CHAPTER ONE

INTRODUCTION
Over the 20\textsuperscript{th} century most countries in the world have experienced great transitions in social structures, economics, politics, education, and home environments. This has resulted in a shift from agricultural and rural societies to industrial and urban societies in the first three quarters of the 20\textsuperscript{th} century with a further shift in the last quarter to information-based societies. These social and economic transitions have resulted in major changes in population demography, industrial structure, income levels, expenditure patterns, education levels, family structures, eating habits, and physical activity. These changes have markedly increased Coronary Artery Disease (CAD) risk factors and disease rates.

**Coronary Artery Disease – Nature and Causes**

Coronary Artery Disease (CAD) is the most common, serious, chronic, life-threatening illness all over the world. CAD causes more deaths, disability, and economic costs than many other illnesses. CAD has been defined as “impairment of heart function due to inadequate blood flow to the heart compared to its needs, caused by obstructive changes in the coronary circulation to the heart” (WHO, 1982). The WHO has drawn attention to the fact that CAD is our modern “epidemic”, i.e., a disease that affects populations. CAD is generally caused by atherosclerotic disease of the coronary arteries. Atherosclerosis
results in the thickening of the arteries due to deposition of fat-like substances known as ‘plaque’. The plaque can eventually burst, tear or rupture, creating a “snag” where a blood clot forms and blocks the artery.

The epidemics of CAD began at different times in different countries. In the United States, the epidemics began in the early 1920s (Rose, 1985); in Britain in the 1930s (Hart, 1983); in several European countries, still later, and now the developing countries like India are catching up. According to the WHO, CAD, long considered a problem of industrialized nations, is spreading to the rest of the world very fast, killing as many as 12 million people prematurely every year. (WHO News, Oct. 29, 2002).

Countries where the epidemic began earlier are now showing a decline. The decline has been attributed to changes in life-styles and related risk factors (Stamler, 1985). In the US, the peak mortality rate from CAD occurred between 1962 to 1965, since then it has been steadily decreasing. [1993 Heart and Stroke Facts Statistics, American Heart Association (AHA)].

Coronary Artery Disease (CAD) manifests itself in many presentations. The most common of these are “angina pectoris” and “myocardial infarction”.
Angina Pectoris

Angina Pectoris is the medical term for chest pain or discomfort due to coronary heart disease. Angina is a symptom of a condition called myocardial ischemia. It occurs when the heart muscle (myocardium) doesn’t get as much blood (hence, as much oxygen) as it needs. This usually happens because one or more of the heart’s arteries is narrowed or blocked. Insufficient blood supply is known as ischemia. Typical angina is uncomfortable pressure, fullness, squeezing or pain in the center of the chest. The discomfort may also be felt in the neck, jaw, shoulder, back or arm. Many types of chest discomfort aren’t related to angina. (American Heart Association, 2002).

Angina often occurs when the heart needs more blood. For example, running to catch a bus could trigger an attack of angina while walking might not. Angina may happen during exercise, strong emotions, eating or extreme temperatures like cold weather. Angina is a sign that the person is at an increased risk of heart attack, cardiac arrest and sudden cardiac death. (AHA, 2002). Angina may take three forms-stable angina, unstable angina, or variant angina.

**Stable angina:** People with stable angina (or chronic stable angina) have episodes of chest discomfort that are usually predictable. They occur on exertion or under mental or
emotional stress. Normally the chest discomfort is relieved with rest and/or medication.

Unstable Angina: In people with unstable angina, the chest pain is unexpected and it usually occurs while at rest. The discomfort may be more severe and prolonged than typical angina. The most common cause is atherosclerosis. The following three groups of patients may be said to have unstable angina: (1) patients with new onset (<2 months) angina that is severe and/or frequent (≥3 episodes/day); (2) patients with accelerating angina, i.e., those with chronic stable angina who develop angina that is distinctly more frequent, severe, prolonged, or precipitated by less exertion than previously; (3) those with angina at rest (Braunwald, et.al., 2001).

Inflammation, infection and secondary causes also can lead to unstable angina. Unstable angina is an acute coronary syndrome and should be treated as an emergency. People diagnosed with unstable angina are at an increased risk for acute myocardial infarction, severe cardiac arrhythmias, and cardiac arrest leading to sudden death.

Variant angina pectoris: Variant angina pectoris is also called Prinzmetal's angina. It is a relatively uncommon form of unstable angina characterized by recurrent and prolonged attacks of severe ischemia. And nearly always occurs when a
person is at rest. It doesn’t follow physical exertion or emotional stress. Attacks can be very painful and usually occur between midnight and 8 a.m. Variant angina is due to coronary artery spasm. About two-thirds of people with variant angina have severe coronary atherosclerosis in at least one major vessel.

Angina can also occur in people with valvular heart disease, hypertrophic cardiomyopathy or uncontrolled high blood pressure.

**Myocardial Infarction**

Myocardial infarction (MI) is the medical term for heart attack. MI occurs when there is an abrupt decrease in the blood supply to part of the heart muscle – the myocardium. This reduction or stoppage of blood supply happens when one or more of the coronary arteries supplying blood to the heart muscle is blocked. This is caused usually by atherosclerosis. If the blood supply is cut off for more than a few minutes, muscle cells suffer permanent injury and die. This can kill or disable someone, depending on how much heart muscle is damaged.

Sometimes a coronary artery temporarily contracts or goes into spasm. When this happens the artery narrows and blood flow to part of the heart muscle decreases or stops. A spasm can occur in normal-appearing blood vessels as well as vessels
partly blocked by atherosclerosis. The causal mechanism of a spasm is not known, but a severe spasm can cause a heart attack. The first coronary presentation for women is more likely to be angina, whereas in men it is more likely to be myocardial infarction.

**Coronary Artery Disease: Prevalence**

Coronary Artery Diseases account for about 42 percent of all deaths and are the leading causes of morbidity and health care utilization. CAD kills and disables people in their most productive years. It is one of the leading causes of death in men and women and in every racial or ethnic group [National Heart, Lung, & Blood Institute (NHLBI), 1996]. According to the WHO, CAD, long considered a problem of the industrialized nations, is spreading to the rest of the world very fast killing as many as 12 million people prematurely every year (WHO News, Oct. 2002). During the past 30 years there have been major reductions in mortality rates for the various forms of heart disease. CAD, however, continues to be the most common serious threat to life and health. The 1999 Statistics for the United States show that CAD is the single leading cause of death in America. About 529,659 deaths (one of every 5 deaths) occurred due to CAD in the US in 1999, (AHA, 2002).

