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New World Syndrome (Obesity) in South India

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Abstract

In developed and developing countries overweight and obesity are most prevalent nutritional problems. Indians now report more and more frequently with overweight, obesity, and their consequences. Obesity is not an immediately lethal disease itself, but has a significant risk factor associated with a range of serious non-communicable diseases in south Indian population. Obesity is a major driver for the widely prevalent Diabetes mellitus, Hypertension, Breast cancer and Dyslipidemia disorders. Hence, there is an urgent need to address the trouble and efforts should be made to prevent the epidemic of obesity and its allied health disasters in South India. Effort has been made in this article to review the data published on prevalence and mechanism of specific morbidity conditions in obese population with special reference to South India.

Keywords: Obesity; South India; Adolescents; Health consequences; Diabesity

Introduction

The world health organization has described obesity as one of today's most neglected public health problems, affecting every region of the globe [1]. Obesity in children and adolescents in gradually becoming a major public health problem in India [2]. Totally 5% of the Indian population has been affected by obesity [3]. Nutritional status of the Indian population varies across the regions, certain regions are associated with extremely high rates of childhood under nutrition (range from 20% to 80%), whereas others have a high prevalence of adult under nutrition (>50%), and some have both. However, Indian states are currently facing the double burden of under nutrition as well as over nutrition. According to the National Family Health Survey (NFHS), the percentage of ever married women aged 15-49 years who are overweight or obese increased from 11% in NFHS-2 to 15% in NFHS-3. Under nutrition is more prevalent in rural areas, whereas overweight and obesity are more than three times higher in urban areas. In south India the percentage of women who are overweight or obese is highest in Kerala (34%), followed by Tamil Nadu (24.4%), Andhra Pradesh (22.7%) and Karnataka (17.3%) [4]. List of the states of south India in order of percentage of people who are overweight or obese, based on data from the 2007 NFHS in figure 1 [5]. Overweight and obesity are associated with an increased burden of diabetes, hypertension, cardiovascular diseases, some types of cancers and premature mortality but also with the social and psychological effects of excess weight [6].

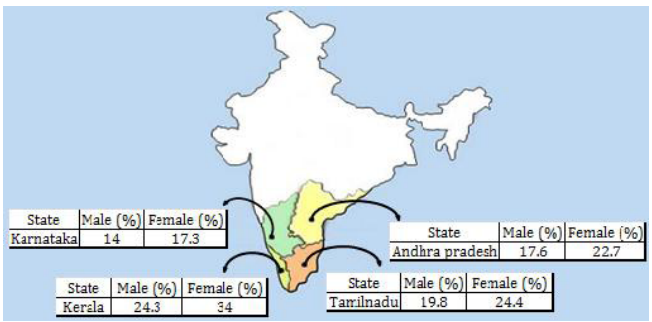

Figure 1: States of south India in order of percentage of overweight or obese people, based on data from the 2007 NFHS.

Adolescent obese children in South India

Various studies indicate that the prevalence of overweight and obesity amongst children of all ages is increasing in developing countries in the past few decades and studies from India also showed the increased prevalence of obesity [7]. Indian data regarding current trends in childhood obesity are emerging. A recent study conducted among 24,000 school children in south India showed that the proportion of overweight children increased from 4.94 per cent of the total students in 2003 to 6.57 per cent in 2005 demonstrating the time trend of this rapidly growing epidemic [8]. Results of a study from Karnataka, Kotian et al. [9] concluded that the overall prevalence of overweight was 9.3% among boys and 10.5% among girls; 5.2 and 4.3% were obese, respectively. The prevalence of overweight was higher among the adolescents of the high socioeconomic status group. A similar study done in Hyderabad, Andhra Pradesh showed that the prevalence of overweight was 7.2% among the 12 to 17 year age group [10]. Study on 707 children in the age group of 10-15 years at Chennai, Tamil Nadu revealed that 10% of the subjects were overweight and 6% of them were obese [11]. Ramesh [12] from Kerala concluded that prevalence of overweight alone is 12% and whereas obesity is 6.3%, prevalence of overweight and obesity increases with the age and is found to be high in the age group 15 yrs. The health consequences of obesity are many and varied, ranging from an increased risk of premature death to several non-fatal but debilitating complaints that have an adverse effect on the quality of life. In many industrialized countries, it is associated with various psychological problems. Childhood obesity has a correlation with increased levels of lipids, lipoproteins, hypertension, insulin resistance and morbidity from coronary heart disease in adults [13].

