) of the participants were males and 115 (57.50%) were females. Maximum 127 (63.5%) students were 20 years and above.

Table 1. Distribution of gender, age, dietary pattern, fast food, soft drink, tobacco & alcohol consumption and physical activity according BMI among medical students

Charecteristics	Underweight		Normal		Overweight		Total		Chi-square
	FRE	%	FRE	%	FRE	%	FRE	%	P-value
Gender									
Male	8	44.4	57	36.8	20	74.1	85	42.5	13.12
Female	10	55.6	98	63.2	7	25.9	115	57.5	*0.001*
Age									
<20 yrs	14	77.8	53	34.2	6	22.2	73	36.5	15.96
≥20yrs	4	22.2	102	65.8	21	77.8	127	63.5	0.0003
Dietary habits/ patterns									
Vegetarian	16	88.9	104	67.1	15	55.6	135	67.5	5.52
Non-vegetarian	2	11.1	51	32.9	12	44.4	65	32.5	0.063 (NS)
Fast food consumption									
< 3 times in a week	7	38.9	109	70.3	8	29.6	128	64.0	20.64
≥3 times in a week	11	61.1	46	29.7	19	70.4	72	36.0	<0.0001
Soft drink consumption									
< 3 times in a week	5	27.8	97	62.6	6	22.2	112	56.0	20.53
≥3 times in a week	13	72.2	58	37.4	21	77.8	88	44.0	<0.0001
Tobacco consumption									
Yes	7	38.9	12	7.7	10	37.0	29	14.5	20.41
No	11	61.1	143	92.3	17	63.0	171	85.5	<0.0001
Alcohol consumption									
Yes	6	33.3	13	8.4	8	29.6	27	13.5	15.44
No	12	66.7	142	91.6	19	70.4	173	86.5	0.004
Physical activities									
Life style sedentary	6	33.3	54	34.8	5	18.5	46	23.0	17.25
Life style moderate	6	33.3	28	18.1	3	11.1	88	44.0	0.008
Life style active	4	22.2	27	17.4	2	7.4	21	10.5	
No any physical activities	2	11.1	46	29.7	17	63.0	65	32.5	

Table 2. Distribution of gender, age, dietary pattern, fast food, soft drink, tobacco & alcohol consumption and physical activity according hypertension among medical students

Charecteristics	Hypertensive		Non-hypertensive		Total		Chi-square
	FRE	%	FRE	%	FRE	%	P-value
Gender							
Male	12	63.2	73	40.3	85	42.5	3.67
Female	7	36.8	108	59.7	115	57.5	0.056 (NS)
Age							
<20 yrs	4	21.1	69	38.1	73	36.5	2.16
≥20yrs	15	78.9	112	61.9	127	63.5	0.141 (NS)
Dietary habits/ patterns							
Vegetarian	8	42.1	127	70.2	135	67.5	6.17
Non-vegetarian	11	57.9	54	29.8	65	32.5	0.013
Fast food consumption							
< 3 times in a week	6	31.6	122	67.4	128	64.0	9.578
≥ 3 times in a week	13	68.4	59	32.6	72	36.0	0.002
Soft drink consumption							
< 3 times in a week	1	5.3	111	61.3	112	56.0	21.93
≥ 3 times in a week	18	94.7	70	38.7	88	44.0	<0.0001
Tobacco consumption							
Yes	18	94.7	11	6.1	29	14.5	109.02
No	1	5.3	170	93.9	171	85.5	<0.0001
Alcohol consumption							
Yes	16	84.2	11	6.1	27	13.5	89.89
No	3	15.8	170	93.9	173	86.5	<0.0001
Physical activities							
Life style sedentary	4	21.1	42	23.2	46	23.0	8.02
Life style moderate	4	21.1	84	46.4	88	44.0	0.045
Life style active	5	26.3	16	8.8	21	10.5	
No any physical activities	6	31.6	59	32.6	65	32.5	

135(67.50%) of students were vegetarian and 65(32.50%) were non-vegetarian. 128(64.00%) of the medical students consumed fast food less than three times in a week, 72(36.00%) fast food more than three times in a week. 112(14.00%) of the medical students consumed soft drinks less than three times in a week, 88(44.0%) consumed soft drinks more than three times in a week. 29 (14.5%) of the medical students were found to be exposed to currently smoking, out of them 11(05.50%) used cigarette smoking and 18(09.00%) were reported to be tobacco chewers in the form of PanMasala or gutkha chewing. 27 (13.5%) of the medical students admitted that they indulged in alcohol drinking.

