Predictors of overweight and obesity among medical students

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Abstract Background: India has been experiencing a nutritional transition in food choices from typical Indian diet into the fast-food pattern. Obesity in combination with unhealthy lifestyle such as smoking and physical inactivity may increase the risk of chronic diseases.We have focused on finding out the predictors of obesity among medical students using a questionnaire and the prevalence of obesity by BMI (Body-Mass Index) which is a weight to height ratio and is a sensitive indicator for finding out the prevalence of obesity

Aim: This study was designed to find the prevalence of overweight and obesity and to identify the predictors of overweight and obesity among the medical students.

Results: out of 375 participants, 22.9% were found to be in the pre-obese category and 6.9% in the obese category. 70.1% did not have a regular exercise pattern or no habit of exercising. 5.3% of the non-exercising participants were found to be obese with a p value of 0.0201 and odds ratio = 1.45. 4% of participants who had the habit of consuming snacks between meals were obese with a p value of 0.020 and odds ratio = 2.44. 0.8% of participants who had the habit of having snacks at midnight were found to be obese with a p value of 0.0015 and odds ratio = 2.4.

Conclusion: To conclude,
  Among the pre obese and obese category predictors like regular exercise, mid meal snacking and midnight snacking were found to have significant association .

Index Terms-obesity, overweight, predictors

I. INTRODUCTION

Obesity may be defined as an abnormal growth of the adipose tissue due to an enlargement of fat cell size or an increase in fat cell number or both.[1] Obesity is one of the major risk factors for development of many chronic non communicable diseases such as NIDDM, CVD and cancer and is also associated with various psychosocial problems. The health consequences of obesity are many and varied ranging from premature death to severe non fatal but debilitating complaints. [2] India has been experiencing a nutritional transition in food choices from typical Indian diet into the fast- food pattern. Obesity in combination with unhealthy lifestyle such as smoking and physical inactivity may increase the risk of chronic diseases.[2] Worldwide, at least 2.8 million people die each year as a result of being overweight or obese, and an estimated 35.8 million (2.3%) of global DALYs are caused by overweight or obesity.[3]

Overweight and obesity lead to adverse metabolic effects on blood pressure, cholesterol, triglycerides and insulin resistance. Risks of coronary heart disease, ischemic stroke and type 2 diabetes mellitus increase steadily with increasing body mass index (BMI), a measure of weight relative to height. [3] The nutritional status of medical students is commonly overlooked and are not examined in depth. This study focuses on finding out the prevalence of obesity in medical students using BMI (Body-Mass Index) which is a weight to height ratio and is a sensitive indicator for finding out the prevalence of obesity.

II. OBJECTIVES

This study was a cross sectional study conducted on medical college undergraduates in Saveetha Medical College, Thandalam fromSeptember 2013-december 2013. The sample size was calculated with the help of n-Master software as 375 based on a study conducted by a group of doctors in Karachi on post graduate students.

a) To assess the prevalence of obesity in medical students in a private medical college.
b) To identify the factors associated with the development of obesity in the study group.
c) Identification of persons in the pre-obese category.

III. MATERIALS AND METHODOLOGY

The height and weight of the students were measured and BMI has been calculated. The lifestyle and eating habits of each student had been collected with the help of a questionnaire.

A. Calculation of Body Mass Index

$$\text{BODY MASS INDEX (BMI)} = \frac{\text{Weight in kilograms}}{\text{Height in metre}^2}$$

CLASSIFICATION	BMI
UNDERWEIGHT	<18.50
NORMAL RANGE	18.50-24.99

OVERWEIGHT
   PRE-OBESE
   OBESE CLASS I
   OBESE CLASS II
   OBESE CLASS III
	
	25.00-29.99
	30.00-34.99
	35.00-39.99
	$\geq$40.00

TABLE 1: Classification according to BMI

B. Analytical strategy:

Prevalence was expressed in percentage and Chi-square test was used to establish an association of factors. Proposal development took 1 month .After approval by ethical committee the data was collected from college students in 2 months Data collected was entered in an excel sheet with coding and analysed. Analysis of data and manuscript drafting was completed in 1 month

III.   OBSERVATIONS

A.Gender distribution of the participants
Out of the 375 participants, the male participants were found to be 47.3% (164) and the female population was 56.3%(211)
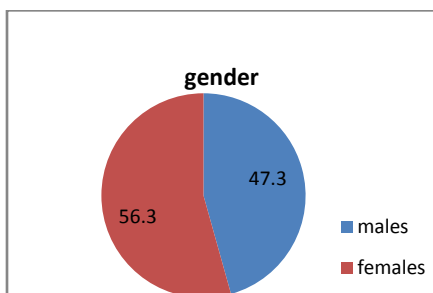

FIGURE 1: Gender distribution of the participants.