In 1994, CAD accounted for about 72 percent of all deaths
from heart disease. Heart disease was the leading cause of death for the White, Black, and Asian US population. The CAD death rate is twice as high in blacks than in white at age 24 to 34, but this difference disappears by age 75. In American Indians, CAD is the leading cause of death (NHLBI, 1996).

In the US, an estimated 13.7 million people have CAD, about one-half of whom have acute MI and half have angina pectoris (AHA, 2002). Approximately 900,000 persons in the US experience MI annually; of these, about 225,000 die. Of those who die, approximately one-half do so within 1 hr. of the onset of symptoms, before reaching a hospital (Ryan, et. al, 1996, NHLBI, 1992). In the US estimates are that about 6,400,000 people suffer from angina and an estimated 400,000 new cases of stable angina occur each year (Framingham Heart Study, NHLBI).

The prevalence and mortality from CAD increase with decreasing levels of family income and education (Rogot et. al., 1992).

*Gender wise Prevalence of CAD*

CAD is the major cause of death beginning around age 40 in men and 65 in women (National Center for Health Statistics, 1993). The female to male ratio for CAD is 1:10 at ages 24 to
34, but this ratio declines to 1:6 by ages 75 to 84. (Gordon & Kannel, 1971).

Out of the 12,600,000 victims of CAD, about half are male and half are female. For men, prevalence of CAD is 7 percent at ages 40 to 49 years, 13 percent at 50 to 59 years, 16 percent at 60 to 69 years, and 22 percent at ages 70 to 79 years. For women, the corresponding estimates by age are 5, 8, 11, and 14 percent respectively, which are substantially lower than in men.

Among American adults age 20 and older, the estimated age-adjusted prevalence of CAD for non-Hispanic Whites is 6.9 percent for men and 5.4 percent for women; for non-Hispanic blacks, 7.1 percent for men and 9 percent for women; and for Mexican-Americans, 7.2 percent for men and 6.8 percent for women (AHA, 2002).

CAD among women is on the rise and this has become a growing concern of the WHO. According to a recent Yale University study in the US, women under the age of 75 are twice as likely as men to die after a heart attack. The mortality rate from CAD in women in their 60s and 70s nearly equals that of men. Post-menopausal women are as equally prone to CAD as their male counterparts.
Prevalence of CAD in India

The health transition in India reflects the growing burden of CAD. Apart from the epidemiological studies conducted in India, the experience of Indian migrants in several countries has also contributed to the understanding of the risks of CAD in India. Data from the WHO and the World Bank indicate that in India, deaths attributable to CAD have increased in parallel with the expanding population, and will continue to increase. In 1990, approximately 25% of deaths in India were attributable to CAD (Yusuf et al., 1998).

Studies of Indian and other South Asian migrants in several countries have revealed higher CAD mortality rates among Indians in comparison to other ethnic groups (Enas & Mehta, 1995). This has been consistently observed across diverse cultures into which the Indian diaspora has become embedded. Asian Indians have the highest rates of mortality and morbidity from CAD amongst all the ethnic groups studied, and CAD in them is often premature and follows a malignant course. It has been projected that CAD would be the greatest killer in India by the year 2015 accounting for nearly a third of all deaths. CAD mortality is likely to rise by 103% in men and 90% in women during the period 1985 to 2015 (Bulatao & Stephens, 1992).
published by WHO indicate that in 1990, CAD accounted for 2.4 million deaths in India. Of these CAD deaths, 52.2% occurred below the age of 70 years in contrast to 22.8% in the industrial nations (Reddy & Yusuf, 1998).

Morbidity and mortality due to CAD is two to five times higher among Indians than anywhere in the world. Earlier studies indicate that CAD prevalence has always been higher in some sections of population in the Indian sub-continent. Within India prevalence rates vary regionally and within a region there are rural-urban variation. In the same town or city they vary in different religious and socio-economic groups (Shukla, 1999). Population surveys do not provide clear time trends, and the vast geographical, ethno-cultural and socioeconomic diversity of India has not been adequately encompassed.

There are few studies on the prevalence of CAD in the general population. In a study conducted at Chandigarh on urban population over the age of 30 years by a 12-lead ECG, the prevalence was found to be 65.8 and 47.8 per 1000 males and females respectively (Sarvotham and Berry, 1968). In a village in Haryana, the prevalence was 22.8 and 17.3 per 1000 males and females respectively (Dewan et al., 1974). Two studies have depicted that young patients (below 40 years of age)
constituted 5-25 percent of the total patients of CAD (Gupta et al., 1987; Pahlajani et al., 1989).

A survey in Delhi indicated that prevalence of CAD is 9.67% in the age range of 25-64 years, while ECG criteria alone yielded an estimate of only 3.14% (Chadha et al., 1990).

A community-based epidemiological survey of CAD and its risk factors carried out over the period 1984-87 on a random sample of adults aged 25-64 years from Delhi and adjoining rural areas, revealed an overall prevalence of 96.7 per 1000 and 27.1 per 1000 in urban and rural population (Chadha et al., 1997). Prevalence of CAD in Indians has been reported from various studies as ranging from 10 per 1000 to 126 per 1000 (Gupta, 1997).

Studies on the prevalence of CAD in India reveal some disturbing trends (Fig.1). The graph represents published data on community-based prevalence studies covering a 40-year period and involving different age groups and regions. The graph confirms the current opinion that the actual prevalence of CAD is zooming in a linear fashion. It increased from 4% in 1960 to 11% in 2001, i.e., from every 25th individual in 1960, to every 9th in 2001 can be confidently suspected of having CAD (Krishnaswami, 2002).

The WHO estimates that if no action is taken to check the
occurrence of CAD and the current trends continue, 25 percent more healthy life years will be lost to CAD globally by 2020, and the brunt of this increase will be borne by the developing countries. (WHO News, Oct. 2002).
Fig. 1: The Prevalence of CAD in India

<table>
<thead>
<tr>
<th>Year</th>
<th>Prevalence (%)</th>
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<tbody>
<tr>
<td>1960</td>
<td>4</td>
</tr>
<tr>
<td>1962</td>
<td>5.5</td>
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<tr>
<td>1968</td>
<td>6.5</td>
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<td>1990</td>
<td>9.7</td>
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<tr>
<td>1994</td>
<td>10.9</td>
</tr>
<tr>
<td>2001</td>
<td>11</td>
</tr>
</tbody>
</table>

- 1960: (30-70 years)
- 1962: (30-70 years)
- 1968: (>30 years)
- 1990: (25-64 years)
- 1994: (35-64 years)
- 2001: (>20 years)
Risk Factors For Coronary Artery Disease

The development of the concept of "risk factors" and their relationship to the incidence of CAD evolved from prospective epidemiological studies in the US and Europe. These studies demonstrated a consistent association among characteristics observed at one point in time in apparently healthy individuals with the subsequent incidence of CAD in those individuals. As a result of these associations, each characteristic has been termed a risk factor for CAD.

