On The Threshold...

Causes Of AMI
The multiple social realities, which the individual constantly negotiates, gradually translate into his personal reality. Thus the paramount belief pattern becomes his own social reality. When confronted with a situation where he has undergone a heart attack, his responses to this new health condition, are based on the reality, which he has internalized. He thus begins to comprehend and readapt, rearrange and reformulate a new social reality of his everyday life. Even while scientific and medical facts ascertain the causes of his heart condition, the meanings he himself assigns to be the causes become significant in many ways.

The process of identifying specific causes for a disease has become a valuable tool in diagnosing and treating diseases. In much of medical education and practice, dominant trends in health care do not yield to a simple explanation, in terms of a single cause. The Multiple Cause Approach is a more acceptable approach to prognosis.

Acute Myocardial Infarction can be termed as a multi factorial disease. Several researchers have reasoned that it is not possible to identify one single cause of AMI. The physiological combined with the socio-cultural and psychosomatic factors, in varying degrees, contribute to the development of heart disease.

According to medical science, most common modifiable risk factors for coronary artery disease have been identified as (i) Smoking; (ii) Hypertension; (iii) Hyperlipidemia (high blood cholesterol); (iv) Diabetes; (v) Obesity and (vi) Physical Inactivity. Added to these are - Behaviour patterns, Stress, Anxiety, Depression and Life events. These factors are considered to be contributing factors for causing the disease - aggravate its symptoms, accelerate its progression and worsen its prognosis. In addition, the results of excessive stress, anxiety and depression may retard an individual’s recovery (Haldar et al, 2005; Bethell, 1995).
Thus it is evident that there is a strong relationship between socio-cultural conditions and individual meanings, which may manifest in a Physiological health condition.

A study conducted by Sidiropoulos and Muthny (2000) on a sample of 100 people who were asked about their perception of myocardial infarction and cancer revealed that most of them perceived cancer as a disease with somatic causes, while myocardial infarction was more often, believed to be psychologically evoked. However, both the diseases were believed to be very dangerous but according to the people questioned, myocardial infarction carried better chances of prevention and therapy as compared to cancer.

Zerwic, King, and Wlcsowicz (1997), undertook a study upon 105 hospitalized patients after MI, and asked them about their perception about the cause of their disease. They listed three modifiable risk factors namely smoking, hypertension and elevated cholesterol.

In a survey conducted by Fielding (1987), on 102 post myocardial infarction patients, the reasons that they believed to have ‘caused their heart attacks’ were elicited. Among the primary causes enumerated were stress, worry, overwork and smoking. A similar study by Murray (1989) also confirmed these findings.

In a recent research carried out by the British Heart Foundation Rehabilitation Research Unit (Furze et al, 2002), people suffering from angina were asked through a postal survey using the York Angina Beliefs Questionnaire (version 1) regarding the beliefs, causation and coping in angina. This was compared with the attitudes of their friends who were matched for age and sex and were not suffering from angina. Peers believed that angina is caused by a worn out heart or a small heart attack and that it causes permanent damage to the heart. Peers were also more likely to believe that people with angina should take life easy, avoid exercise and excitement. Such beliefs about causation and coping in angina run counter to
professional advice. It is feared that over time this may contribute to reduction in patient concordance with risk factor reduction, and may help to create cardiac invalids instead.

In an earlier study carried out at the British Heart Foundation Rehabilitation Research Unit at Edinburgh with 180 patients of myocardial infarction, the same beliefs had emerged. Many patients appeared to view the heart as a kind of battery or fuel tank, and ‘energy’ it ‘contains’ is used up by work, worry, stress and emotional arousal. They often viewed heart attack as a ‘warning’ and believed that Rest or ‘taking things easy’, is recuperative and leading to restricted lifestyle is essential. As documented, prolonged rest carries medical and psychological dangers (Lewin, 1995).

These misconceptions about cardiac disease and the patients’ attributions are normative and socially constructed. Often, the persons’ family, friends and the media reinforce them.

This chapter has been divided into two sections: (a) The scientific and medical causes that lead to AMI and (b) The causes of AMI as perceived by the respondent.

**Medical Causes of AMI As Evaluated By the Doctor**

As mentioned above, medical science research is based on the causal approach. These then lead to prognosis and treatment. Often, it is difficult to ascertain one primary cause for AMI. It is a combination of multiple factors, which operate at different levels. This has been reiterated by King (1963) who writes, “When the impact of the social environment in the etiology of disease is considered, the assignment of a direct cause is often difficult if not impossible”.

