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OVERWEIGHT AND OBESITY IN YOUNG ADULTS: FOOD FOR THOUGHT

Kavita Vasudevan P.[1], Umamaheswari K.[2], Vedapriya D.R.[3], Palanivel Chinnakali[1]

[1]Department of Community Medicine, Indira Gandhi Medical College and Research Institute, Pondicherry, India
[2]Department of Physiology, Indira Gandhi Medical College and Research Institute, Pondicherry, India
[3]Department of Community Medicine, Aarupadai Veedu Medical College and Hospital, Pondicherry, India

E-mail of Corresponding Author: kavitavasudevan77@gmail.com

ABSTRACT

Research question: What is the magnitude of overweight and obesity among young adult students of a medical college? **Setting**: All undergraduate medical college students of a private medical college in Pondicherry. **Design:** Facility based cross-sectional study. Using a pre-tested semi-structured questionnaire all subjects were interviewed after taking informed consent. Weight, height, waist circumference and hip circumference were measured. Overweight, obesity and central obesity was estimated by using standard criteria. **Results:** prevalence of overweight or obese was 26.7 % & 35.2% resp. using the standards for Asian Indians and 29.1% and 3.8% resp. using the WHO cut-offs. About 23.3 5%and 10.9% of the subjects had larger waist circumferences and higher waist-hip ratios The prevalence was significantly more in males when compared to females. **Conclusion**: Overweight and obesity is a problem in this study group which calls for primary preventive measures like health education, dietary modification, physical activity and periodic screening.

Keywords: overweight, obesity, young adults, primary prevention

INTRODUCTION

The global epidemic of overweight and obesity – 'globesity' is becoming a public health problem in many parts of the world. Rapidly changing diet and lifestyles is fueling this global obesity epidemic. It is associated with an increased risk of developing various non-communicable diseases including hypertension, coronary heart disease, diabetes, stroke and some forms of cancers.(1) The National Family Health Survey-3 (NFHS-3) has reported that nutrition transition is underway in India with high proportion of overweight co-existing with high rates of malnutrition.(2)

The age-group from 18-21 years is an important phase in life; physically, mentally and emotionally. This is the period of transition from adolescence to adulthood. Proximity to biological maturity at this time may provide final opportunities for primordial and primary prevention of health problems. Overweight and obesity during this period are associated with development of risk factors for obesity related diseases. Studies using anthropometric measurements to assess nutritional status have been focused more on under-five children and school children. But the emergence of obesity and its sequelae as public health problems has renewed interest in the adolescent anthropometry.(3)

Medical students joining Medical Colleges represent this group. There are very few studies on the health and nutritional status for this group in our country. This study aims to assess the prevalence of overweight and obesity in medical students.

METHODOLOGY

This study was conducted in a private medical college in Pondicherry wherein 100 students are admitted every year. Institute Ethical committee clearance was obtained before starting the study. The purpose of the study, and the procedure was explained to each student in detail. All students currently studying in the college, willing to participate, were enrolled for the study. Informed consent was obtained from each student. The height, weight, waist circumference and hip circumference were measured. The weight was taken on a weighing scale with standard minimum clothing to the nearest 0.5kg. Height was measured on a vertical scale with the heel, buttocks and occiput against the wall and the head in the frankfurt plane to the nearest 0.5cm. Waist circumference (WC) was measured at the level of the highest point of the iliac crest and hip circumference was the largest diameter around the buttocks. The cut-off for WC to quantify abdominal obesity indicating high risk was taken as 90 cm for men and 80cm for women. Waist-hip ratio was calculated by using the formula WHR= (waist circumference in cm)/ (Hip circumference in cm). WHR of more than 0.85 in women and 0.95 in man was considered as abdominal obesity. Body mass index (BMI) was calculated by the formula BMI= (weight in kg)/ (height in mts)^2. BMI was used to categorise the nutritional status of the subjects as per the recommended cut-offs for Asian Indians. (Normal BMI: 18.0-22.9 kg/m^2; Overweight: 23.0-24.9 kg/ m^2; Obesity: >25 kg/m^2).(4,5) It was also compared with the WHO cut-offs.

STATISTICAL ANALYSIS

Data was entered in MS Excel and analyzed by using SPSS software v17.0. Students' t test was used to compare means and Chi-square test was used to compare proportions between groups. A pvalue of 0.05 or less was considered statistically significant.

RESULTS

A total of 471 students were included in this study of which 59.7% were males. The mean age for girls was 21.2 ± 2.1 (range 18-36yrs) and for boys was 21.7 ± 2.2 (range 18-31yrs). Only 5(1.1%)of them, all girls; were married. Socio-economic status was assessed by using the Prasad's classification based on per capita income. About 95.4% of the respondents belonged to class II or above.