A risk factor for a disease may be defined broadly as "any habit or trait that can be used to predict an individual's probability of developing that disease". A risk factor so defined may be a causative agent but it is not always necessary. A more limited and specific definition is that a risk factor is a causative agent or condition that can be used to predict an individual's probability of developing disease.

Some risk factors can be modified while others cannot. Risk factors may be truly causative, contributive, or predictive.

CAD is a multifactorial disorder. Presence of any one of the risk factors places an individual in a high-risk category for developing CAD. The greater the number of risk factors present, the more likely one is to develop CAD. The principal risk factors for CAD are age, sex, family history, smoking,
hypertension, diabetes, obesity, elevated serum cholesterol, psychosocial factors, sedentary lifestyle, etc.

CAD risks factors have been classified as lipid and non-lipid factors; conventional and emerging risk factors; independent, predisposing, and conditional risk factors (Grundy et al., 1999).

The lipid factors include total cholesterol level, triglyceride level, low levels of HDLC and high levels of LDLC, lipoprotein (a), etc, while non-lipid factors include diabetes, hypertension, smoking, positive family history, gender, etc. Conventional risk factors include smoking, diabetes, hypertension, obesity, age, gender, dyslipidemia, family history and sedentary lifestyle. Emerging factors include psychosocial factors, elevated lipoprotein (a) etc. The independent risk factors are themselves capable of triggering onset of CAD and include smoking, hypertension, elevated cholesterol, diabetes, age and sex. The presence of predisposing factors worsens the effect of independent risk factors. These include obesity, physical inactivity, family history, psychosocial factors, etc. The conditional risk factors, like elevated serum triglycerides, are associated with increased risk for CAD, although their causative, independent, and quantitative contributions to CAD have not been well documented.
In the present study, the investigator has categorized the CAD risk factors into seven categories, viz., Lifestyle, Psychosocial, Environmental, Personal, Dietary, Physical, and Organizational.

**Lifestyle Risk Factors**: This is a class of established risk factors for CAD which include sedentary lifestyle, diabetes mellitus, and obesity. Unhealthy or sedentary lifestyle is a risk factor for CAD.

Diabetes mellitus is an independent risk factor for CAD and increases risk by two to three times for men and three to five times for women as compared to non-diabetics (Krolewski et al., 1991). CAD is the leading cause of death in diabetic patients, and approximately 25 percent of MI survivors have diabetes. Diabetic women have the risk of recurrent MI compared with diabetic men. The greater risk of CAD in diabetic women compared to diabetic men may be explained in part by the greater adverse effect of diabetes on lipoproteins in women (Walden et al., 1984).

Observational studies of long duration indicate that obesity is an independent risk factor for CAD in men and women (Jousilahti, et al., 1996). Excess weight increases the strain on the heart, raises blood pressure, blood cholesterol and triglyceride levels and lowers HDL cholesterol levels. The
distribution of body fat plays an important role. Intra-abdominal fat deposition poses a greater CAD risk than peripheral obesity.

Lifestyle factors increase the risk of CAD several times if other established risk factors are also present.

**Psychosocial Risk Factors**: A growing body of evidence links psychosocial factors to CAD. Psychosocial factors that are important in CAD incidence are anxiety, poor social support, hostility, type A behavior, and negative emotions (Theorell, 1992). Depression has emerged as a major risk factor for mortality in survivors of MI. These psychosocial factors are often lumped together under the umbrella rubric of stress.

Acute emotional reactions act as triggers of acute coronary syndromes. In the presence of atherosclerosis, mental stress induces silent myocardial ischemia. An episode of anger is capable of triggering acute MI (Mittleman et al., 1995). The potential mechanism by which acute emotional stress could trigger coronary events are the release of catecholamines, leading to an increase in heart rate, blood pressure, myocardial oxygen demand, etc. These factors could contribute to the rupture of a vulnerable plaque.

Type A behavior is the extensively studied risk factor for CAD. Friedman and Rosenman (1974) observed the following behavioral characteristics in cardiac patients: (a) almost
obsessive attempts to achieve many poorly defined goals; (b) love of competition; (c) a strong need for recognition and advancement; (d) a consistent preoccupation with time and need to get things done in a hurry; (e) intense concentration and alertness; and (f) high levels of free-floating hostility.

Studies have revealed a strong correlation of type A behavior with extent of coronary atherosclerosis. Barefoot and others proposed a 'hostility-cynicism factor' as being associated with CAD. This pattern of behavior has been described as a cynical and untrusting view of mankind, the frequent experience of negative emotions when dealing with others, and the frequent expression of overt anger and aggression when faced with frustration of problems. Antagonistic hostility characterized by a disagreeable and uncooperative interpersonal interaction has been shown to be a coronary risk factor. Current evidence suggests that overt expression of hostility and cynicism is a potent predictor of CAD.

Depression may increase the risk of a first acute MI in medically healthy patients by two to three folds. Panic disorder approximately doubles the risk of CAD and anxiety may be provocative.

Lack of social support and poor social ties has emerged as a risk factor for CAD. Studies show that people with poor social
support are more likely to die of CAD as compared to people with strong social ties (Marmot and Syme, 1976). A study by Karasek and Theorell (1990) indicated that people with high social support showed fewer symptoms of CAD than people with low social support.

**Environmental Risk Factors:** Substantial evidence points to a relationship between risk of CAD and environmental factors. Extreme temperatures or climates are known to aggravate the risk of CAD. Extreme cold climates may lead to the onset of angina in people. Also, frequent climatic changes, like moving from hot to cold climates, may trigger CAD. Seasonal variations have been observed in the occurrence of CAD. There is an increase in the number of CAD patients in hospitals during winter months of January through March (Alexander et al., 1998).

Living in crowded places, where noise, and stress is more, may also increase the likelihood of developing CAD. Crowded localities have poor hygiene, which may have an effect on the development of CAD. All types of pollution viz. air, water, noise, domestic and smoke, may increase the risk of CAD. Evidence indicates that chronic exposure to environmental smoke may increase the risk of CAD (AHA, 2002). Drug misuse (overuse or underuse) may make a person more prone to CAD.

