Prevalence and Determinants of Overweight and Obesity in Hanamkonda District

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Bandi Rajendar[1], A. Tejaswini[2], B. Adarsh[3], B Indhu[4], K. Rajeswari[5], S Shivani[6], P Pavani[7]

[1,2,3,4,5,6,7]Assistant Professor, SVS Group of Institutions, Department of Pharmacy, Bheemaram, Hanamkonda, Telangana-506015

ABSRACT:

The present study was undertaken by selecting 2931 subjects in Warangal city, to assess the prevalence of Obesity and its determinants. Among the 4663 study subjects, 2931 (62.86%) were underweight followed by 1283 (27.51%) in normal range. 210 (4.50%) were overweight, 198 (4.25%) and 41 (0.88%) were obese 1 and obese 2 respectively.Among Female, 143 (5.52%) were overweight, 140 (5.41%) and 25(0.97%) were obese 1 and 2 respectively. Among Male, 67 (3.23%) wereoverweight and 58 (2.80%) and 16 (0.77%) were obese 1 and 2 respectively. In the present study, there were more Female (55.52%) than Male (44.48%). The prevalence of overweight / obesity was found more in Female (11.90%). For the study subjects, 2170 exercised and 2493 did not exercise. Of 2170 who exercised, 219 (10.09%) of the study subjects who were overweight/ obese In the present study, the overall prevalence of overweight / obesity was 9.63% and the prevalence of overweight / obesity was 4.50% and 5.13% respectively. overweight / obesity was high in study subjects who were from urban area (9.83%) than from rural areas (8.31%).

Keywords: Obesity,Basal Mass Index ,Urban & Rural population, Cross Survey Study

INTRODUCTION

Obesity is a complex condition, with serious social and psychological dimensions, affecting virtually all ages and socioeconomic groups. Obesity has reached epidemic proportions globally and is a major contributor to the global burden of chronic diseases and disability. India and many other countries in South-East Asia are currently going through the so-called nutrition transition which is associated with a change in the structure of the diet and rapid increase in the prevalence of obesity.Dietary factors strongly influence the energy balance equation and they are major modifiable factors through which many of the external forces promoting weight gain act. With this background, the present study was conducted with following objectives. [1]

Recent studies have reported that globally, more than 1.9 billion adults are overweight and 650 million are obese. Approximately 2.8 million deaths are reported as a result of being overweight or obese. Due to the consumption of energy dense food (i.e. unhealthy food habits), sedentary life style, lack of health care services and financial support, the developing countries are facing high risk of obesity and their adverse consequences (i.e. diabetes, ischemic heart disease, etc). In India, more than 135 million individuals were affected by obesity. The prevalence of obesity in India varies due to age, gender,

geographical environment, socio-economic status, etc. According to ICMR-INDIAB study 2015, prevalence rate of obesity and central obesity are varies from 11.8% to 31.3% and 16.9%-36.3% respectively. In India, abdominal obesity is one of the major risk factors for cardiovascular disease (CVDs). Various studies have shown that the prevalence of obesity among women were significantly higher as compared to men. Obesity is one of the main medical and financial burdens for the government. This problem of obesity can be preventable by spreading public awareness about obesity and its health consequences. Governmental agencies should promote the benefits of healthy life style, food habits and physical activity. The aim of this article is to report the prevalence of obesity in different regions of India and highlight the problem areas. [2]

Obesity in India has reached epidemic proportions in the 21st century, with morbid obesity affecting 5% of the country's population.[3] India is following a trend of other developing countries that are steadily becoming more obese. Unhealthy, processed food has become much more accessible following India's continued integration in global food markets. This, combined with rising middle class incomes, is increasing the average caloric intake per individual among middle class and high income households.[4] Obesity is a major risk factor for cardiovascular disease, and NGOs such as the Indian Heart Association have been raising awareness about this issue.[5]. The prevalence of overweight and obesity in India is increasing faster than the world average. For instance, the prevalence of overweight increased from 8.4% to 15.5% among women between 1998 and 2015, and the prevalence of obesity increased from 2.2% to 5.1% over the same period[7]. This fast-paced growth has been accompanied by notable increases in the burden of non-communicable diseases (NCDs). Whereas in 1990 the number of life years lost to disability (DALYs) attributable to communicable, maternal, neonatal and nutritional disorders exceeded that attributable to NCDs in virtually all of India's states, currently the opposite is true[8]. Given the extent of the increase in prevalence of overweight and obesity, and its relationships with NCDs[], reliably predicting its future prevalence has become increasingly important. Body mass index (BMI) is a calculation that takes a person's weight and height into account to measure body size.In adults, obesity is defined as having a BMI of 30.0 or moreTrusted Source, according to the Centers for Disease Control and Prevention (CDC). [11].Obesity is associated with a higher risk for serious diseases, such as type 2 diabetes, heart disease, and cancer.Obesity is common. The CDC estimates that 42.4 percentTrusted Source of Americans 20 years old and older had obesity in 2017 to 2018.

