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A CROSS-SECTIONAL STUDY ON PREVALENCE OF OVERWEIGHT & OBESITY AMONG THE MEDICAL STUDENTS AT KANNUR, KERALA

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ABSTRACT: BACKGROUND: Obesity is one of the major non-communicable diseases in recent decades leading to huge morbidity, mortality & economic losses. Obesity is perhaps the most prevalent form of malnutrition. Overweight and obesity are the fifth leading risk of global deaths. **MATERIAL & METHODS: Study Design:** A Cross-sectional descriptive study done in a medical college. **Study Duration:** February 15th to March 20th 2013. **Study Participants:** Out of 400 medical students, purposively derived & randomly selected 200 students who were willing to participate and available during study period were enrolled in the study. Representation from all phases/batches of MBBS course was ensured. **Data Collection:** By self-administered pre-tested & validated questionnaire. Height, Weight & Waist circumference was measured using standard instruments & procedures. Statistical analysis was done by applying proportions/percentages. **RESULTS:** Out of 200 students enrolled in the study, 43.5% were males and 56.5% were females. The overall prevalence of obesity according to BMI classification was 2.5%. The prevalence of obesity in males was 1% and 1.5% in females. The prevalence of overweight was 9%.28 (14%) students were having increased waist circumference, which was more in females (8.5%) when compared to males (5.5%). 60% of obese individuals & 61.1% of overweight individuals are having habit of eating heavy meals either daily or alternative days.80% of obese individuals and 50% of overweight individuals never used to do exercise. **CONCLUSIONS:** There is need for increasing the awareness, bringing motivation & attitudinal change even in medical students to eat balanced diet & to incorporate physical activity in them to prevent them from suffering from the harmful effects of overweight & obesity.
KEYWORDS: Obesity, Overweight, Medical students.

INTRODUCTION: Obesity is one of the major non communicable diseases that are showing an increasing incidence in recent decades.[1] Obesity is emerging as a serious problem throughout the world, not only among adults, but also children, teenagers and young adults. Obesity is perhaps the most prevalent form of malnutrition.[2] Overweight and obesity are the fifth leading risk of global deaths.[2] Once considered a high-income country problem, overweight and obesity are now rising in low and middle income countries, particularly in urban settings.[2] Worldwide, obesity has more than doubled since 1980.[2] The World Health Organization has described obesity as one of today's most neglected public health problems, affecting every region of the globe.[3]

Obesity can be defined as an abnormal growth of adipose tissue due to an enlargement of fat cell size (hypertrophic obesity) or an increase in the fat cell number (hyperplastic obesity) or a combination of both.[2] Distribution of fat, induced by weight gain affects the risk associated by obesity, and kind of disease that results. Obesity increases the likely hood of various diseases particularly heart disease, type II Diabetes Mellitus, Obstructive Sleep Apnea, certain types of cancers, Osteoarthritis and asthma.[1]

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44% of diabetes burden, 23% of ischemic heart disease burden and between 7 to 41% of certain cancer burdens is attributable to overweight and obesity.[2] Obesity is a key risk factor in natural history of other chronic and non-communicable diseases. Obesity is most commonly caused by a combination of excessive food energy intake, lack of physical activity, genetic susceptibility, endocrine disorders, medications or psychiatric illness.[1]

Obesity is often expressed in terms of body mass index (BMI). It is defined as the weight in kilograms divided by square of height in meters. (Kg/m2). BMI values are age independent and same for both sexes. Waist circumference is unrelated to height and correlates closely to BMI. It's an approximate index of intra-abdominal fat mass and total body fat. There is good evidence that abdominal obesity is important in the development of insulin resistance and metabolic syndrome.[2]

In this context, the present study has been conducted to estimate the prevalence and determinants of overweight and obesity among medical students of Kannur.

METHODOLOGY:
STUDY TYPE: Cross-sectional descriptive study.
STUDY TOOL: A structured questionnaire was designed by reviewing relevant literatures and questionnaires previously used in similar studies. The study questionnaire was first pre-tested and suitable modifications were done.

METHODOLOGY: This cross sectional descriptive study was conducted at Kannur Medical College, Kannur, north Kerala from February 15th to March 20th 2013. Out of 400 medical students, a total of 200 students who were willing to participate and available during study period were enrolled in the study. It was a purposive sampling and students were selected randomly. The study sample had a representation from all phases/batches of medical course. Height, weight and waist circumference of each subject were recorded using a portable anthropometric rod, electronic weighing scale with an error of ±100 g & non-stretchable measuring tape respectively applying standard procedures. Body Mass Index (BMI) was calculated using the formula weight (kg)/height^2 (m^2). These BMI values were then categorized into, underweight with BMI less than 18.5, normal weight with BMI between 18.5 and 24.9, overweight with BMI from 25 to 29.9 and obese with BMI more than 30. Waist circumference greater than 102 cms for male & greater than 88 cms for female was considered as high risk for NCD's.[4]

A briefing was given about the nature of the study and informed consent was obtained. The data was collected by using self-administered questionnaire which included the various aspects of diet & physical exercise.