These risk factors increase the risk of CAD manifolds in
the presence of other established risk factors.

**Personal Risk Factors:** Cigarette smoking is an established risk factor for CAD (Castelli, 1996). Strong relationships between cigarette smoking and CAD have been observed in both sexes, in the young and the elderly, and in all racial groups. Cigarette smoking increases risk for CAD two-to threefold and interacts with other risk factors to multiply risk. There is no evidence that filters or other modifications of the cigarette reduce risk. Passive smoking also increases CAD risk. The degree of risk of developing CAD is directly related to the number of cigarettes smoked per day.

High alcohol intake is an independent risk factor for CAD. There is evidence that light consumption of alcohol is protective against CAD, while heavy consumption is harmful (Doll, 1997).

The causative role of Oral Contraceptive Pills (OCPs) in CAD has been debatable. However, it has been observed that women using OCPs have higher systolic and diastolic blood pressure. The risk of MI is increased in women taking OCPs. In female patients with past thromboembolic events, other CAD risk factors, and advanced age, OCPs may increase the risk of CAD.

A positive family history of CAD is a nonmodifiable risk factor for CAD. CAD in a male relative with onset at age 55 or
less or in a female relative with onset at age 65 or less is defined as a positive family history. There has been consistent evidence of an association between CAD and a history of first-degree relatives with early onset CAD. Premature development of CAD among first-degree relatives increases the risk 2 to 5 fold of an individual developing CAD. Most people with a strong family history of CAD have one or more other risk factors for CAD.

Male gender is another unmodifiable risk factor for CAD. Men have a greater risk of CAD than women do, and they have attacks earlier in life. Even after menopause, when women's risk for CAD increases, it's not as great as men's. CAD incidence rates in men are similar to those in women 10 years older.

Relationship between socio-economic status (SES) and CAD has been revealed by several studies. At any one point in time, marked differences in CAD prevalence may be observed between socioeconomic subgroups of the population. Earlier it was observed that CAD rates were higher in people belonging to affluent groups i.e. high SES groups. Currently, persons with low SES are at a high risk for CAD (Kaplan & Keil, 1993). There may be several reasons for this. First, risk factors for CAD, such as smoking, hypertension, obesity, and sedentary lifestyle are higher in persons with low SES. Second, some of
these risk factors as well as psychosocial responses to stressors may increase exposure to CAD triggers in these groups. Finally, these groups may have less access to care. The relationship between SES and CAD may depend on underlying factors other than SES, and it is likely that different relationships may be observed in different countries depending on the degree of urbanization, social support structures, lifestyles, and interaction with other psychosocial factors.

Lack of religious affiliations also indirectly influences the occurrence of CAD. People with strong and firm religious beliefs are less likely to suffer from CAD as compared to people who are non-believers. However, there is no empirical evidence linking religious affiliations directly to CAD.

*Dietary Risk Factors:* Diet and nutritional factors are an important contributor to CAD. However, there is no substantial evidence present. Processed food including fast food is popular among city dwellers. The WHO has reported a direct connection between these foods and CAD. Low-fiber diet is also an important factor.

High salt intake has been linked to hypertension and it increases the risk for CAD substantially. Consumption of high amounts of saturated fat may increase the risk of CAD through the process of hypercholesterolemia.
Other dietary factors which may increase the risk for CAD include high sugar intake, malnourished diet, over dieting, excessive coffee or tea drinking.

A diet with low salt and sugar content, high fibre content and polyunsaturated fats is recommended for the prevention of risk of CAD.

**Physical Risk Factors:** The incidence and prevalence of CAD increases sharply with age. Increasing age is one of the most potent CAD risk factors. About four out of five people who die of CAD are 65 or older. At older ages, women with CAD are more likely than men are to die from it within a few weeks (AHA, 2002).

Physical inactivity roughly doubles the risk of CAD. Regular, moderate-to-vigorous physical activity helps prevent CAD. Physical activity slows progression of coronary atherosclerosis in humans. Several observational studies have established that physical fitness, on-the-job physical activity, and leisure-time physical activity reduces the risk of CAD (Haskell, 1994). The overall risk of MI and sudden cardiac death is reduced among those who exercise regularly.

The mechanism of benefit afforded by regular physical activity is multifactorial and involves improved glucose
tolerance, increased HDL levels, reduced obesity, reduced blood pressure, etc.

Several major prospective epidemiologic studies have found that both systolic and diastolic hypertension have a strong, positive and graded relationship to CAD (Collins & MacMohan, 1994). The risk imposed by hypertension is heightened substantially when other risk factors are present. Hypertension alone causes about 50 percent of CAD worldwide (WHO News, Oct. 2002).

High Serum Total Cholesterol (>240 mg/dl) causes about one-third of CAD worldwide. A continuous, graded, direct relationship between serum total cholesterol level and CAD is well established. This relationship has been confirmed in numerous countries, in women, the elderly, and middle-aged adults (Law, et al., 1994). Cholesterol levels obtained in young adulthood predict CAD decades later (Klag, et al., 1993). High levels of LDL cholesterol (Low Density Lipoprotein), also known as “bad” cholesterol and low levels of HDL cholesterol (High Density Lipoprotein), also known as “good” cholesterol, have been significantly linked to CAD.

Hypertriglyceridemia has also been considered to increase the risk for CAD (Austin, et al., 1998). A number of mechanisms, direct and indirect, may link serum triglycerides
and CAD.

Other physical factors for CAD include inability to rest and physical stress.

**Organizational Risk Factors:** Work-related factors are also important predictors of CAD. Excessive noise, exposure to danger, and poor physical conditions may have a significant impact on stress and health. Stressors such as unrealistic time pressures, high level of responsibility, non supportive superiors and colleagues, work overload, and lack of control at work, have all been associated with increased incidence of CAD.

Work stress or job stress has been studied extensively as a predictor of CAD. The two-dimensional model of job stress, developed by Karasek and Theorell (1990) predict that personal control over a stressor and job stress predicts CAD. The 'job demand control hypothesis' defines the term 'job strain'. According to this model, there are two aspects of job strain: job demands, which reflect conditions that affect performance, and job autonomy, which reflects the control over the speed or the nature of decisions made within the job. The job demand and control hypothesis suggests that high job demands and low job autonomy (control) predict CAD. High social support mediates and moderates the effects of low job control and high job demand.
An awareness of the above-mentioned risk factors of CAD is necessary to reduce the prevalence of CAD. Therapeutic interventions as well as personal awareness is required for the control of several modifiable risk factors.

