Original Research Article

Prevalence of overweight and obesity among women of >20 years

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ABSTRACT

Background: Obesity is a newly emerging, global pandemic problem involving developed as well as developing countries. Even in countries like India, which are typically known for high prevalence of under nutrition, significant proportions of overweight and obese now coexist with the undernourished. Overweight and Obesity are the 5th leading risk of global deaths. Rapidly changing diets and lifestyles are increasing the global obesity epidemic. According to recent estimates, there are more than one billion overweight people worldwide, and some 300 million of these are estimated to be obese. Obesity is one of the important risk factors for non communicable disease like CAD, stroke, cancer, depression etc, going to increase burden of non communicable diseases in terms of morbidity and mortality. Aims and objectives were to determine the prevalence of overweight and obesity among women of >20 years and to identify various factors associated with overweight and obesity.
Methods: A community based cross sectional study was conducted and 446 women of 20-60 years age were included in the study. A Predesigned questionnaire was used for the study. Anthropometric measurements such as weight, height, waist circumference were measured using standard techniques.
Results: In the present study, prevalence of overweight in the study population was 28.2% and obesity 13.6%. Overweight & Obesity were significantly associated with family history, comorbid conditions etc.
Conclusions: Prevalence of overweight & obesity is increasing in developing countries like India due to changing life styles, diet patterns and sedentary life style. This observation emphasizes large scale awareness campaign about overweight and obesity.

Keywords: Overweight, Obesity, Women

INTRODUCTION

Obesity is one of the biggest health problems today which affects a person not only physically but also psychologically as well. Obesity is becoming a public health problem of global significance.[1] Even in countries like India, which are typically known for high prevalence of undernutrition, significant proportions of overweight and obese now coexist with the undernourished.[2] Obesity refers to abnormal growth of adipose tissue due to enlargement of fatcell size or increase in fat cell number. Overweight refers to increased body weight when compared to same standard of acceptable and desirable weight. According to World Health Organization (WHO), the global prevalence of overweight and obesity has reached epidemic proportions.[3] Overweight and Obesity are the 5th leading risk of global deaths. Rapidly changing diets and lifestyles are increasing the global obesity epidemic.[4] According to recent estimates, there are more than one billion overweight people worldwide, and some 300 million of these are estimated to be obese.[5] Problems of overweight and obesity are caused by chronic imbalance between energy intake and actual energy needs of the body. In many developing countries, with increasing urbanization, mechanization of jobs and transportation, availability of processed and fast foods

and dependence on television for leisure, people are fast adopting less physically active lifestyles and consuming more energy-dense, nutrient poor diets.[2,4,6].WHO typically defines adult overweight as a body mass index (BMI) of 25.0−29.9 kg/m2; and adult obesity as a BMI ≥ 30.0 kg/m2.2 However, it is observed that in Asian populations health risks associated with overweight and obesity occur at lower levels of BMI than in north America or Europe.[7,8] and it is now being suggested that lower cutoff points for BMI be used to categorize overweight and obese conditions for Asian populations.[9]Obesity is a key factor in the natural history of non-communicable diseases and other chronic diseases.

Health problems associated with obesity are cardiovascular diseases (CVD), hypertension, coronary heart disease, type 2 diabetes, gallbladder disease and breathlessness. The increased CVD risk is 2 fold in women of BMI 25-28.9 kg/m^2 and 3.6 fold for BMI of 29 kg/m^2 or more. Blood pressure is increased by 6mm systole and 4mm diastole for a 10% gain in body weight. Hypertension is prevalent in obese adults at a rate of 2.9 fold than non-obese population and weight reduction reduces risk of developing hypertension. Obese women have a 2.7 fold increase in the prevalence of gallbladder disease. It is estimated that more than two-thirds of all diabetes mellitus cases can be linked to overweight conditions.[10] WHO estimates that approximately 58% of diabetes mellitus, 21% of ischemic heart disease, and 8-42% of certain cancers can be attributed to body mass index (BMI) above 21 kg/m^2. Obesity has also been associated with menstrual dysfunction, reproductive disorders including infertility, increased abortion rates and adverse pregnancy outcomes.[11-14]