B. Body mass index of participants
 Of the 375 participants, 20 were obese,269 were in the pre-obese category,138 had normal BMI and 36 were in the underweight category.
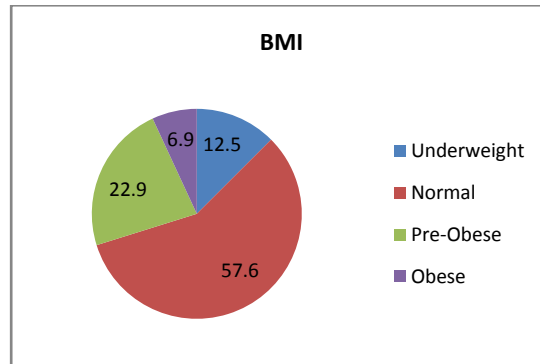

Figure 2: Body mass index (BMI) classification of the participants

C. Exercise patterns of the participants
Out of the 375 participants 263 were on a regular exercise regimen and 112 were not on any exercise regimen.
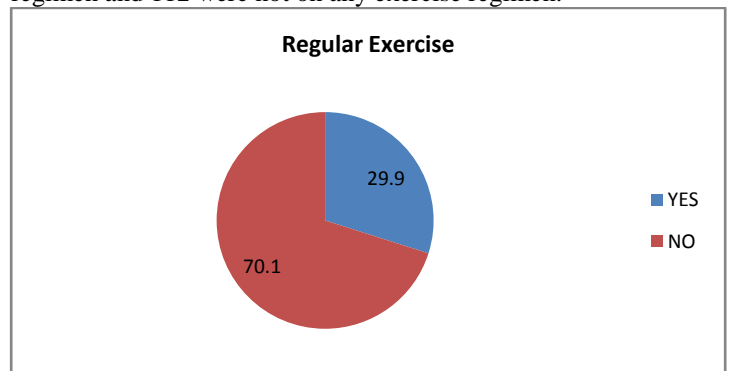

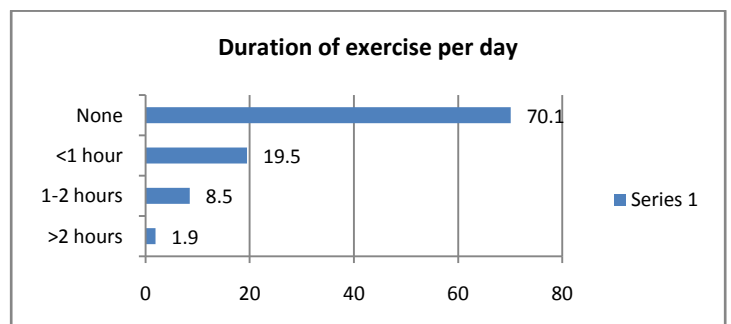Figure 3: Exercise patterns of participants.

D. Duration of exercise

Figure 4: Duration of exercise per day

TABLE 2 :Comparison between BMI
and exercise habits

DO YOU EXERCISE REGULARILTY	BMI				TOTAL
	Under weight	Normal	Pre obese	Obese	
Yes count% of total	11 2.9%	78 20.8%	17 4.5%	6 1.6%	112 29.9%
No .count %of total	36 9.6%	13 36.8%	69 18.4%	20 5.3%	63 70.1%
Total count %of total	47 12.5%	216 57.6%	86 22.9%	26 6.9%	75 100.0%

The association between exercising and the Body Mass Index
was found to be significant with a p value of 0.021.

On calculating odds ratio the strength of association between
BMI and exercise is found to be 1.45

TABLE 2 :

Comparison between BMI and habit of mid meal snacking

Midmeal snacking	BMI				Total
	Under weight	Normal	Pre obese	Obese	
No count %of total	9 2.4%	54 14.4%	33 8.8%	11 28.5%	107 28.5%
Yes count % of total	38 10.1%	162 43.2%	53 14.1%	15 4.0%	268 71.5%
Total count %of total	47 12.5%	216 57.8%	86 88.9%	26 6.9%	375 100.0%

The association between mid meal snacking and the Body Mass
Index was found to be significant with a p value of 0.020 .