A large no. of studies have highlighted that the primordial prevention strategy of CAD involving control of three modifiable risk factors-smoking, physical inactivity, and aberrant diet-is the most cost-effective method (Beaglehole, 2001; WHO Study Group, 1985).
Coronary Artery Disease Risk Factors: The Evidence Supporting Their Association With Disease, And Their Responsiveness To Intervention.

<table>
<thead>
<tr>
<th>RISK FACTOR</th>
<th>EVIDENCE FOR ASSOCIATION WITH CAD</th>
<th>RESPONSE TO NON PHARMACOLOGIC THERAPY</th>
<th>RESPONSE TO PHARMACOLOGIC THERAPY</th>
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<tbody>
<tr>
<td></td>
<td>EPIDEMIOLOGY</td>
<td>CLINICAL TRIALS</td>
<td>NON PHARMACOLOGIC THERAPY</td>
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<tr>
<td>Cigarette Smoking</td>
<td>+++</td>
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<td>LDL Cholesterol</td>
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<tr>
<td>HDL Cholesterol</td>
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<tr>
<td>High Fat Diet</td>
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<td>Low SES</td>
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<td>Family history of CAD</td>
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<td>-</td>
<td>-</td>
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<tr>
<td>Obesity</td>
<td>+++</td>
<td>-</td>
<td>++</td>
</tr>
</tbody>
</table>

Note: +, weak, somewhat consistent evidence; ++, moderately strong, rather consistent evidence; +++ , very strong, consistent evidence; -, evidence poor or nonexistent.

Source: Fuster and Pearson, 1996
Coping Behavior: Nature & Definitions

Another variable which has been studied in the present study is the coping behavior of CAD patients.

When individuals experience stress or face a demanding situation, they adopt ways of dealing with it, as they cannot remain in a continued state of tension. How the individual deals with the stressful situations is called 'coping'.

The concept of coping has been studied in various disciplines. Sociologists refer to the ways in which a social order adjusts to a crisis, and biologists refer to the adjustment of a tissue system of the body to noxious agents as in Selye's (1956, 1976) "General Adaptation Syndrome". However, coping is primarily a psychological concept. In psychological usage, there are numerous definitions of coping, but all share a common theme, namely, the struggle with external and internal demands, conflicts and distressing emotions. The term 'coping' has been used to denote the way of dealing with stress, or the effort to master conditions of harm threat or challenge when a routine or automatic response is not readily available (Lazarus, 1974).

Coping has been described as constantly changing cognitive and behavioral effort to manage specific demands (internal or external) that are appraised as taxing or exceeding
the resources of a person. Coping refers to a person’s active efforts to resolve stress and to create new ways of handling new situations at each life stage (Erikson, 1959). This idea emphasizes the importance of the personal resources and competencies that are used to deal with new challenges. Coping emphasizes mastery of the situation while defence mechanisms emphasize protection of the self. This does not, however, imply that coping occurs with no regard for the self. The coping process requires an effective person who actively engages each life challenge.

White (1974) has identified three components of coping. First, coping requires that the person be able to gain and process new information. New information is needed to understand a difficult situation more fully or to establish a new position in the face of threat. Second, coping requires that the person be able to maintain control over his or her emotional state. This does not mean doing away with emotional responses. Rather, it suggests the importance of correctly interpreting emotions, expressing them, and limiting their expression when necessary. Third, coping requires that the person be able to move freely in his or her environment.

The goals of coping include the desire to maintain a sense of personal integrity, and to achieve greater personal control
over the environment. In each situation, the person uses physical, cognitive, social, and emotional resources to understand what is needed. Then he modifies some aspects of the situation or the self in order to achieve a more adequate person-environment fit. Coping, thus, is the behavior that occurs after the person has had a chance to analyze the situation, take a reading of his or her own emotions, and to move to a closer or more distant position from the challenge.

Investigators have employed two distinct approaches to the study of coping. Some researchers (e.g. Byrne, 1964; Goldstein, 1973) have emphasized general coping traits, styles or dispositions, while others (e.g. Cohen & Lazarus, 1973; Katz et al., 1970; Wolf & Goodell, 1968) have preferred to study the active ongoing strategies in a particular stress situation.

At a general level, coping has been broadly defined as "any effort at stress management" (Folkman & Lazarus, 1980). The term coping is viewed as a stabilizing factor that may help individuals maintain psychological adaptation during stressful period (Folkman & Lazarus, 1985).

Definitions given by Menninger (1963), Haan (1977), and Vaillant (1977) imply a hierarchy of adaptationally focused efforts with "coping" representing mature ego processes and "defenses" representing immature and less serviceable
variations of the same essential cognitive processes.

Pinkerton et al (1985) defined coping as the minimization of emotional distress. This places coping as the dependent variable and loses the notion of different coping cognitions/behaviors being enacted in an attempt to limit the effects of stress.

The most commonly used definition of coping is put forward by Folkman & Lazarus. They see coping as a psychological mechanism for managing psychological stress (Lazarus & Folkman, 1984). This mechanism may be both action-oriented and intrapsychic and is intended to avoid or mitigate the consequences of a stressor (Cohen, 1987).

Lazarus and Folkman (1984) recognized the value-laden nature of certain traditional ways in which coping has been defined. They define coping at the psychological level of analysis as "the process of managing demands (external or internal) that are appraised as taxing or exceeding the resources of a person". This definition has several important features. First, it emphasizes "process" as distinguished from trait or style. Second, it speaks of management rather than mastery; since many human problems (e.g., terminal illness, ageing) cannot be mastered, they must be redefined, tolerated endured, or accepted for optimal adaptation. Third, the term "appraisal"
indicates the central role of psychological mediation. Finally, they view coping as establishing the mobilization of effort.

Dewe and others (1979) defined coping as an individual’s attempted response to reduce feelings of discomfort. According to Burke and Wier (1980) coping process refers to any attempt to deal with stressful situations when a person feels he must do something about, but which tax or exceed his existing adaptation response patterns. Maddi and Kobasa (1984) have mentioned two forms of coping: (a) Transformational coping involves altering the events so that they become less stressful. To do this, one has to interact with the events and by thinking about them optimistically and acting toward them decisively, change them in a less stressful direction. (b) Regressive coping includes a strategy wherein one thinks about the events pessimistically and acts evasively to avoid contact with them.