In the field of medicine, the modifiable and non-modifiable risk factors for coronary artery disease have been identified as:
Smoking; (ii) Hypertension; (iii) Hyperlipidemia (high blood cholesterol); (iv) Diabetes; (v) Obesity; (vi) Physical inactivity; (v) Family history.

However, it has become increasingly acceptable that not all coronary events occur because of traditional risk factors (Ridker, Genest and Libby, 2001).

**Smoking:** The four leading causes of death - heart disease, cancer (especially lung cancer), cerebrovascular disease, and chronic obstructive pulmonary disease (COPD) – are strongly related to smoking. Cigarette consumption constitutes the single most important modifiable risk factor for coronary artery disease and the leading preventable cause of death. (Report of the Surgeon General, 1990; Centers for Disease Control, 1988).

Nicotine, which is an addictive substance, and carbon monoxide, found in tobacco smoke have been identified as the main culprits. They get bound to blood replacing oxygen in blood. Smoking has been associated with both aspects of atherosclerosis. It promotes the development of lesions and also promotes the occurrence of triggering events that lead to blockages. Clots may form within the blood vessels, which supply blood to the heart, brain and limbs.

Studies done till date, have clearly documented the effects of smoking on coronary risk. These studies suggest that, compared to non-smokers, those who consume 20 or more cigarettes daily, have a twofold to threefold increase in total coronary disease (Rastogi *et al*, 2005; Ridker, Genest and Libby 2001). Total life may be cut short by five to ten years in a heavy smoker.

**Hypertension:** Hypertension or high blood pressure is often called the silent killer because one can have it for years without knowing it. Blood pressure is determined by the amount of blood the heart pumps and the amount or resistance to blood flow in the arteries. Blood pressure normally varies during the day. It rises during activity and decreases with rest. The more the heart
pumps and narrower the arteries, the higher would be the blood pressure. A normal resting blood pressure reading is 120/80 mmHg. It is considered high if the blood pressure reading is consistently 140/90 mmHg or higher. Blood pressure is not considered life threatening by many people because it has few, if any symptoms. But uncontrolled blood pressure can increase the risk of stroke, heart attack and kidney failure. It is considered as a primary risk factor for coronary artery disease and is more common among those with a positive family history of blood pressure (Chadha et al, 1993; Joint National Committee, 1988).

High blood pressure damages the delicate inner lining of the blood vessels and increases the heart's workload. This in turn, speeds up the development of atherosclerosis (deposits of fat in the artery lining) and coronary artery disease. (Stamler, Stamler and Liv 1985; Chobanian, 1983). Diseased coronary arteries make it more difficult for the heart muscle to receive the blood flow and oxygen it needs when blood pressure levels are higher than normal. This risk is heightened markedly when concomitant hyperlipidemia, cigarette smoking, glucose intolerance, and other risk factors are present.

**High Cholesterol**: Cholesterol is a soft, waxy substance present in all human beings. It is produced in the liver and is also present in foods such as meat, eggs and dairy products. The body uses cholesterol to assist in the manufacture of hormones, vitamin D, to build cell walls and to produce bile, which breaks down other fats. Total cholesterol levels lower than 200mg/dl are desirable.

There is no longer any doubt about the causative relation linking elevated cholesterol levels to increased rates of premature coronary artery disease (Ridker, Genest and Libby 2001). The risk of developing coronary artery disease in individuals with high cholesterol at least doubles when compared with levels less than 200mg/dl (British Heart Foundation, 1994; Shaper et al, 1985. The main risk of coronary disease relates to high levels of
low-density lipoprotein (LDL); by contrast, high-density lipoprotein (HDL) appears to be protective.

**Diabetes:** Diabetes is a chronic disease. It is a condition that affects how insulin is produced and used in the body. Insulin is a hormone that controls blood sugar. A person with diabetes either does not produce enough insulin or is unable to use it properly (because of the body's inability to produce or respond properly to insulin). People with diabetes are unable to use the glucose in their food for energy. The glucose accumulates in the bloodstream, where it can have significant damaging effects on the heart, kidneys, eyes and nerves. Diabetes may double the risk of death from coronary artery disease. However, with proper care, people with diabetes can lead normal, satisfying lives. Young people with insulin dependent (type 1) diabetes have an increased risk of coronary artery disease and heart attack. Strict control of blood sugar levels in these people may prevent or delay the start of coronary artery disease. Diabetes is a stronger risk factor for coronary artery disease in women than in men (Canto *et al*, 2000).