Table 1 shows the distribution of the study population based on their gender and semester of study. The biggest proportion of female and male subjects was in V semester and I semester respectively. Table 2 shows the mean anthropometric parameter of the study population. The male subjects were found to be significantly taller, heavier, had larger waist circumferences and higher body mass index compared to female subjects. Figure 1 shows the distribution of body mass index of the study subjects based on south-asian cut-offs and WHO cut-offs. Using the south-asian cut-offs majority of the subjects were found to overweight or obese (26.7 % & 35.2% resp.) with sub-optimal BMI. The WHO classification which has higher BMI cut offs for overweight and obesity shows that majority have normal BMI(60.3%). The proportion of overweight and obesity was 29.1% and 3.8% resp. About 23.3 5%and 10.9% of the subjects had larger waist circumferences and higher waist-hip ratios(table 3)indicating abdominal obesity.

DISCUSSION

The risk factors of today are the diseases of tomorrow. Identifying the risk factors in populations occupies a central place in the surveillance system because of the importance of the lag time between exposure and disease. Therefore, public health strategies have to be driven by the motive of identifying risk factors in populations in different settings.(6)

Obesity is an important risk factor in the pathogenesis of hypertension, dyslipidemias, diabetes mellitus and cardio-vascular diseases. Identifying overweight and obesity early and managing it with rational approaches is crucial in control of cardio-vascular diseases.

This study has found a prevalence of overweight and obesity in this group of medical students as 26.7% and 35.2% respectively using the BMI cut-offs for Asian Indians. Using the WHO BMI cut-offs the prevalence of overweight or obesity was found to be 32.9%. This prevalence is higher than that reported by studies in medical college students in Delhi and West Bengal.(3,7) This difference may be due to the differences in sample size of the studies, age of the subjects and dietary practices. In this study most of the students belonged to the upper socio-economic class indicating the effect and quality of the feeding practices in their childhood and adolescence.

The National Family Health Survey-3 (NFHS-3) has reported a prevalence of overweight in women as 14.8% and in men 12.1% with an higher prevalence in urban areas when compared to rural areas. This is lower than the present study as the population studied in NFHS-3 was adults in the age group 15-45yrs(2). Studies from Kerala and gujrat(6,8) among adults in the age-group 15-60 yrs have reported a prevalence similar to this study.

All the above mentioned studies from India have used BMI cut-offs as stated by WHO for assessing obesity. This would make international comparisons possible but may underestimate the true burden. It would be advisable to use the criteria relevant to Asians Indians as suggested in various publications by the government of India with respect to body mass index, waist circumference and waist-hip ratio.(4,5)

The prevalence of overweight, obesity and central obesity was more in males than in females. This is different from that reported by some other studies (6, 9). Shah et al reported that overweight, obesity and central obesity is higher in women, whereas Mehan et al have reported higher abdominal obesity in women based on waist circumference and waist-hip ratio. But in both the studies the age group of the subjects(15-45yrs) was different from that of the current study.

This study has shown that overweight and obesity is a health problem in the group studied. Belonging to higher socio-economic status, changing diets and lifestyles may have contributed to this high prevalence. This requires planning of strategies, focusing on the young adults to prevent obesity-related sequelae.

CONCLUSION

Overweight and obesity is a problem in this study group which calls for primary preventive measures like health education, dietary modification, physical activity and periodic screening. Physical activities like sports, yoga, periodic screening of students, maintaining health cards for students could be made essential during medical training course. Further studies in similar groups, across the country are needed to substantiate the findings of this study.

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Table 1: Gender and semester-wise distribution of the study population

Semester	Male N(%)	Female N(%)	Total N(%)
I semester	65 (23.1)	31(16.3)	95(20.2)
III semester	51(18.1)	43(22.6)	92(19.5)
IV & V semester	45 (16.0)	49(25.8)	94(20.0)
VI &VII semester	56 (19.9)	36(18.9)	94(20.0)
VIII & IX semester	64(22.8)	31(16.3)	96(20.4)
Total	**281(100.0)**	**190(100.0)**	**471(100.0)**

Table 2: Mean anthropometric parameters of the study population

Parameter	Males (mean ±SD)	Females (mean ±SD)
Weight (in kg)	70.9 ± 11.5	57.7 ± 10.9
Height (in mts)*	1.7 1 ± 0.07	1.57 ± 0.06
Waist circumference (in cm)	82.5 ± 8.2	73.9 ± 8.5
Body mass index (in kg/m2)*	24.1 ± 3.5	23.2 ± 4.1

* p value<0.05

Table 3: Distribution of sub-optimal physical parameters in the study population

Parameter	Males N(%)	Females N(%)	Total N(%)
Overweight (BMI=23-25kg/m2)	75(26.7)	35(18.4)	110(23.4)
Obese (BMI>25kg/m2)	99(35.2)	56(29.5)	155(32.9)
Abdominal obesity (WC>80 for females, WC>90 for males)	48(25.3)	54(19.2)	102(22.3)
High WHR (WHR> 0.85 for females, WHR> 0.95 for males)	34(17.9)	11(3.9)	45(10.9)

Figure 1: Overweight & obesity based on body mass index