Houston (1986) proposed a more extensive classification system which can be applied to stimulus, process, or other response based definitions of stress. He defines coping as a response or responses whose purpose is to reduce or avoid psychological stress (negative feelings). However, such responses may or may not be successful in reducing the psychological stress.

The concept and definitions of coping have spanned a
wide range of views including: (a) coping as a personality trait or disposition versus coping as a situation-based or state-like effort; (b) coping strategies as inherently adaptive, reality-based, conscious, and purposive approaches versus coping or defense strategies as global, primarily intrapsychic, reality-distorting, rigid and maladaptive processes; and (c) the nature of coping classification (e.g. approach versus avoidance coping; instrumental /active versus affective/passive coping; adaptive versus maladaptive coping) (Billings and Moos, 1984; Haan 1977; Holahan, Moos & Schaefer, 1996; Lazarus & Folkman, 1984)

Types of Coping

Researches in the field of coping behavior follow several different formulations. There is no single technique and widely accepted models for categorizing differences in coping styles. Coping strategies include feeling incapable of being hurt; denial of stress; worrying when you know stress is coming, and resilience in recovering from stress. The distinction between "problem-focused" and "emotion-focused" coping has been given by Mechanic (1974), Kahn et al., (1964), and White (1974). Problem-focused coping refers to efforts directed at doing something constructive about the conditions that harm, threaten, or challenge. Emotion-focused coping refers to efforts
directed at regulating the distressing emotion itself, whether the focus of such regulation is in behavior and expression, physiological disturbance, subjective stress, or all the three (Folkman & Lazarus, 1980; Lazarus, 1975, 1981; Lazarus & Launier, 1978). Folkman and Lazarus (1980) have obtained evidence that most people adopt both problem-focused and emotion-focused modes of coping in daily stressful encounters and the relative proportion of each varies according to how the encounter is appraised.

Lazarus (1975) suggests two categories of coping, viz., "direct action" and "palliative modes". Direct action deals with the actions which are performed by the organism when it is in the face of stressful situation. Palliative approach to coping indicates those thoughts or actions which purport to relieve the organism of any emotional impact of stress.

According to Lazarus and Launier (1978), coping is the "effort, both action oriented and intrapsychic, to manage (i.e. to master, tolerate, reduce, and minimize) environmental and internal demands, and conflicts among them, which exceed a person's resources". McGrath (1976) says that coping is an array of covert and overt behavior patterns, which can help prevention, alleviation or responding to a stressful experience. Billings and Moos (1982) categorize coping as: (a) cognitive
coping where individuals solve the problems, (b) *behavioral coping* whereby individuals engage in attempts to deal directly with the problems, and (c) *avoidance coping* whereby individuals avoid the problems.

Wilder and Plutchick (1982) proposed eight basic coping styles to reduce stress: suppression (avoid the stressor), help seeking, replacement (engage in direct stress reducing activities), blame (others and system), substitution (engage in indirect stress-reducing activities), mapping (collect more information), reversal (act opposite to the way one feels), minimization (minimize the importance of the stressful situation).

Pareek (1983) suggests two types of coping strategies which people use as the ways of dealing with stress. One way is that the person may decide to suffer, accept or deny the experienced stress or put the blame on somebody (self or others) for being in that stressful situation. These are passive or avoidance coping strategies and are termed as *dysfunctional* styles of coping. Another way is that the person may face the stress consciously and take action to solve the problems himself or with the help of other people. These are active approaches of coping and are termed as "*functional*" styles of dealing with stressful situations.
Pareek (1983) has proposed eight coping strategies and styles which can be categorized into dysfunctional and functional coping strategies. These are: Impunitive, Intropunitive; Extrapunitive; Defensive; Impersistive; Intropersistive; Extrapersistive; and Interpersistive.

Endler and Parker (1990) have considered the coping responses from a multidimensional perspective and have identified three coping styles: (a) Task-oriented coping emphasizes the achievement of problem resolution through purposeful efforts to cognitively restructure the problem or alter the situation; (b) Emotion-oriented coping delineated a set of reactions (e.g., tension, anger) of a self-oriented nature which occurs in response to a problematic event; (c) Avoidance-oriented coping involves reactions or responses which have the effect of destructing or diverting individual's attention from stressful situation.

The stress-strain relationship is a function of coping strategies or mechanisms used by the individual. Adaptive coping reduces stress and promotes long term health whereas maladaptive coping reduces stress but promotes long-term ill-health. Positive thinking and problem-focused responses in the face of stressors are normally referred to as adaptive coping strategies; negative thinking and avoidance responses are
referred to as maladaptive coping strategies (Nowack, 1990).

Different coping styles can be adequate in different problem situations. However, a more active coping style (problem solving, trying to influence the problem situation) generally is seen as a more healthy coping style in the long-term compared to a passive and problem-avoiding coping style (Schreurs, Van de Willige, Brosschot, Telligen, & Graus, 1993). The function of a healthy coping strategy encompasses the adequate management of life stress and negative emotional states. In addition to evidence that an active problem-directed coping style is effective in preventing psychosomatic problems (Frese, 1986), it is believed that an adequate problem-directed coping also results in preventing psychiatric problems.

Coping as Trait, Style, or Process

Researchers working in the field of coping have paid much attention to the distinction between coping as trait, style, or process. A coping trait means that a person is disposed to engage in a particular coping behavior under certain conditions. The more general the trait, the less it is limited to any particular situational context. Thus, a coping trait is a stable tendency from which a prediction is made about how the person will cope in some or all types of stressful encounters.

A coping style refers to a characteristic way of handling
situations. The term “style” as in Adler’s “style of life”, tends to imply a very broad and encompassing disposition. There is something about the connotation of style that suggests sustained, complex strategies for relating to the world. Many of the concepts related to coping style are derived from one particular theoretical formulation, namely, psychoanalytic ego psychology. There are a large number of coping style schemes which have been described and classified by the researchers as coping behavior.

A coping process refers to (1) “what the person actually does in a particular encounter”, and (2) “how what is done changes” as the encounter unfolds (Lazarus & Folkman, 1984; p.827), or from encounter to encounter when they are united by some common theme. Process is analogous to ‘state’ because it refers to what actually happens in specific contexts, and to how it changes. By definition, process means change. State is evanescent, so is process. To Burke and Weir (1980), coping process refers to “any attempt to deal with stressful situations when a person feels he must do something about them, but which tax or exceed his existing adaptation response pattern.”

Coping strategies can be of several types but there are two major targets of coping: changing ourselves or changing our environment. A person can either make adjustments to fit better
with the environment ("go with the flow") or change the environment to suit his/her own needs ("divide and conquer"). Coping strategies can be classified into four major categories: cognitive, behavioral, social, and avoidance.