According to WHO Global strategy on diet, physical activity and health, globally 1 billion people are overweight and >300 million obese. In US, in the year 1970: 32% were overweight and 15% were obese whereas in the year 2003, 34% were overweight and 31% were obese. 200 million people across western and Eastern Europe are affected by obesity.[15]

Indian scenario

The prevalence of overweight/ obesity in India according to National Family Health Survey 3 (2005-2006) in urban women is 28.9% whereas in rural women it is 8.6%.Overweight and obesity are more than three times higher in urban than rural areas and more common among women.[16] The percentage of ever married women aged 15- 49 years who are overweight/obese increased from 11% in National Family Health Survey 2 (1998-1999) to 15% in National Family Health Survey 3 (2005-2006).[4]

Table 1: Prevalence of obesity in different states in India.

Author	City/state	Year	Age	Prevalence of obesity in females (%)
Gopinath et al[17]	Delhi	1994	25-64	33.4
Zagar et al[18]	Kashmir	2000	>40	23.7
Mohan et al[19]	Chennai	2001	>20	31.8
Mithubadra, Ashishmukopadyaya[20]	Kolkata	2001-2003	20-50	17.45
Mungreiphy and Satwantikapur[21]	Manipur	2005-2006	20-70	0.6

Andhra Pradesh

According to Integrated Disease Surveillance Project-Non communicable Disease Risk Factor Survey (2007-2008) in Andhra Pradesh, 31% of women are overweight in urban areas and 7% in rural areas.[22] According to NFHS3 (2005-2006), percentage of overweight/obese women in Hyderabad slums is 31%.[16] Burden of the slum population, and magnitude of their health problems are on the rise. There is rising prevalence of obesity and other non-communicable diseases in the slum population.[23]

Aims and objectives

- To determine the prevalence of overweight and obesity among study population.

- To identify various factors associated with overweight and obesity among the subjects.

METHODS

Present study was a community based cross sectional study conducted in urban field practice area (Harazpenta) of community medicine department of Osmania medical college, Hyderabad. Study period was from November 2013 to October 2014. Harazpenta consists of 29 slums having population of 45066 and 8995 households.

The study subjects were 21-60 years women.

Sample size was calculated based on the following formula.

$$N = 4PQ/L^2$$

p = prevalence of overweight women in urban area as per NFHS3

q = 100- p

l = allowable error, here taken as 15% of prevalence

Hence, the sample size calculated is

$N = 4 \times 28.9 \times 71.1/4.39/(4.3)^2$

=8219/18.49

=446

Out of 29 urban slums of Harazpenta, the first urban slum was randomly selected. It is listed and later every 2nd urban slum was selected. A total of 15 urban slums with the population of 23928 and 4616 households were taken into the study.

Household selection

Houses were numbered serially in each urban slum. Assuming for 200 households in each area, sampling interval was calculated as 7.First household from26 each area was randomly selected by lottery method. Thereafter using systematic random sampling technique every 7th house was selected for the study. Sample size being 446, subjects were selected from the 15 slums. A predesigned and pretested questionnaire was used to interview the subjects. Height was measured with stadiometer. Weight was measured with portable weighing machine. Blood pressure was measured using Mercury sphygmomanometer. Data was entered using Microsoft Excel 2007 version and Chi-square test with significance level at 5% was used to determine the association between the study variables. P<0.05 was considered to be statistically significant.

WHO Asian classification was used classify the study population as underweight (BMI<18.5), normal (BMI: 18.5–22.9), overweight (BMI: 23–24.9), obese I (BMI: 25-29.99) and obese II (BMI>30).[9]

RESULTS

In the present study, out of 446 study subjects surveyed, according to the Asia Pacific BMI guidelines, overall prevalence of overweight was 126 (28.2%), prevalence of obesity was 61 (13.6%), 221 (49.7%) were in the normal range and 38 (8.5%) were underweight.

The prevalence of overweight /obesity was 52.1% in 31-40 years age group, 45.3% in 41-50 age group, 35.9% in 21-30 years and 35.1% in 51-60 years. From the above table the prevalence of overweight/obesity was found to be highest in the age group of 31-40 years.

Majority of the study population (41.2%) did not have any co morbid condition where as 25.2% of the individuals were found to have hypertension, 17.1% individuals have diabetes mellitus.

