Commentary

Obesity & abdominal obesity in Asian Indians

Obesity identified as a nutritional disorder, thirty years ago, still continues to be one of the most important, yet preventable health hazards. Indeed, obesity rates have now reached epidemic proportions with over 25 per cent of the population being obese in US and 15 per cent in Europe.

Obesity is considered to be the link between insulin resistance and metabolic abnormalities inclusive of diabetes, hypertension and dyslipidaemia, all of which are risk factors for coronary artery disease. In the recent INTERHEART study, abdominal obesity assessed by waist-to-hip ratio showed a strong association with myocardial infarction. Obesity is also considered to be a major risk factor for hypertension. Over 70 per cent of hypertension among males and 61 per cent among females was attributed to excess adiposity in the Framingham study. The INTERSALT study also showed a strong association between body mass index and blood pressure. A population based study conducted in Chennai, subjects with hypertension had increased body mass index (BMI) and waist circumference compared to normotensives. The study by Deshmukh et al in this issue suggests that there is a significant correlation between obesity indices and systolic and diastolic blood pressure. In their study, body mass index is found to be better correlated with blood pressure than waist measurements. This may be because, the population was unusually lean, being a rural population.

Obesity has now become an important health problem in developing countries particularly in India, which is currently experiencing a rapid epidemiological transition. The epidemiological transition has its positive side in that it has resulted in an increased life expectancy and a decrease in infant mortality rates and deaths due to infectious causes. However, the consequences of industrialization and urbanization which lead to rise in standards of living, also promote weight gain and obesity rates begin to rapidly rise thus posing a growing threat to the health of the nation. There is a paucity of nation wide data on the prevalence of obesity in India. However, studies from different States of India provide some clues regarding the health threat due to this problem. Available data on prevalence of obesity from different published studies suggest that the prevalence ranged from 10 to 50 per cent (Table). Undoubtedly, these large differences in prevalence rates are due to differences in methodology and the definitions and cut-off points used for defining obesity.

Measures commonly used for assessing obesity are BMI and waist circumference (WC). Unfortunately, BMI is not considered to be a good estimate of obesity in Asian Indians as they have a characteristic obesity phenotype, with relatively lower BMI but with central obesity. It has been suggested that fat distributed in the abdominal region, particularly visceral fat is more metabolically important than other fat depots. Case control studies, have clearly indicated that visceral fat is
associated with diabetes. Hence abdominal adiposity assessed using waist circumference is considered to be more appropriate to predict metabolic disorders than generalized adiposity assessed by BMI.

Several reports suggest that for any given BMI, Indians tend to have increased waist circumference. Further, Indians also tend to have excess body fat, abdominal and truncal adiposity. For any given waist circumference, they have increased body fat accumulation and for any given body fat, they have increased insulin resistance. These features have been referred to as the “Asian Indian Phenotype or Paradox”. The World Health Organization has revised the BMI cut-off for Asians and suggested a BMI of 25 kg/m² to define obesity against the 30 kg/m² recommended for Europeans. Further, due to these ethnic differences in obesity assessment, the International Federation of Diabetes has modified the diagnosis of metabolic syndrome using ethnic specific cut-offs for waist circumference.

Several studies from India have attempted to modify the threshold for obesity and abdominal obesity using various metabolic abnormalities as gold standard. These studies have suggested cut-offs for BMI ranging from 19-22 kg/m² while that of waist circumference ranges from 72-85 cm in men and 65.5 - 80 cm in women. The study done by Deshmukh et al is an attempt to identify obesity thresholds in rural Wardha. This study indicates that the threshold for all obesity parameters namely BMI, WC and WHR is remarkably low in rural Wardha compared to other studies in India. This indicates a geographical variation in obesity parameters and its association with metabolic abnormalities. Such regional variations have also been documented in the prevalence of diabetes, coronary artery disease.

<table>
<thead>
<tr>
<th>Author</th>
<th>City/ Centre</th>
<th>Year</th>
<th>Age (yr)</th>
<th>No. of subjects studied</th>
<th>Prevalence of obesity (%)</th>
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<tr>
<td>Dhurandhar &amp; Kulkarni</td>
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<td>1992</td>
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<td>Gopinath et al</td>
<td>Delhi</td>
<td>1994</td>
<td>25 - 64</td>
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<td>Zargar et al</td>
<td>Kashmir</td>
<td>2000</td>
<td>&gt;40</td>
<td>5083</td>
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<td>Gopalan</td>
<td>Nutrition Foundation of India</td>
<td>1998</td>
<td>-</td>
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<td>District nutrition profiles survey</td>
<td>Food and Nutrition Board</td>
<td>1998</td>
<td>-</td>
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<td>National family health survey</td>
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<td>1998-99</td>
<td>15 - 49</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Mohan et al</td>
<td>Chennai urban population study</td>
<td>2001</td>
<td>&gt;20</td>
<td>1262 obesity</td>
<td>22.8</td>
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<td>Deshmukh et al</td>
<td>Rural Wardha</td>
<td>2006</td>
<td>&gt;18</td>
<td>2700 obesity</td>
<td>5.1</td>
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</table>

Table. Prevalence of obesity in India
This study and that of others from India indicate the need for a national level study on obesity indices to determine the thresholds for obesity parameters for detecting high risk groups for metabolic abnormalities. This can help in formulating prevention strategies, as studies in the West have demonstrated that weight reduction can delay the onset of diabetes.

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References


