Original Article

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A Population Based Study of Overweight and Obesity in Urban Southern India

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Abstract

Background: Overweight and Obesity though not an immediate lethal disease by itself is a significant risk factor associated with a range of serious non-communicable diseases. Worldwide, overweight and obesity cause more deaths than underweight. Transition of lifestyle due to rapid urbanization is a contributing factor for increased prevalence of lifestyle diseases. **Objective:** To determine the prevalence of overweight and obesity in urban population and to study the relationship of obesity with age. **Methodology:** A population based cross sectional study was conducted among 1000 subjects (43.8% males and 56.2% females) aged 20 and above residing in urban areas of Belgaum, South India. Data was collected using pretested questionnaire and physical measurements including weight, height, Waist Circumference (WC) and Hip Circumference (HC) were obtained. Body Mass Index (BMI) and Waist to Hip ratio (WHR) was calculated. Data was analyzed with SPSS 16.0 version using chi-square test for statistical significance. **Results:** The overall prevalence of overweight and obesity was 23.4% and 7.9% respectively. Females had higher prevalence of both overweight and obesity (25.0%, 10.0%) when compared with that of males (21.2%, 5.2%) respectively (p=0.0039). Majority of the overweight and obese participants were in the age group of 40 – 49 years. Central obesity assessed using WHR observed that 42.6% of the females and 34.8% of the males were at high risk (p=0.012) and increased waist circumference among females was 46.5% and in males was 36.1% (p=0.001). **Conclusion:** High prevalence of overweight and obesity in the urban population establishes the urgent need to consider it one of the top priorities in formulation of national health policies and reducing the health care costs arising due to hazards of obesity.

Keywords: Overweight; Obesity; Body mass index; Waist circumference; Waist to hip ratio.

Introduction

The parallel rise in malnutrition and obesity is a unique and complex challenge to health care services in India.[1] Obesity though not an immediate lethal disease by itself, is a significant risk factor associated with a range of serious non-communicable diseases.[2] Obesity is seen as the first wave of a defined cluster of non communicable diseases called "New World Syndrome" creating socio-economic burden in poorer countries.[3] Globally, 44% of diabetes burden, 23% of Coronary Artery Disease (CAD) burden and 7-41% of certain cancer burdens are attributable to overweight and obesity.[4] According to the World Health Statistics 2012 report, one in every six adults is obese, 10% of men and 14% of women in the world were obese, compared with

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5% of men and 8% of women in 1980.[5,6]

India is witnessing rise in obesity and overweight with the changing lifestyle of families with increased purchasing power, increasing hours of physical inactivity due to television and computers which have replaced outdoor and other social activities.[7] According to National Family Health Survey (NFHS-3, 2005-06), 11% of adult Indians are overweight and 2% are obese.[8] In certain affluent cities, prevalence of obesity has reached the levels of industrialized countries with values increasing with socioeconomic class.[9] World Health Organization (WHO) has also emphasized on urgent need of understanding the prevalence, trend, factors contributing and strategies for effective intervention of obesity and its hazards.[10] The present study was carried to find out the prevalence of overweight and obesity in urban population.

Materials and Methods

A population based cross-sectional study was conducted in urban areas covered by the three Urban Health Centers (UHC) Ashok Nagar, Ram Nagar and Rukmini Nagar which are attached to Jawaharlal Nehru Medical College KLE University, Belgaum, Karnataka, South India. Using the formula, $N = 4\ p\ (1\text{-}p) / d^2$ where 'p' is the prevalence of overweight among adult population as 11%[8] , 5% significance level and absolute error as 2% sample size obtained was 980 which was rounded of to 1000. Sampling frame was prepared based on census 2011 report provided by the city corporation and study population was obtained from these 3 UHCs in the ratio of 3:3:4 based the proportion of population. Adults aged 20 years and above who are permanent residents of the respective urban area were included in the study. House surgeons and health workers were trained for data collection and taking anthropometric measurements. Data was collected using a questionnaire by house to house survey. A written informed consent was obtained from every participant.

Data included demographic details and physical measurements viz., Height (in meters), weight (in kilograms) and Waist and Hip Circumferences (in centimeters). Weight was measured using a calibrated digital weighing machine with participants wearing light clothes. Height was measured with a calibrated fixed scale in bare feet. Waist Circumference (WC) was measured as maximum diameter, midway between the lowest rib margin and iliac crest. Hip Circumference (HC) was measured at the widest points of two greater trochanters using a non stretchable measuring tape. Body Mass Index (BMI, in Kg/m^2) and Waist to Hip Ratio (WHR) were calculated and grades of overweight and obesity was classified using WHO/IOTC recommendations. Overweight and obesity was defined as BMI 25.0 – 29.9 and > 30.[11] WHR of > 1.0 for males and > 0.85 for females[12] and WC of >90cm for males and >80 cm for females was considered to define abdominal obesity.[13] The data collected was analyzed using SPSS 16.0 version. The frequency and proportions were used for data analysis. Test of significance for proportions was done by chi square test. 'P' value of < 0.05 was taken as statistically significant.

Results

Among the participants 43.8% were males and 56.2% were females. The mean age of the participants was 32± 2.1 years. Most of the study participants were in the age group 20 – 39 years (Graph 1). Males were predominantly self employed (45.0%) and females (67.3%) were

Graph 1: Age group wise distribution of the participants (%)