Table 1: Distribution of study population according to BMI for Asian adults.

Nutritional status	Number	Percentage (%)
Underweight (<18.5)	38	8.5
Normal (18.5-22.9)	221	49.7
Overweight (23-24.9)	126	28.2
Obese (>25)	61	13.6
Total	446	100

Table 2: Prevalence of overweight and obesity according to age.

Age (in years)	Total number of subjects in group	BMI>23 (overweight and obese)	Percentage (%)
21-30	162	58	35.9
31-40	123	64	52.1
41-50	84	38	45.3
51-60	77	27	35.1
Total	446	187	42

Table 3: Distribution of study population according to comorbid conditions.

Comorbid conditions	Number	Percentage (%)
Diabetes mellitus	76	17.1
Hypertension	112	25.2
Others	74	16.5
No comorbid condition	184	41.2

Out of 187 overweight and obese individuals, 56.7% had positive family history of overweight and the relation of family history with overweight and obesity was proved statistically significant (p=0.0001). 54.1% have the habit of watching TV for more than120 minutes and the duration of watching TV with overweight and obesity was found to be statistically significant (p=0.001063). Association of overweight and obesity with all the above factors was found to be statistically significant.

DISCUSSION

The present study was carried out in urban field practicing area of Community medicine Department of Osmania medical college, Hyderabad to find out the prevalence of overweight and obesity among women aged above 20 yrs.

In the present study prevalence of overweight was 28.2% and prevalence of obesity was 13.6% according to Asia Pacific BMI guidelines.

A similar finding was noted by Anuradha et al in in their study in urban slum of Chennai where prevalence of overweight was 27.7% & obesity were 19.8%.[24]

Table 4: Factors associated with overweight and obesity.

Factors		BMI		Total value	P value
		<23 Normal and underweight	>23 Obesity and Overweight		
		N (%)	N (%)		
Family history of overweight	Yes	62 (43.3)	81 (56.7)	143	0.0001
	No	197 (65)	106 (35)	303	
TV Viewing (in hours)	>4	62 (45.9)	73 (54.1)	130	0.001
	2-4	108 (60)	72 (40)	180	
	<2	89 (67.9)	42 (32.1)	131	
Post lunch sleep	Yes	112 (51.3)	106 (48.7)	218	0.005
	No	147 (64.4)	81 (35.6)	228	
Physical activity	Sedentary worker	32 (42.1)	44 (57.9)	76	0.0008
	moderate worker	201 (59.6)	136 (40.4)	337	
	heavy worker	26 (78.7)	7 (21.3)	33	
Frequency of fruits intake	<3 times/week	75 (37.3)	126 (62.7)	201	0.0001
	>3 times/week	184 (75.1)	61 (24.9)	245	
Frequency of junk food intake	<3 times/week	148 (66)	76 (34)	224	<0.0001
	>3 times/week	111 (51.3)	105 (48.7)	216	

In contrast, in a study conducted by Deshmukh et al prevalence of overweight was 5.4% & prevalence of obesity was 5.2% in females.[25]

In the present study prevalence of overweight and obesity was 52.1% in the age group of 31-40 years. However there was no significant association between prevalence of overweight and age.

A similar finding was observed by Anuradha et al where the prevalence of overweight was highest (42.7%) in the age group between 30-39 years without any association between overweight and obesity with age.[24]

But in a study by Misra et al in urban slum population in northern India, there was significant increasing trend in prevalence of obesity with advancing age.[26] Contrary to the present study Asthana et al in her study in Varanasi city found a direct relationship between age and prevalence of obesity.[27] Prevalence of obesity showed an increasing trend over the successive age period. Prevalence of obesity increased from 8% in 15-20 years age group to 50% in women aged 50 years and above. The prevalence was highest in the age group 40 years and above.

In the present study, prevalence of overweight and obesity among known diabetics was found to be 67.3% and among known hypertensive it was found to be 53.6%. This shows the significant association of overweight and obesity with comorbid conditions like diabetes mellitus and hypertension.