ETHICAL CLEARANCE: The study was approved by Institutional Ethical Committee of Kannur Medical College, Anjarakandy.

STATISTICAL ANALYSIS: After collection of data, information gathered was entered into Microsoft excel 2007 version & analyzed by using Percentage/ proportions and presented in suitable tables.

RESULTS: Out of 200 students enrolled in the study, 43.5% were males and 56.5% were females. Majority of them belonged to age group between 21 to 23 years (Table 1). The overall prevalence of

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obesity according to BMI classification was 2.5%. The prevalence of obesity in males was 1% and 1.5% in females. The prevalence of overweight was 9% & males & females prevalence was 4.5% each. Overall prevalence of increased body weight was there in 11.5% of students. (Table 2) The risk for non-communicable diseases increases in an adult female and male if the waist circumference increases more than 88 cms and 102 cms respectively. 28 (14%) students were having increased waist circumference, which was more in females (8.5%) when compared to males (5.5%). (Table 3)

It can be observed from table 4 that 60% of obese individuals & 61.1% of overweight individuals are having habit of eating heavy meals either daily or alternative days, which was high when compared to nonobese individuals. 80% of obese individuals and 50% of overweight individuals never used to do exercise which reflects high degree of sedentary life style compared to non-obese individuals. (Table 5)

DISCUSSION: Obesity & over-weight being important risk factors for developing many non-communicable diseases, the prevalence of the same was assessed in medical students. It was found in our study that the overall prevalence of obesity based on BMI, among medical students was 2.5% which was almost similar to the observation made by Chhabra[5] while a higher prevalence was reported by Soma Gupta.[6] In our study, obesity was observed more commonly in females then males (1.5% & 1% respectively) as similarly mentioned by K. Park.[2] The prevalence of overweight was 9% in our study, but a higher prevalence was observed by Chhabra[5] & Soma Gupta. [6]

BMI does not distinguish between weight associated with muscle and weight associated with fat. BMI may not correspond to same degree of fatness across populations. Waist circumference is unrelated to height. It's an approximate index of intra-abdominal fat mass and total body fat.[2] In our study, the prevalence of increased waist circumference was 14% which shows that more number of medical students is at risk of developing Cardiovascular diseases.

Dieting and physical exercise are the mainstays of tackling of obesity.[1] Physical inactivity has proven to cause obesity. [2] This is reflected in our study which shows that 60% of obese individuals & 61.1% of overweight individuals are having habit of eating heavy meals either daily or alternative days. 80% of obese individuals and 50% of overweight individuals never used to do exercise. This shows that increased eating & decreased physical activity combination may lead to overweight & obesity. This reflects the need for increasing the awareness & motivating students for practicing good diet practice & regular physical activity which will help them in leading a disease free life.

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AGE	MALE		FEMALE		TOTAL	
	No.	%	No.	%	No.	%
18-20	16	8	46	23	62	31
21-23	61	30.5	62	31	123	61.5
24-27	10	5	5	2.5	15	7.5
TOTAL	87	43.5	113	56.5	200	100
Table 1: Age And Sex Distribution Of Participants						

Gender	Body Mass Index Categorization							
	Under weight		Normal weight		Over weight		Obese	
	No	%	No	%	No	%	No	%
Male	7	3.5	68	34	9	4.5	2	1
Female	13	6.5	89	44.5	9	4.5	3	1.5
Total	20	10	157	78.5	18	9	5	2.5
Table 2: Distribution of respondents according to their BMI								

Sex	Normal Waist circumference		Increased Waist circumference	
	No.	%	No.	%
Male	76	38	11	5.5
Female	96	48	17	8.5
Total	172	86	28	14.0
Table 3: Distribution of Respondents According To Their Gender And Waist Circumference				

Frequency of eating heavy meals	BMI							
	Under wt.		Normal		Over wt.		Obese	
	No.	%	No.	%	No.	%	No.	%
Daily	1	5	8	5	9	50	2	40
Alternate Days	1	5	30	19.1	2	11.1	1	20
Twice Weekly	3	15	95	60.5	5	27.8	1	20
Once Weekly	3	15	17	10.8	0	0	1	20
Never	12	60	7	4.6	2	11.1	0	0
TOTAL	20	100	157	100	18	100	5	100
Table 4: Body Mass Index and Frequency of eating heavy meals								

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Frequency of exercise	BMI							
	Under wt.		Normal		Over wt.		Obese	
	No	%	No	%	No	%	No	%
Daily	7	35	49	31.2	5	27.7	0	0
Alternate days	2	10	33	21	1	5.6	0	0
Twice weekly	1	5	8	5	2	11.1	0	0
Once weekly	5	25	15	9.5	1	5.6	1	20
Never	5	25	52	33.3	9	50	4	80
TOTAL	20	100	157	100	18	100	5	100

Table 5: Body Mass Index and Frequency of exercise

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