**Obesity:** Obesity, defined as the excessive storage of energy in the form of fat, has adverse effects on health (National Institute of Health, 1985). Obesity is determined by measurement of body fat, not merely body weight. Obesity, or being extremely overweight, causes the heart to work harder to pump blood throughout the body. Many factors contribute to obesity, including genetics, environment, nutrition and levels of physical activity. Although heredity does seem to play a significant role in weight, heredity alone does not provide a plausible explanation for the recent surge in obesity prevalence (Rippe, Crossley and Ringer, 1998).

Studies have shown that excessive food intake also contributes importantly to the development of obesity (Bandini *et al*, 1990). There is a strong association between being overweight and the risk of developing coronary artery disease (Wenger, 2002; Ridker, Genest and Libby, 2001; Canto *et al*, 2000). Obesity increases strain on the heart and appears to
accentuate atherosclerosis by predisposing to hypertension, diabetes and high cholesterol. It may also further lessen physical activity. Fat deposits, especially around the abdomen area (abdominal obesity or the "beer belly"), are probably an important independent risk factor for developing coronary artery disease (Canto et al, 2000).

**Physical inactivity:** Nakovich Ambodick, a Russian physician, described in 1786 the pathology of physical inactivity when he wrote, ‘A body without motion deteriorates like still water’. The role of physical activity (independently) in preventing coronary disease and in decreasing mortality after myocardial infarction remains controversial (Julien, 1995; Hurst, 2001; Gotto and Farmer, 1988; Blocker, 1986; Oglesby, 1985). Nevertheless, physical activity is significant for maintaining body weight and helps prevent obesity. It also lowers blood pressure, cholesterol levels and also the raised blood glucose levels. Thus the risk of coronary artery disease is significantly decreased. The level of physical activity required for protection against coronary artery disease has been debated upon. Physical fitness rather than physical activity pattern has been described as protective (Oberman, 1985). Physical inactivity may be a lower risk factor than elevated serum cholesterol levels, hypertension, or smoking cigarettes.

**Family History:** Although age, gender and hereditary characteristics are unalterable, they identify potential high-risk individuals for whom early risk assessment and appropriate intervention may be warranted. It is common for coronary artery disease to occur in several members of the same family. To some extent, this can be attributed to the genetic inheritance of hypertension and high cholesterol, but shared habits (for example cigarette smoking) may play a part.

A family history of angina pectoris, myocardial infarction, or cardiac death is statistically significant if it occurred prior to 55 to 60 years of age in a parent, and it appears most predictive in men who are younger in age. The risk associated with family history may be important in individuals otherwise at

Migration from rural to urban environment can be termed as another special risk factor for individuals. Migration is usually associated with stress of seeking and maintaining the new job, stress of coping with the new job expectations, and stress of competing with the peer group who is in the organization longer. New affluence is associated with sedentary life style and higher consumption of calories, saturated fat, salt, tobacco and alcohol. These factors contribute to obesity, hyperlipidemia and diabetes (Rissam, Kishore and Trehan, 2001).

Though it is difficult to attribute a specific cause for a myocardial infarction, various risk factors can be analyzed. For the present study, the doctor attending to the patient was asked to specify three probable causes for the patient’s myocardial infarction in order of priority (Table 1).

There were 15 respondents who were diabetic. Thus, their myocardial infarction could be attributed to their diabetes as a first cause, since diabetes is a high risk factor for coronary artery disease.

There were 51 respondents who were smokers at the time of AMI. Out of these 51 respondents, for 45 respondents, smoking was attributed as the first cause of their myocardial infarction and for 6 respondents smoking as a cause, came second after diabetes.
Table 5.1

<table>
<thead>
<tr>
<th>Medical Cause of AMI</th>
<th>Cause 1</th>
<th>Cause 2</th>
<th>Cause 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Frequency</td>
<td>Frequency</td>
</tr>
<tr>
<td>Diabetes</td>
<td>15</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Smoking</td>
<td>45</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Hyperlipidemia (High Cholesterol)</td>
<td>1</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Hypertension</td>
<td>10</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>Obesity</td>
<td>10</td>
<td>14</td>
<td>1</td>
</tr>
<tr>
<td>Family History</td>
<td>4</td>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td>No Cause</td>
<td>15</td>
<td>55</td>
<td>87</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

There were a total of 6 respondents who had high cholesterol at the time of their myocardial infarction. High cholesterol was specified as a first cause for one respondent. For 4 of the respondents, high cholesterol was specified as a second cause and for one of the respondents, high cholesterol was specified as a third cause.