Obesity health consequences

Diabetes mellitus: Obesity in Type II diabetic patients is very common phenomenon and often termed as "Diabesity". South East

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Asian countries have the highest burden of diabetes including India and have 33 million cases [14]. Higher BMI and especially increased abdominal fat clearly is an important determinant of blood glucose levels, insulin resistance, and the development of diabetes [15]. Intra-abdominal fat accumulation has been implicated as an independent risk factor for type-2 diabetes mellitus and in some studies it has been shown to be an even stronger predictor of type-2 diabetes mellitus than overall fatness [16]. India has diverse lifestyle pattern and ethnic variations, thus epidemiological profile of diabetes mellitus may be different in different geographical areas. There are very few data available for prevalence of obesity and diabetes from Indian continent, which is mainly from South Indian population. In an earlier clinic based study conducted in South India showed that incidence of diabetes in urban south Indian population was 20.2% and pre-diabetes was 13.1% [17]. In Andhra Pradesh results from the Tarakeswari S and Fernandez E [18] study suggest that one in five pregnant women was obese and nearly one in ten pregnant women had gestational diabetics. An estimated 3.31% of women had both gestational diabetics and obesity.

Hypertension

Obesity is being recognized as one of the most important risk factors for the development of hypertension. Several epidemiological studies show that the age-adjusted prevalence of hypertension increases directly with body-mass-index [19]. Central obesity, so common in Indians is much more clearly related to cardiovascular (C.V.) and metabolic risk factors than lower body obesity. In our country also many hypertensive are either overweight or obese [20]. Results of a study from Chennai, Tamil Nadu, Kannana and Satyamoorthy [21] concluded that the overall prevalence of out of 189 hypertensives, 29.1% were pre-obese, 13.7% were class I obese and 5.8% were class II obese. Only 2 individuals were in class III obese, respectively. Manu raj et al. [22] examined in detail relationship between overweight and hypertension in Kochi, Kerala children hypertension was seen in significantly higher percentages (17.34%) among overweight children. In Andhra Pradesh H. Mahesar et al. [23] Findings showed that 86.6% obese were hypertensive where as non obese respondents were 5.4% hypertensives. These studies confirm an evolving epidemic of hypertension risk in South Indian population, as evidenced by an increase in the prevalence of overweight and obesity.

Breast cancer

Epidemiological evidences strongly support that weight gain in adult life with or without physical activity is associated with increased incidence of cancers in men and women. Obesity leads to increased levels of fat tissue in the body that can store toxins and can serve as a continuous source of carcinogens [23]. Studies have revealed that obesity is a major risk factor for several cancers such as colon, breast (post-menopausal), endometrium, kidney and gallbladder, ovaries and pancreas [24]. Singh et al. [25] observed that the risk of breast cancer increased with increasing levels of BMI. Overweight and obese women had 1.06 and 2.27 fold risk as compared to women with normal weight in India. Results from the Pushkala and Gupta [26] suggest that nearly 4% obese blind women had breast cancer in south India.

Dyslipidemias

Universally, obesity has been found to be associated with increase in plasma Triglycerides (TGs). The characteristic pattern observed consists of elevated serum low-density lipoprotein cholesterol (LDL-C) and triglycerides and lowered high-density lipoprotein cholesterol levels [27]. Dyslipidemia are disorders of lipoprotein metabolism, including lipoprotein overproduction and deficiency which is associated with obesity regardless of ethnic group. They may marked as one or more of the following: elevated total cholesterol, Low-density Lipoprotein Cholesterol (LDL), and triglyceride levels or as decreased High-Density Lipoprotein Cholesterol (HDL) level with promotion of insulin resistance causing metabolic syndrome in obesity [28,29]. In Tamil Nadu, younger adults patients who were visited in the south India teaching hospital, increased prevalence of elevated blood pressure and serum lipids were more prominent in 31-40 age group as compared to <30 years which means the risk of dyslipidemia increases as the age advances with obesity [30]. Results of a study from Andhra Pradesh showed that the prevalence of dyslipidemia significantly higher in younger (<45years) than (46-55years) subjects being overweight, expressed as BMI, appears to be a good indicator of risk for dyslipidemia particularly in middle-aged obese subjects [31]. Kalra A et al. [32] from Karnataka concluded that obesity and waist-to-hip ratio as a cause for dyslipidemia in the polycystic ovarian syndrome in women. Unfavorable lipid levels were relatively common among obese individuals, above studies proving that obesity should be considered a risk factor for dyslipidimias.

Conclusion

The process of rapid urbanization and changing lifestyles in India and other developing countries has brought obesity. Prevalence of overweight/obesity is intensifying rapidly in South India population compared to other studies carried out in India with serious public health consequences. In addition it poses a serious hazard to the basic health care delivery system and also overburden for public health sector in south India. Further, it is the need of the hour to set guidelines for detection of obesity in south Indian population to enable early detection of obesity, so that early & prompt treatment or prevention actions can be started & huge hidden burden of future obesity health consequences can be reduced.

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