MATERIALS AND METHODS

Study setting: The present study was conducted in Warangal Urban District areas

Study design: Cross sectional study

Period of study: June 2023 – jan2024

Study population: Population enrolled in area of Warangal city.

Sample frame: All the Population in selected areas of Warangal city.

Sample size: 4663

Collection of data: The present cross sectional study was conducted in Warangal city from June 2020 to Jan2021. The sample size was calculated considering prevalence of overweight and obesity as P = 10% based on the previous literature31, Q is (100 – 10) and allowable error is 10% of P. Expected sample size is n = 4PQ/L2 Where n = Sample size P = 10 Q = 100 - 10 = 90 L = 10% of P n = 4 x 10 x 90 / (L)2 = 3600 The total population enrolled in Wrangal city was 5070 (information from Deputy Director Public Instruction, Wrangal). Of the 5070, 4663 were available for the study and the rest were not

included due to unavailability during two visits (221).The purpose of the study was explained and oral consent was obtained from the participants before enrolling them in the study. A pretested semi structured questionnaire was used to elicit the information of family characteristics and individual characteristics. The questionnaire had four sections.

1. General information.

2. Physical activity

3. Dietary history

4. Examination Clinical examination and anthropometric measurements of height, weight, waist and hip circumference were taken using standard equipments (stadiometer, bathroom scale weighing machine and non-stretchable measuring tape respectively) to calculate Body mass index (BMI) and Central obesity (waist-hip ratio). All the instruments used for the study were calibrated daily. The anthropometric measurements were taken by the investigator. The data was recorded in the questionnaire under the fourth section 'Examination' which was filled by a team of interns each group consisting of a male and a female intern supervised by the investigator. Interns were adequately trained before conducting the study. Two visits were made to each area to ensure complete coverage. Heath education regarding the risk factors for overweight / obesity and other non-communicable diseases and the preventive measures for these were given at the end of filling the questionnaire and examination. Hand notes related to healthy habits about diet, physical activity were distributed to students.

Study instruments: Questionnaire and Physical instruments.\

Questionnaire A pretested semi structured questionnaire was used to get information from the study population. The variables studied included details regarding socio-demographic factors, family history, physical activity, dietary history and anthropometric measurements like weight, height, waist circumference and hip circumference. The English version of questionnaire was translated in to local language Telugu and then back translated in to English by independent language experts. The back translated English was then compared to the original English questionnaire.

RESULTS & DISCUSSION

Sex wise distribution of study subjects according to BMI

Sex	Underweight (< 18.5)	Normal (18.5 – 22.9)	Overweight (23 – 24.9)	Obesity 1 (25 – 24.9)	Obesity 2 (≥ 30)	Total
Females	1443 (55.73)	838 (32.37)	143 (5.52)	140 (5.41)	25 (0.97)	2589
Mens	1488 (71.74)	445 (21.46)	67 (3.23)	58 (2.80)	16 (0.77)	2074
Total	2931 (62.86)	1283 (27.51)	210 (4.50)	198 (4.25)	41 (0.88)	4663

Among the 4663 study subjects, 2931 (62.86%) were underweight followed by 1283 (27.51%) in normal range. 210 (4.50%) were overweight, 198 (4.25%) and 41 (0.88%) were obese 1 and obese 2 respectively.Among Female, 143 (5.52%) were overweight, 140 (5.41%) and 25(0.97%) were obese 1 and 2 respectively. Among Male, 67 (3.23%) wereoverweight and 58 (2.80%) and 16 (0.77%) were obese 1 and 2 respectively.

Table 5.2.2: Prevalence of overweight / obesity according to sex

Sex	Non overweight / non-obese	Overweight / obesity	Total	OR	95% CI	*p* value
female	2281 (88.10)	308 (11.90)	2589			
male	1933 (93.20)	141 (6.80)	2074	1.85	1.50 – 2.28	< 0.001
Total	4214 (90.37)	449 (9.63)	4663			

Figures in present thesis indicate percentage 308 (11.90%) of 2589 female were overweight / obese and 141 (6.80%) of 2074 mens were overweight / obese. The odds of being overweight / obese was 1.85 times more in female as compared to male.