There were 23 respondents who had hypertension. Out of these 23 respondents, hypertension was attributed as a primary cause of their myocardial infarction for 10 respondents. For 9 patients, hypertension was specified as a second cause and for 4 patients; it was specified as a third cause.

Obesity as a risk factor was specified for 25 respondents. Out of these 25 respondents, obesity as a primary cause was specified for 10 respondents, as a second cause for 14 respondents and as a third cause for 1 respondent.
Individuals with a family history of heart disease are more at risk of dying suddenly during an acute myocardial infarction (Kaikkonen et al, 2006). There were a total of 23 respondents who had a family history of heart disease. Family history as a primary cause was specified for 4 respondents in the present study. There were 12 respondents for whom family history was specified as a second cause and for 7 respondents; it was specified as a third cause.

Patient's Perception of the Cause of AMI

Over the past two decades substantial evidence suggests that it is not just biological risk factors that are important for the development of coronary heart disease (Welin, Rosengren and Wilhelmson, 1995), but social, cultural and psychosocial factors also play a vital role. Though, controversy still exists over the independent role of psychosocial factors in AMI. Cases of AMI often exhibited type–A behaviour, more depressive symptoms and showed worse scores on general well being (Coelho et al, 1999).

The beliefs and attributions that people hold can influence their health in one of the two main ways: first, by affecting their health behaviour, such as attendance at a screening programme; the food they eat; whether they take prescribed medication once declared ill; and secondly, more directly by affecting a physiological system, such as the immune or cardiovascular system. What people believe about their illness may effect how they cope with it.

The respondents’ perception about their having had an AMI included Destiny, Economic stress, Personal stress, Work stress and Family stress among other influencing factors. Belief in destiny leads the individual to locate the cause in an outside force and may be helpful in enabling him to cope and move on in life. Scientific causes elude their sensibilities, either because of their ignorance or lack of awareness. A substantial number of respondents
and their spouses believed **destiny** to be a major cause. One of them said, “*Meri kismet main yehi tha shayad*” (Perhaps this was my destiny).

Others pointed out that **Physical stress** was a primary cause. One respondent initially attributed his AMI to indigestion but then as an afterthought believed that his heart attack was caused by climbing four flights of stairs twice in a day and also his having to walk more on that particular day. The strain of heavy physical work in manual labour or other kinds of physical exertion was the reason reported by many respondents for them getting an AMI. One respondent said, “I was getting my house constructed. I would work in the office in the morning and then go to the construction site in the evening. This was physically very strenuous for me and I was exhausted by the end of the day. I now realize it was too much for me”

**Family stress** pertains to marital discord, property disputes, ill health of loved ones and/or stress of children’s education and their marriage.

**Work Stress** is related to mentally taxing or demanding jobs like accounting or jobs that carry high degree of responsibilities.

**Economic stress** deals with financial pressures on the individual and may range from meeting basic family needs, to arranging a daughter’s wedding.

**Personal stress** is more pronounced in highly sensitive people and manifests itself at times of personal loss. One respondent mentioned that he was overly depressed at his brother’s death who had died in an accident, Another one was in shock over his son’s death and attributed the occurrence of AMI to this.

In the present study, all the 100 respondents were asked during hospitalization at the onset of AMI about the perceived cause of their AMI. They were asked to specify three causes in order of priority out of the causes specified in the questionnaire (Table2)
Patient's Perception of the Cause of AMI

Table 5.2

<table>
<thead>
<tr>
<th>Cause</th>
<th>Cause 1</th>
<th>Cause 2</th>
<th>Cause 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Destiny</td>
<td>24</td>
<td>14</td>
<td>3</td>
</tr>
<tr>
<td>Physical Overwork</td>
<td>8</td>
<td>13</td>
<td>5</td>
</tr>
<tr>
<td>Family Stress</td>
<td>19</td>
<td>16</td>
<td>3</td>
</tr>
<tr>
<td>Work Stress</td>
<td>16</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Economic Stress</td>
<td>8</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Personal Stress</td>
<td>3</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Smoking</td>
<td>12</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Diabetes, Hypertension, Obesity</td>
<td>6</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Family History</td>
<td>4</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>No Response</td>
<td>0</td>
<td>17</td>
<td>77</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Data reveals that more than one third (41 respondents) blamed their destiny to be the cause of their myocardial infarction. Out of these one fourth (24 patients) believed destiny to be the main cause of their myocardial infarction, 14 respondents blamed destiny as a secondary cause and 3 respondents blamed destiny as a third cause.