On calculating odds ratio the strength of association between
BMI and the habit of mid meal snacking is found to be 2.44

DISCUSSION

Out of the 375 participants :
(1) 22.9% were found to be in the pre-obese category
and 6.9% in the obese category

(2) 70.1% did not have a regular exercise pattern or no
habit of exercising (figure 3)
(3) 5.3% of the non exercising participants were found
to be obese with a p value of 0.0201 and odds ratio =
1.45
(4) 4% of participants who had the habit of consuming
snacks between meals were obese with a p value of
0.020 and odds ratio = 2.44
(5) 0.8% of participants who had the habit of having
snacks at midnight were found to be obese with a p
value of 0.0015 and odds ratio = 2.4

The implication is that the prevalence of obesity
among our undergraduate students is 6.9% and
22.9% are in the pre- obese category.70% are not
exercising regularly.

CONCLUSION

In a community where doctors should be a role model, if we do
not stress on regular exercise and avoidance of mid meal
snacking, how can we advise the same to our patients.There is
an emerging need for implementing programmes which create
awareness on these aspects in the present situation if we want
to bring down the incidence of type 2 diabetes, CAD, and
metabolic syndromes.

APPENDIX

Appendix A: QUESTIONNAIRE
1) Age:

2) Sex: Male   Female

3) Do you exercise regularly?   YES
          NO

4) How many hours of exercise do you do per day?

a)   >2   b) 1-2 c) <1 d)none

5) What kind of physical activity do you do?

a)   Gym b) Any sport c)Running d)

6) Hours spent a day watching TV or on the computer?

a)   1-2 b) 2-3 c) 3-4 d) >4

7) How many hours do you sleep every day?

a)   >8   b) 7-8 c) 6-7   d) <6

8) Educational Qualification of Father.

          A)Profession or Honours'

                    B)Graduate
or Post Graduate

C)Intermediate or post high school diploma

D)High school certificate

E)Middle school certificate

F)Illiterate

9) Total Income of the family _____

10) Number of members in the family_____

11) Do you consume alcohol? YES   NO

12) How often do you consume alcohol?

A) Daily B) Weekly C) Occasionally D) Rarely

13) Do you smoke?   YES   NO

14) How often do you smoke?

A) Daily B) Weekly C) Occasionally D) Rarely

15) If daily, how many cigarettes do you smoke per day?

A) 10 cigarettes or less

B) 11-20

C) 21-30

D) More than 30

16) Which is your heaviest meal of the day?

1) Breakfast

2) Lunch

3) Dinner

17) How many meals do you have per day? _____

18) Do you skip Breakfast?   1) YES   2) NO

19) If yes, how often do you skip breakfast in a week?

1) 1-2 times
2) 3-4 times
3) Everyday

20) Do you have the habit of eating/snacking between meals?   1) YES   2) NO

21) What is your preferred snack?

1) Fruits and vegetables

2) Junk food-chips, cookies etc.

3) sweets

22) Which beverage do you prefer to drink?

1) Water

2) Juice

3) Carbonated drinks

23) How frequently do you eat out?

1) Once a month

2) Couple of times a month

3) Once a week

4) Couple of times a week

5) Every day

24) Do you have the habit of eating midnight snacks?
    1) YES   2) NO

25) If yes, how many times in a week do you do so?

1) 1-2 times

2) 2-3 times

3) 3-5 times

4) Everyday

Appendix B : CONSENT FORM

I_____ agree to take part in the research study, conducted by , Medical students of Department Of Community Medicine in Saveetha Medical College and Hospital, entitled ": PREVALENCE OF OBESITY AMONG MEDICAL STUDENTS IN A PRIVATE MEDICAL COLLEGE".

I acknowledge that the research study has been explained to me and I understand that agreeing to participate in the research means that I am willing to:

- Provide information which is only the truth and to the best of my knowledge.

- Allow the researcher to have access to the medical records, pertaining to the purpose of the study.

- Allow to participate in the analysis program.

I have been informed about the purpose of my queries towards the research. I provide consent to the researcher to use the information given by me for educational purposes only. I understand that my participation is voluntary and can withdraw at any stage of research.

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