**Cognitive Coping Strategies**

A person can cope with a stressor or disturbing emotions by problem-solving, self-talk, and reappraisal. Problem-solving involves analyzing the situation to generate possible course of action, to evaluate the efficacy of the actions, and to select an effective plan of action (Janis & Mann, 1976). Self-talk refers to covert statements or thoughts that are used to direct our efforts at coping with the stressful event and its associated emotional arousal. This internal talk directs attention to relevant stimuli, facilitates the formulation and implementation of coping strategies, and provides corrective feedback (Meichenbaum, 1977). Reappraisal involves reducing the impact of a stressful event by altering how that event is interpreted. In other words, the event is given a different meaning.

**Behavioral Coping Strategies**

Mostly persons respond to stress behaviorally. Behavioral responses to stress include seeking information, direct action, inhibiting action, and turning to others. Seeking information refers to gathering data on the nature of the stressor and on
possible coping strategies. An individual faced with a diagnosis of cancer, for example, may seek information about prognosis from a health-care provider (Haan, 1977). Information, thus, provides useful, instrumental coping strategies and enhances feelings of control and predictability. Direct action refers to overt verbal and motor responses that alter the stressor or stress-related emotional arousal. An individual with a sprained ankle may rest, take pain pill, or see a physician to find relief. Inhibiting action involves not doing something in order to reduce stress and emotional arousal. A person with a persistent cough may stop smoking.

Social Coping Strategies

The behavioral response of “turning to others” has been traditionally labeled social support, and is a form of social coping. The phrase “turning to others” is used here because it emphasizes the active, interactional nature of this coping strategy. Our relationships with other persons provide an important resource in dealing with stress. A person can gain material, emotional, and informational support from others. Material support includes money, goods, and services available from significant others (Cohen & Mckay, 1984). Emotional support is the feeling of being loved and valued by others and the opportunity to reciprocate those feelings (Cobb, 1976).
Informational support is available when others make suggestions about the meaning of stressful events or recommendations concerning coping strategies, and provide feedback about the appropriateness of coping efforts (Cohen & Mckay, 1984). Berkman and Syme (1979), for example, found social support to be a modest but significant predictor of mortality, even when controlling for initial health status, health-impairing behaviors and social status. Those persons who had few social ties had higher mortality. Social support may also mitigate the negative effects of stress that have already occurred. For example, social support is associated with longer survival time among those with cancer (Weisman & Worden 1975). A large proportion of the problems most frequently reported by persons with a critical disease are interpersonal. These include: difficulty communicating with significant others about the disease, speaking with family members about the future, and gaining information from health providers (Wortman & Dunkel Schetter, 1979). Health providers, family, and friends can provide the patient with clarification and reassurance about what is happening, show love and caring, and assist in developing strategies to deal with the physical and emotional demands of the disease and its treatment. Social support also promotes recovery by enhancing adherence to treatment regimens (Suls,
Caring relationships enhance physical and mental health. The timing and manner in which social support is offered significantly influences its impact. Well-meaning assistance that is not wanted is not helpful; social support is not a reservoir from which a person passively borrows but rather interpersonal exchanges in which both parties are active (Cohen & McKay, 1984). Social support may also have negative effects (Suls, 1982).

**Avoidance Coping Strategies**

According to Holahan and Moos (1986), avoidance coping is a response to threatening situations when personal and contextual resources are scarce. Also, when severe stressors persist, individuals may gradually lessen their use of problem-solving coping and increase their reliance on avoidance strategies (Moos, 1992). In avoidance coping, a person tries to reduce tension by eating more, smoking more and taking tranquilizing drugs (sleeping pills etc.)

Another class of coping strategies, which has not received much attention by the researchers, is a significant one, i.e. Religious/Spiritual coping.

**Religious/Spiritual Coping Strategies**

An individual grows up with the particular religious and cultural modes of the society. Religious people adopt religious
beliefs and practices as the ways of coping with stress. A stressful life event, for example, death may be considered by them as a way to attain "oneness with God" and thus to "live" in heavenly bliss. In biblical times and in some primitive cultures human sacrifice was an important means of appeasing the gods; again this view would lessen the stress impact on the "honoured" families of those sacrificed.

Prayer is central to most people's spiritual and religious lives. It serves as a marker for many stressful and non-stressful events in people's spiritual lives, particularly among those people for whom spirituality and religion are important.

Many people use prayer to help them cope with life's problems (Bearon, & Koenig, 1990), medical problems such as HIV (Kaplan, Marks, & Martens, 1997), cancer (Potts, 1996), and cardiac surgery (Sandia, Kinney, Brown, & Young-Ward, 1991). People frequently use prayer to cope with natural (Harvey, Stein, Olsen, & Roberts, 1995) and unnatural (Zeidner, 1993) disasters.

An individual's preferences for certain types of prayer might reveal much about whether his/her style of religious coping is positive or negative, active or passive. This information can have implications for how health practitioners discuss or intervene in their client's religious lives in general,
and thus might be relevant for assessing the effects of client's spirituality on his/her health and well-being (Pargament et al., 1998).

Individuals experiencing stress have to do something to deal with the disturbing situation and what is done is referred to as coping. There can be several types of coping strategies such as cognitive, behavioral, avoidance, social, or spiritual. There is no rule as to who will use a particular type of coping strategy and will not use certain other. Individuals use a mixture of several coping strategies when dealing with stress or any stress-related disorder.

The Role of Coping Strategies in Coronary Artery Disease

Coronary Artery Disease is a primary example of a life-threatening chronic disease (Falvo, 1991). In addition to being the leading cause of death, it is also one of the most anxiety provoking and therefore, coping mobilizing impairments (Johnson & Getzen, 1992). Clinicians and researchers have shown increasing interest in the study of the relationship between coping strategies and disease and disability (Dunkel-Schetter et al., 1992; Hanson et al., 1993). Moos (1986) used the term coping and considered the variety of responses to normal and abnormal life crises. Some of his early researches on coping
have closer parallels to attempts to examine coping strategies and chronic illness.

It has been demonstrated through research that persons with cardiac disease employ a wide range of global (e.g., active, optimistic) and specific (e.g., confrontive, venting feelings, information-seeking) coping modes (King, 1985; Miller, et al, 1985; Scherck, 1992). A growing body of research has accumulated on the relationship between global coping styles and measures of psychosocial adaptation to heart disease. This research has focused mainly on: (a) repression versus sensitization, (b) problem-focused versus emotion focused coping, (c) adaptive versus maladaptive coping, (d) dispositional optimism, (e) hardiness and sense of coherence, and (f) active versus passive coping.

