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Coronary Artery Disease (CAD) Risk Factors in Women

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ABSTRACT
Cardiovascular disease particularly coronary artery disease is one of the principal killers in women. However, it remains under diagnosed, under treated and under researched in India. Although the lifetime risk of dying from the heart disease is more than eight times higher than that of breast cancers in women, yet they fear more of breast cancers and neglect precautions for coronary heart disease. We conducted a hospital based cross-sectional study and collected data in order to find out demographic profile in females suffering from CAD in East Delhi. Data from Jan to Sept 2008 was collected based on case record form. Age-specific rates were less than 40, 41-50, 51-60, 61-70 and more than 70 22.5%, 17.2%, 25%, more than 20% and 9.8%, respectively. The vast majority (82.8%) was Hindu in middle class (44.1%) and had parity more than three (78.3%). Out of 52% of HTN and 24% of T2DM patients, 23% and 11.3% had known hypertension (KHTN) and known type II diabetes mellitus (K2DM) with SBP≥140mmHg (30.6%) and DBP≥90 mmHg (22.9%), respectively. Demographic profile in this study may represent high rates in young CAD, smoking, HTN and DM in female. Thus, unfavorable trends in these risk factors provide the most likely explorations for observed trends and prevention in three levels.

Key words: CAD, Risk factors, Women

1. INTRODUCTION
Despite advantages in the detection and management of coronary artery disease (CAD) in recent years, CAD remains unrecognized in many special populations particularly women. The rapid urbanization, increasing literacy, scientific triumph and improving technology in the modern era has made women self-dependent and aware about their rights, but unfortunately their awareness and attitude towards their health especially cardiovascular diseases still remain largely ignored. Though the women constitute 48% of the total population in India, however due to inadequate perception and attention the coronary artery disease remains a formidable health problem in the women. Indeed, it is rightly said that coronary heart disease (CHD) the most prevalent from of heart disease, is "under-diagnosed, under- treated and under-researched" in women (1). The total number of CAD cases in India increased from 27 million in year 2000 to an enormous number of 35 million people in 2005 (2). From 1960 to 1995, the prevalence of CAD in adults increased from 3% to 10% in urban Indians and from 2% to 4% in rural Indians, with woman having rates similar to men (3). It is estimated that 31% of women will die from CAD; yet, about 70% of university educated women consider their risk of CAD to be <1%. The lifetime risk of a woman dying from heart disease is more than eight times higher than from breast cancer, yet they fear more of breast cancer and neglect any precautions for heart diseases (4).

2. MATERIALS AND METHODS
We conducted a hospital based cross-sectional study and collected data of all female patients admitted in coronary care unit of the Guru Teg Bahadur (GTB) Hospital and studied the demographic and risk factor profile and short term mortality in this group. All female subjects
diagnosed as acute coronary syndrome on the basis of classical chest pain, raised cardiac injury enzymes and unequivocal electrocardiographic changes were enrolled for this study. Diabetic situation was diagnosed based on fasting blood glucose more than 126 mg/dL and post prandial blood (2hPP) more than 195 mg/dL. Waist circumference more than 85cm was diagnosed as central obesity. Descriptive analysis was used to process of the demographic profile in tables and graphs. The consent form was signed by the subjects and approved by ethical committee.

3. RESULTS AND DISCUSSION

A total of 204 female subjects diagnosed as acute coronary syndrome from Jan to Sept 2008 were enrolled for this study. Age-specific rates for less than 40, 41-50, 51-60, 61-70 and more than 70 years were 22.5%, 17.2%, 25%, 21.1% and 9.8%, respectively (Table 1).

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
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<tbody>
<tr>
<td>&lt;40</td>
<td>40</td>
<td>22.5</td>
</tr>
<tr>
<td>41-50</td>
<td>35</td>
<td>17.2</td>
</tr>
<tr>
<td>51-60</td>
<td>51</td>
<td>25</td>
</tr>
<tr>
<td>61-70</td>
<td>43</td>
<td>21.1</td>
</tr>
<tr>
<td>&gt;70</td>
<td>20</td>
<td>9.8</td>
</tr>
<tr>
<td>Total</td>
<td>195</td>
<td>95.6</td>
</tr>
<tr>
<td>Missing</td>
<td>9</td>
<td>4.4</td>
</tr>
<tr>
<td>Total</td>
<td>204</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 1. Age distribution in CAD female

CAD in female based on ethnic background were Hindu (82.8%), Muslim (11.8%) and Sikh (2%) (Table 2).

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hindu</td>
<td>164</td>
<td>82.8</td>
</tr>
<tr>
<td>Muslim</td>
<td>24</td>
<td>11.8</td>
</tr>
<tr>
<td>Sikh</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>197</td>
<td>96.6</td>
</tr>
<tr>
<td>Missing</td>
<td>7</td>
<td>3.4</td>
</tr>
<tr>
<td>Total</td>
<td>204</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 2. Distribution of CAD female based on ethnic background

Majorities were belonging to middle socioeconomic group (44.1%) and multipara (78.3%). Central obesity (Waist circumference≥85cm) and menopause were 78.3 % and 63.6%, respectively. 52% were hypertensive and 24% were diabetic out of which 23% were known HTN and 11.3% Known T2DM. 13.2% were smokers of which 52% smoked bidi, 20% used hookah, another 20% consumed tobacco and 8% eat gutkha. During this period the mortality in females was 5% (Table 3, Figure 1).

<table>
<thead>
<tr>
<th>Smoking</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoker</td>
<td>27</td>
<td>13.2</td>
</tr>
<tr>
<td>Non Smoker</td>
<td>177</td>
<td>86.8</td>
</tr>
<tr>
<td>Total</td>
<td>204</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 3. Distribution of CAD female based on smoking
Females are usually exempted from getting coronary artery disease at young age. However, it is not very unusual to find young ladies presenting with acute coronary syndrome. There has been an explosive increase in the knowledge of the natural history of CAD in women in the past decade in west; however there is not much published data on CAD in women in India, especially in young. Excess of CAD among overseas Indians has been similar or greater in women than men (5). In a recent study comprising consecutive 200 female CAD patients; about 11.5% patients were below 45 yrs of age (6). Regarding the prevalence of risk factors of cardiac ischemic disease in Delhi study reported that 22% had hypertension, 41% obesity, 10% diabetes and 59% cigarette smokes, in this study prevalence of obesity, diabetes mellitus and high blood pressure were higher but smoking was lower than Delhi study. Although, estimated prevalence of obesity in India is 26.5% and only 8% of women were smokers which is like other Asian countries and lower than many western counties (7). Many studies have reported that smoking is an even stronger risk factor for women than men: it quadruples the risk of heart attack in young pre-menopausal women (8). About 50% smoked bidi / or hookah. Studies showed that these products being the cheaper option than cigarette is the most popular way of smoking among women in India. With attention to prevalence of young CAD and HTN in this study, high blood pressure is highly prevalent among women. Having hypertension raises a woman of risk of heart disease fourfold, and her risk of dying from a coronary event seven fold (9). There was no limitation in this study.

4. CONCLUSION
Demographic profile in this study reflect high incidence of young CAD, smoking, HTN and DM in female. Unfavorable trends in these risk factors provide the most likely explanations for the observed trends and prevention of CAD in women. This study was a part of my work in the Cardiac Clinic.

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AUTHORS CONTRIBUTION
This work was carried out in collaboration among all authors.

CONFLICT OF INTEREST
The authors declared no potential conflicts of interests with respect to the authorship and/or publication of this article.
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