Table 5.2.8: Prevalence of overweight / obesity according to place of residence

Place	Non overweight / non-obese	Overweight / obesity	Total	OR	95% CI	*p* value
Urban	3662 (90.17)	399 (9.83)	4061			
Rural	552 (91.69)	50 (8.31)	602	1.20	0.88 - 1.63	0.238
Total	4214 (90.37)	449 (9.63)	4663			

Figures in present stydy indicate percentage:399 (9.83%) and 50 (8.31%) were overweight / obese among the study subjects who lived in urban and rural areas respectively. The proportion of overweight / obesity was high in study subjects who were from urban area (9.83%) than from rural areas (8.31%) .

Table 5.2.14: Distribution of overweight / obesity with respect to type of diet

Type of diet	Non overweight / non obese	Overweight / obesity	Total	OR	95% CI	*p* value
Vegetarian	490 (94.77)	27 (5.22)	517			
Non Vegetarian	3757 (90.62)	389 (9.38)	4146	0.79	0.59 - 1.05	0.106
Total	4214 (90.37)	449 (9.63)	4663			

Figures in present stydy indicate percentage Among the 517 vegetarians, 27 (5.22%) were overweight / obese and among the 4146 non vegetarians, 389 (9.38%) were overweight / obese. The difference in prevalence of overweight / obesity was not statistically significant with respect to type of diet with *p* =

0.106 (χ^2- 2.610, df – 1). The odds of being overweight / obese was 0.79 times among non-vegetarians compared to vegetarians.

Table 5.2.19: Distribution of overweight / obesity with respect to Physical exercise

Physical exercise	Non overweight / non obese	Overweight / obesity	Total	OR	95% CI	p value
Yes	1951 (89.91)	219 (10.09)	2170			
No	2263 (90.77)	230 (9.23)	2493	1.10	0.91–134	0.317
Total	4214 (90.37)	449 (9.63)	4663			

Figures in present study indicate percentage of the study subjects, 2170 exercised and 2493 did not exercise. Of 2170 who exercised, 219 (10.09%) of the study subjects who were overweight/ obese. The difference in prevalence of overweight / obesity was not statistically significant with respect to exercise with $p = 0.317$ (χ^2- 1.001, df – 1). The odds of being overweight / obese was 1.10 times more among those who exercised.

DISCUSSION

The present cross sectional study was carried out in Warangal city. A total of 4663 were given a predesigned and pretested questionnaire to determine the prevalence of overweight / obesity.

In the present study, the overall prevalence of overweight / obesity was 9.63% and the prevalence of overweight / obesity was 4.50% and 5.13% respectively. This is comparable to studies done by M Premanath, et al, (2008) conducted in Mysore which reported the prevalence of obesity and overweight to 3.4 and 8.5% respectively[33]. In another study done by CA Kalpana in 35 schools of Coimbatore, the overall prevalence of overweight / obesity among school children was observed to be 7.6% and 5.6% respectively[6]. Wang Y (2001) in his study reported the prevalence of obesity and overweight as 11.1% and 14.3% respectively in the USA, 6.0% and 10.0% in Russia, and 3.6% and 3.4% in China.

Overweight / obesity and Sex

In the present study, there were more Female (55.52%) than Male (44.48%). The prevalence of overweight / obesity was found more in Female (11.90%) as compared to Male (6.80%) with the odds of 1.85 and the difference was found to be statistically significant.

Overweight / obesity and place of residence

In the present study, majority of study subjects were from urban area. The proportion of overweight / obesity was high in study subjects who were from urban area (9.83%) than from rural areas (8.31%). The odds of becoming overweight / obese was 1.20 times more among those from urban area. Similar finding was found in a study done by Bharati DR, et al, where the prevalence of overweight/ obesity was significantly higher among children from urban area than from rural area with odds of 3.046[95]. The same finding is supported by a study done by Mohanty B in Puducherry where the overweight / obesity was significantly high among urban students[4].

Overweight / obesity and physical exercise

In the present study the prevalence of overweight / obesity was not statistically significant with respect

to exercise and the odds of becoming overweight / obese was 1.10 times higher among those who exercised. The finding of the present study was in contrast to the studies which showed that the odds of becoming obese was less when exercised regularly.

CONCLUSION

In present study, many factors contributing to overweight and obesity like higher socioeconomic status, number of meals per day, lack of physical work, watching television (>1.5 hours).Women slightly overweight and obesity than men due to above explanation reasons. And also category of diet especially Non vegetarians slightly overweight and obesity than vegetarians.

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