Several coping strategies have been identified that relate directly to coping with heart disease. These strategies have been broadly categorized into engagement and disengagement strategies. Engagement strategies normally refer to strategies that are labeled: (a) problem-focused, (b) information-seeking, (c) confrontation, (d) positive reappraisal, and (e) seeking social support. Investigations of disengagement strategies have focused primarily on the efforts of persons with cardiac disease to: (a) deny the impact or severity of their condition, (b) avoid
or escape the problems or issues necessitated by its onset, (c) seek distraction from the disease's constant presence (e.g., diversion of attention, wishful thinking), and (d) resort to "traditional" (i.e., psychoanalytically derived) defense mechanisms.

Livneh (1999) summarized the findings of the studies on coping with heart disease and MI which suggests that:

1. Among the broader, dispositional like coping approaches some preliminary support has been obtained to link repressive style, problem- or approach-oriented coping, optimistic outlook, and hardy disposition/sense of coherence with indices reflecting increased psychosocial adaptation to cardiac disease. Sensitizing style and an affective-oriented coping style were generally associated with increased degrees of psychosocial and medical distress.

2. Among the specific, behavior-like coping efforts, the scant literature reflects mixed findings on the relationship between engagement type coping strategies and psychosocial adaptation to cardiac disease. Mixed findings are also found when the relationship between disengagement-type strategies and psychosocial adaptation to cardiac disease has been explored. These mixed findings suggest that neither class of strategies is consistently linked to successful adaptation to the disease.
3. The coping strategy of denial has been studied in numerous research efforts. The findings suggest that denial is generally positively related to increased psychosocial adaptation and decreased levels of physical, medical, and emotional distress in the early phases of convalescence following MI or the impact of other cardiac diseases. The research on impact of denial upon the distanced periods of psychosocial adaptation to the disease, medical functional indices, and survival rate generally yielded mixed findings.

**Attitude Towards Life**

The concept of attitude towards life has been linked to existential psychology. For some existentialists meaning and purpose of life should be on the continuum of illusion because the concept of immorality remains unproven and unknowable. According to Sartre (1963) life seems absurd and purposefulness is a groundless flight of fancy.

Various attempts have been made to define lack of purpose as a relative lack of responsibility for coming to terms with life. Fromm (1951) has advocated that undissolved emotional conflict, self-hatred and disgust lie at the root of war and international competitiveness. He believes that self-deception and dishonesty lie under such neurotic anxiety.

Logotherapists believe that the search for meaning is the
primary motivation in the life of every person, and it is more basic than the drive for pleasure or power (Frankl, 1985). Each person has a meaning that is unique and specific and it is the task of each person to discover that meaning (Fabry, 1988). Frankl (1986) defined the will to meaning as the innate desire to give as much meaning as possible to one’s life. According to Frankl (1963) religion plays a crucial role in finding a will to meaning. It is the concept of spiritual freedom to decide what one can become, that renders life meaningful.

*Existential frustration* occurs when the search for meaning is thwarted. *Existential vacuum* develops when a person feels empty and believes that life is meaningless (Frankl, 1985). Many aged people believe that their life has no meaning. The aged parent no longer raises children, the worker have retired, or a marriage is disrupted by a spouse’s death; the arena that previously gave the person meaning has ceased to exist. Missinne and Willepe-Kay (1985) pointedly asked: “What ...becomes of the ageing person? Where is his or her meaning to be found in culture that values youth and work so highly?”

Frankl viewed purpose in life, in his theory in existential terms and related research to the development of the spiritual side of one’s personality. He believes that religion defines one’s purpose in life. The concept of the ‘will to meaning’ represents
the striving to construct meaning to wholes from the discrete elements of experience, and transpiration of that striving into a unified philosophy of life.

Mc Carthy (1980) points out "A lack of purpose in life has been described as a general indication of depression. The concept of the lack of purpose in life involves more of a displacement and projection of such inner mental states into the world." High purpose in life goes with lesser fear of death. Mc Carthy (1980) believes that people who have a high purpose in life have positive or accepting attitude towards death and they fear it less.

The present study seeks to explore the awareness of CAD risk factors, identify prescribed and non-prescribed strategies which the angina pectoris and myocardial infarction patients adopt in coping with their illness, and to assess the attitude towards life of male and female angina pectoris and myocardial infarction patients.

Need of the Present Study

A large number of studies have been done to explore the personality correlates of CAD patients, but very little work has been done to study the awareness of risk factors associated with CAD. The present study is very important in this respect because a large number of people are victims of CAD in India
and a number of risk factors such as lifestyle, psychosocial, environmental, personal, dietary, physical, and organizational, have been associated with CAD.

Coping behavior/strategies is also a relatively new concept as far as research on CAD patients is concerned. There can be various coping strategies used by the angina pectoris and myocardial infarction patients which may be prescribed by the cardiologist or adopted by the patient himself/herself.

Attitude towards life has received very little or no attention by researchers in the field of CAD. It is a quiet significant psychological variable related to CAD. In the present investigation, the researcher has attempted to study the pattern of life attitude profile of the CAD patients.

**Research Objectives:**

The present study is an attempt to examine the awareness of various risk factors among CAD patients and the coping strategies adopted by them. The pattern of attitude towards like among CAD patients has also been studied. The main objectives of the present study are:

(1) to examine the differences between the awareness of male and female angina pectoris patients on the various CAD risk factors (lifestyle, psychosocial, environmental, personal, dietary, physical, and organizational)
(2) to examine the differences between the awareness of male and female myocardial infarction patients on the various CAD risk factors.

(3) to examine the differences between male and female angina pectoris patients on the use of various prescribed and non-prescribed coping strategies.

(4) to examine the differences between male and female myocardial infarction patients on the use of various prescribed and non-prescribed coping strategies.

(5) to examine the differences between the mean scores of male and female angina pectoris patients on the overall scale and various factors of Life Attitude Profile.

(6) to examine the differences between the mean scores of male and female myocardial infarction patients on the overall scale and various factors of Life Attitude Profile.

The awareness of CAD risk factors, the coping behavior, and the attitude towards life in patients suffering from coronary artery disease, namely, angina pectoris, and myocardial infarction have been studied here with a view that the findings of the present study may have relevance to improve the awareness of CAD risk factors, coping behavior and pattern of attitude towards life in such patients in particular and people in general.