A total number of 26 respondents (one fourth) gave physical overwork as the perceived cause of their myocardial infarction. From among these 8 respondents specified physical overwork as the main cause, 13 respondents thought physical overwork to be secondary and 5 respondents specified it as a third cause in order of priority.

A total of 38 respondents (a little more than one third) specified family stress as a cause of their myocardial infarction, out of these, 19 respondents thought family stress to be the main cause of their myocardial infarction. 16
respondents blamed family stress as a second cause and 3 respondents specified family stress as a third cause in order of priority. One of the respondents said, “my younger brother died in a car accident and I was emotionally shaken. That is why I got a heart attack”.

A total number of 28 respondents (a little over one fourth) blamed work stress to be the cause of their myocardial infarction. As many as 16 respondents thought they had their myocardial infarction because of some form of stress at work. For 8 respondents work stress was the secondary cause and 4 respondents specified work stress as the third cause.

A total of 22 respondents (nearly one fourth) perceived economic stress/hardships as the main cause of their myocardial infarction. Out of these 8 respondents thought economic hardship to be the main cause of their myocardial infarction. For 12 respondents it was the second cause and for 2 respondents it was the third cause.

Personal stress as a cause was given by a total number of 11 respondents. From among these, 3 respondents believed personal stress to be the main cause of their myocardial infarction. Seven respondents blamed personal stress as a secondary cause and only 1 respondent thought personal stress to be the third cause for his myocardial infarction. The study shows that as many as 99 respondents blamed stress in one form or the other was the cause of their myocardial infarction. These findings are similar to a study done by Bar – On D et al in 1994 and Koslowsky, Croog and La Voie in 1978.

Despite half of respondents being smokers, not even one fourth (only 20) of them specified smoking as a risk factor or a cause for their myocardial infarction. Out of these 20 respondents, only 12 respondents blamed their unhealthy habit of smoking to be the main cause of their myocardial infarction. 7 respondents specified smoking as a second cause and only 1 respondent specified it as a third cause.
It is well documented that the risk of having a myocardial infarction increases manifold in patients suffering from diabetes and hypertension or in those who are obese. But due to lack of awareness, not many respondents could correlate their diabetes, hypertension or obesity to be the cause of their myocardial infarction. Only 9 respondents specified either of these as the cause of their myocardial infarction. Out of these 9 respondents, 6 respondents thought their diabetes, hypertension or obesity to be the primary cause of their myocardial infarction and only 3 respondents specified these as a secondary cause. None of the respondents specified diabetes, hypertension or obesity as a third cause.

Family history is a non-modifiable risk factor for myocardial infarction. It is suggested and also expected that people with a family history of heart disease would be more careful about their lifestyle in order to avoid additional risk to their lives. But according to the trends of this study, not many respondents were aware of their family history of heart disease as a risk factor. Half out of a total of twenty-three respondents specified family history as a cause of their myocardial infarction. Only 4 respondents specified family history as the primary cause of their myocardial infarction. 3 respondents specified it as a second cause and 4 respondents specified family history as a third cause.

In the present study, destiny emerged as a primary cause of AMI as cited by a total of 41 respondents, stress in one form or the other, emerged as the next major cause of myocardial infarction as cited by the respondents. Stress is a psychological state of mind that involves both the cognitive as well as the emotional aspect. Though stress may be a risk factor for causing a heart attack, scientists still do not know exactly how stress may be involved in developing heart disease. It can be seen that negative emotional experiences, which are associated with the experience of stress, diminish both the individuals’ general quality of life and his sense of well-being. Stress may affect health but, at the same time, a state of ill health can both act as a
significant source of stress and also sensitize an individual to other sources of stress by reducing their capability to cope.

Many respondents who were actually smokers or were suffering from diabetes, hypertension, were obese or had a family history of heart disease, did not mention the actual risk factors such as smoking, diabetes, hypertension, obesity and family history to be the cause of their AMI. They attributed the cause of their heart attack to causes other than these. Despite general knowledge about heart attack, respondents with known risk factors continue to be largely ignorant of their personal risks and to some extent, of the course and the outcome of the disease. Although it is understandable, these causes as reported by the respondents are completely different from that of the clinician.

Thus, it clearly emerges that the misconceptions and the respondent’s beliefs about the cause of AMI are embedded in their socio cultural meanings. Though the physiological condition can be understood and treated medically, it is these socio cultural meanings, which cannot be ignored. Unless the clinician/social worker directly addresses this aspect of the patients’ frame of mind and clarify the misconceptions, patients may experience unnecessary distress or emotional burden. It is in this light that the following chapter, which deals with the awareness about the disease and its implications, have been discussed in detail.