Types of Various physical activities were found by the participants. 46(23.0%) sedentary, 88(44.00%) moderate, and 21(10.50%) medical students were engage in active physical activity. It was observed that 65(32.5%) were not indulging in any physical activity.

BMI of medical students was found to be 18 (9.00%) under weight, 155 (77.50%) normal weight, 21 (10.50%) over weight and 06 (3.00.%) obese. Hypertension was found 19 (09.50%) among the medical students.

DISCUSSION

A positive correlation between the age group 20 years and above and vegetarian diet schedule was found. In this study, (63.5%) students were 20 years and above and (32.50%) were non-vegetarian. It is indicating a shift toward obesity among the young adults due to the non vegetarian and fast food consumption. A nutritional balanced and high dietary fibre should not only bring about a reduction in body weight but also beneficial for a many diseases. In this study, (64.00%) of the medical students consumed fast food less than three times in a week and (36.00%) fast food more than three times in a week. (14.00%) of the medical students consumed soft drinks less than three times in a week and (44.0%) consumed soft drinks more than three times in a week. A significant relation between obesity/overweight and consumption of junk food was established in a study conducted among medical students of Malaysia. In their study, the prevalence of obesity was 15.2% and that of overweight was 21.8%. This increased prevalence was attributed to their increased junk food consumption. (Gopalakrishnan *et al*., 2012)

Good nutrition through proper diet is the foundation of good health. Diet should not only be adequate but also be balanced. Cheaper foods are not necessary less nutritious, e.g., green vegetables are cheaper but still are of greater nutritional value than costlier vegetables. For good health, vegetarianism is positively superior to non vegetarianism. Foods of animal origin increase the risk of development of cancer. Further to the risk of infection, fast and processed foods contain excess of salt, sugar fat and calories; all harmful to health. (Deodhar, 2008) Healthy dietary habits among medical students are even more important as they are future physicians and the students who personally ignore adopting healthy life style are more likely to fail to establish health promotion opportunities for their patients. (Sakamaki *et al*., 2005) In this study, (14.5%) of the medical students were found to be exposed to currently smoking, out of them (05.50%) used cigarette smoking and (09.00%) were reported to be tobacco chewers in the form of PanMasala or gutkha chewing. A study conducted by Lasker *et al*. (2010) suggested that current of smoking rate was observed (17.06%) and (02.45%) males admitted that they consumed alcohol daily. (Laskar *et al*., 2010) Even though smoking has been shown to be associated with general and abdominal obesity in some studies (Saarni *et al*., 2009)

In this current study, (13.5%) of the medical students admitted that they indulged in alcohol drinking. A study among randomly selected adults aged ≥18 years in Brazil showed that participants who consumed alcohol had a higher probability of being centrally obese among men and women (Lourenco *et al*., 2012). In this study, various physical activities were found by the participants. 46(23.0%) sedentary, 88(44.00%) moderate, and 21(10.50%) medical students were engage in active physical activity. It was observed that 65(32.5%) were not indulging in any physical activity.