Another study that correlates with the above findings is a study conducted by Rezende on BMI and waist circumference association with cardiovascular risk factors where they concluded that cardiovascular risk factors increased along with BMI.[28] Similar observations were also made by Deshmukh et al where strong positive correlation of BMI was found with both systolic and diastolic pressure.[25]

These findings correlate with the study done by Chandrashekar et al in urban and rural areas of Mysore where 42.3% of the overweight individuals were found to have associated hypertension and 25.6% of the obese individuals were found to have associated diabetes mellitus.[29]

In the present study, 56.7% of the overweight and obese individuals were found to have positive family history. The relation of family history with overweight and obesity was found to be statistically significant. Similar findings of positive association of family history with overweight and obesity was observed by Anuradha et al where 53.5% had positive family history and Chandrashekar et al where 87.6% of the overweight individuals are having family history of overweight and obesity.[24,29]

In the present study, individuals who are having the habit of taking junk food >3 times/week are more overweight i.e. 48.7% than those taking <3 times/week. This finding correlates with the study done by Vijayakumar et al in their study of prevalence of overweight and obesity in urban area of Hyderabad where 44.45% of the overweight individuals had the habit of taking junk foods >3 times/week.[30]

Another study that correlates with the present study was the study done by Ghosh et al on association of food patterns and metabolic risk factors for coronary heart

disease in middle aged people of Calcutta.[31] 54.1% of the overweight individuals watch TV for >4 hours and the association of overweight and obesity with TV viewing was found to be statistically significant. TV watching has significant influence on the prevalence of overweight and obesity.

Present study correlates with the study done by Anuradha et al in urban slum of Chennai where 55.3% of the overweight individuals watch TV for >4 hours.[24]

Another similar study that correlates was the study done by Chandrashekhar et al in their study of obesity and associated risk factors in urban and rural areas of Mysore where 87.2% of the overweight individuals watch TV for >120 minutes which was proved statistically significant.[29]

In the present study 48.7% of the overweight individuals have the habit of post lunch sleep and it was found to be significantly associated with overweight and obesity. 57.9% of the sedentary workers were found to be overweight and obese and the association of type of physical activity with overweight and obesity was proved statistically significant. 53 Similar finding was observed by Gopinath et al in their study where there is 29.3% prevalence of obesity among sedentary activity group and 24.55 in moderate activity group and 17.5 in heavy activity group.[17] Naidu et al found that, obesity was relatively more in the subjects doing sedentary work.[32] They observed that 96% of the female obese subjects were sedentary workers. This finding also correlates with study done by Anuradha et al in urban slum of Chennai where sedentary workers were more overweight (46.7%) and obese than those of moderate workers (24.6%)and those doing vigorous physical activity (23.1%).[24]

In the present study 54.1% of the overweight individuals watch TV for >4 hours and the association of overweight and obesity with TV viewing were found to be statistically significant. TV watching has significant influence on the prevalence of overweight and obesity.

In the present study 57.9% of the sedentary workers were found to be overweight and obese and the association of type of physical activity with overweight and obesity was proved statistically significant. Similar finding was observed by Gopinath et al in their study where there is 29.3% prevalence of obesity among sedentary activity group and 24.55 in moderate activity group and 17.5 in heavy activity group.[17]

CONCLUSION

The prevalence of obesity is increasing in urban women of India. Improving socio-economic status and sedentary lifestyle along with advancing age are major risk factors for development of obesity. Obesity is associated with very severe long term health hazards such as diabetes mellitus, dyslipidemia, polycystic ovarian disease, hypertension etc. The epidemic of obesity needs to be controlled at earliest. A large scale awareness campaign to sensitize population regarding long term complications of obesity and measures to prevent obesity needs to be launched. All overweight and obese individuals should be encouraged to do regular physical activity and adhere to strict diet advice. Advice should be given to overweight/obese individuals and their family members regarding junk foods, importance of adequate intake of fruits, vegetables and fiber diet in relation to overweight and obesity Those individuals with associated diabetes mellitus and hypertension should be periodically examined to ensure good control of Diabetes mellitus and Hypertension and explain them about the consequences of uncontrolled diabetes mellitus and hypertension. All the family members of overweight and obese individuals along with high risk groups should be included in the health education and counseling programs this would help not only in the care of the patient but would also act as primordial prevention for other family members.

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