This study suggested that there is a lack of health consciousness and awareness amongst the medical students and practicing unhealthy dietary habits and adopting modern lifestyle. There is a tendency towards sedentary lifestyle the young students. Inappropriate nutrition and physical inactivity increase the risk of diabetes, osteoporosis, obesity & cardiovascular disease unhealthy habits and addictions contribute to risk of developing the no communicable diseases. (Sebo *et al*., 2007). A study conducted by Wong ND *et al*. (2000) have shown sedentary lifestyles to be associated with an increased risk of cardiovascular diseases and a cause mortality. (Wong and Bassin, 2000) Physicians with impaired physical and mental health can have a direct impact on patient healthy care and safety. Physical activity, dietary habits and health behaviour among medical students are an important marker of how the public perceives harmful lifestyle behaviours. (Webb *et al*., 1998)

An increase in bodyweight and sedentary life style shows strong association with hypertension and others diseases among the youth. Non-communicable diseases have been strongly associated with unhealthy life style habits, including inappropriate diet, lack of exercise, smoking, and alcohol consumption. (Ignarro *et al*., 2007) Prevalence of body weight in medical students was found according to (BMI) under weight (9.00%), normal weight (77.50%), over weight (10.50%) and obese (3.00.%) was found in our study. A study conducted by Banarjee Amitav *et al*. (2010) revealed that more than 20% of the medical students were overweight and obese. (Banarjee and Khatri, 2010) In the study conducted in Trivandrum Medical College, among 350 students, the prevalence of obesity was 25.71% and that of overweight was 24.57%. (Manojan *et al*., 2014) In the study conducted among 458 medical students of Kancheepuram district, prevalence of obesity was 8.6%. (Selvaraj and Sivaprakasam, 2013)

A study conducted in West Bengal in India among undergraduate medical students showed an overall prevalence of overweight 17.5% and prevalence of obesity was 3.4%. (Gupta *et al*., 2009) Another similar study by Chhabra *et al*. reported a prevalence of 11.7% overweight and two per cent obesity among medical students of Delhi. (Chhabra *et al*., 2006) In a study conducted in Kelantan by the Department of Medicine, University Sains Malaysia, out of 2,284 subjects over 20 years old, the overall prevalence of overweight and obesity was 21.3% and 4.5% respectively. (Mohamad *et al*., 1996) Boo NY *et al* conducted a study to determine the prevalence of obesity among medical students in a private medical school in Malaysia and found, similarly, that 30.1% of the students were overweight or obese, Malays and Indians were more obese than the Chinese. (Boo *et al*., 2010) In Malaysia, Gopalakrishnan *et al*. (2012) found the prevalence of overweight and obesity to be 14.8% and 21.1% among medical students. (Gopalakrishnan *et al*., 2012) In this study, Hypertension was found (09.50%) among the medical students. A study conducted by Ahmad S *et al*. (2014) revealed that (09.02) hypertension was found among medical, dental and nursing students. (Ahmad *et al*., 2014) A study done by Bansal *et al*. (2012) reported that doctors are not able to take proper care of their health. Their study suggested that the proportion of doctors who suffer from lifestyle diseases seem to be 30%-38% hypertensive, 38% were overweight. (Bansal *et al*., 2012) Physicians and medical student's personal lifestyle, habit and health behaviours have been shown to be associated with their prevention related counselling and screening practices with their patients. (Stiegler and Cunliffe, 2006) A study done by Baker *et al*. reported that the most important life style factors were responsible for obesity. (Baker *et al*., 2002)

Conclusion

Obesity is emerging as a serious problem throughout the world, not only among adults but also children, teenagers and young adults. The etiology of obesity is complex and is one of multiple causation. Like age, sex, genetic factors, physical inactivity, socioeconomic status, eating habits, smoking, alcohol. 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. The professional students, including medical students are in a high risk side when obesity is concerned. Hence, this study was undertaken to find out the prevalence of overweight and obesity among undergraduate medical students. Our study concluded with the fact that the prevalence of obesity and overweight is increasing at an alarming rate of (10.50%) over weight and (3.00 %) obese out of 200 medical students of Meerut. 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. This negligence may lead to several serious diseases like diabetes, increased blood pressure, stroke, etc. It is high time to think about it and make changes in their lifestyle to have a healthy future. Also the findings of the study helped us to modify and enhance the IEC strategy to intervene the students at risk and promoting the students with existing healthy life style.

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