Awareness of CAD Risk Factors and Prescribed-Nonprescribed Coping Strategies in Relation to Attitude Towards Life

ABSTRACT

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BY
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ABSTRACT
The present study is concerned with the awareness of Coronary Artery Disease risk factors and prescribed-nonprescribed coping strategies in relation to attitude towards life, among Coronary Artery Disease (CAD) patients. CAD includes Angina Pectoris and Myocardial Infarction.

Diseases of the heart and blood vessels constitute a major health problem today. Coronary Artery Diseases are the leading cause of death and disability in our country. Today, about 40 million Indians are suffering from CAD. Infact, CAD is soon expected to be responsible for one out of four deaths in the developing countries.

CAD is one of the lifestyle related disorders. Lifestyle or behavioral factors play a dominant role in determining disease prevalence in all populations and in most individuals. Risk factors related to CAD differ widely across populations. These differences are partly culture-specific and partly related to the lifestyle factors. Within CAD patient populations too, such factors tend to contribute to the variability of CAD risk between angina pectoris and myocardial infarction patients.

Sedentary lifestyle and psycho-physical-social stress associated with rapid urbanization, globalization, and technological advancements have led to a high incidence of CAD. Smoking, high
cholesterol, hypertension, diabetes, and physical inactivity are the main risk factors associated with CAD. These factors have a cumulative affect as the chances of developing CAD multiplies with additional psycho-social factors such as Type A behavior pattern, anger, hostility, stress, depression, irrational thinking & pessimism. Health has been deeply affected by these factors.

Having recognized that risk factors do not affect only a few individuals in isolation but are spread across populations, with a continuous rather than a threshold relationship to disease, it is necessary to identify the various coping strategies adopted by people or prescribed by the health professionals to cope with the disease. The concept of coping and its relation to CAD is described in detail in chapter one.

Attitude towards life determines, to a great extent, the health status of an individual. A positive attitude towards life enables an individual to control disease and enhance his/her physical, psychological, and spiritual health. Positive attitudes have a greater effect than lowered blood pressure or cholesterol, exercise, weight loss, or non-smoking status. Negative self-perceptions can diminish life expectancy while positive self-perceptions can prolong life expectancy.

The present study attempts to examine relationship of attitude
towards life to CAD through the assessment of attitude towards life of angina pectoris and myocardial infarction patients.

The objectives of the present study include:

1. To examine the awareness of various CAD risk factors (lifestyle, psychosocial, environmental, personal, dietary, physical, and organizational) among male and female angina pectoris patients.

2. To examine the awareness of various CAD risk factors among male and female myocardial infarction patients.

3. To examine differences between male and female angina pectoris patients on various prescribed and non-prescribed coping strategies.

4. To examine differences between male and female myocardial infarction patients on 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 researchers in the field of CAD have carried out numerous
studies on the various risk factors and coping behaviors associated with CAD. The studies which are relevant to the present research are reported in chapter two.

The sample of the present investigation comprised of 100 angina pectoris patients (Male =61, Female=39), and 100 myocardial infarction patients (Male=70, Female =30) drawn from the Center of Cardiology of the J.N. Medical College, AMU, Aligarh.

Patients were contacted individually and were administered the CAD Risk Factors Questionnaire, Coping Strategies Check List, and Life Attitude Profile.

The patients were assured that their responses would be kept strictly confidential and will be used for research purpose only.

The data were analyzed by means of t-test and critical ratio of percentages. The main results of the present study are:

➢ In the angina pectoris group, the female patients exhibited significant awareness of diabetes mellitus, poor social support, living in crowded environment, taking of oral contraceptive pills by women, family history of CAD, lack of religious affiliations, high intake of refined or processed sugars, malnourished diet and over dieting risk factor of CAD. The male patients were significantly aware of all the organizational risk factor of CAD.
On the rest of the risk factors studied, no significant differences were found between male and female angina patients.

➢ In the MI group, the female patients showed significant awareness of depression, psychosocial stress, fear and panic, poor social support, taking of oral contraceptive pills by women and hypertension risk factors of CAD, where as the male patients exhibited significant awareness of only the high intake of salts risk factor of CAD. For the other risk factors no significant difference existed between male and female MI patients.

➢ The male CAD patients highly adopted the various prescribed and non prescribed behavioral coping strategies as compared to female CAD patients.

➢ Among the non prescribed coping strategies, male angina patients preferred greatly the various social, avoidance, religious coping strategies as compared to females.

➢ The female MI patients preferred various avoidance, and religious coping strategies as compared to male counterparts.

➢ The male CAD patients greatly adopted almost all the cognitive coping strategies as compared to female CAD patients.

➢ The male angina pectoris and MI patients exhibited a highly positive attitude towards life as compared to the female patients. The male angina patients scored significantly higher than females.
on the Life Control and Future Meaning to Fulfil factors of the LAP; whereas, the male MI patients scored significantly higher on Life Purpose, Life Control, and Will to Meaning factors of LAP as compared to their female counterparts.

CAD is major global health problem, with the majority of the burden occurring in developing countries. Therefore, there is an urgent need to establish appropriate research studies, increase awareness of the CAD burden, and develop preventive strategies in developing countries, like India. These strategies should include approaches to prevent the development of the risk factors in the population as a whole by changes in social and governmental policy as well as approaches that can be applied to high risk individuals. Both population-level and individual-level strategies should be tailored to each country, community and socioeconomic stratum. Effective implementation of these strategies can substantially blunt or even reverse the current global epidemic of CAD.
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Allah is your Protector,
And He is the best of Helpers.
(The Holy Quran : 3: 150)
To my family
CONTENTS

Certificate
Acknowledgements

Chapter One

Introduction 1-50

Chapter Two

Review of Literature 51-138

Chapter Three

Methodology 139-145

Chapter Four

Results and Discussion 146-204

Chapter Five

Conclusions, Implications, and Suggestions 205-211
for Future Research.

References

Appendices

I  Personal Data Sheet
II  CAD Risk Factors Questionnaire
III  Coping Strategies Check List
IV  Life Attitude Profile
Certificate

Certified that the Ph.D thesis entitled "Awareness of CAD Risk Factors and Prescribed-Nonprescribed Coping Strategies in Relation to Attitude Towards Life" is the original contribution of Miss. Kehkashan Yaqub. It is carried out under our supervision and is suitable for submission to the examiners for evaluation.

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CHAPTER ONE

INTRODUCTION
Over the 20th 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 20th 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). The Global Comparative Assessments in Health Section,
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

Year

Prevalence (%)

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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<td>CLINICAL TRIALS</td>
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<td>Low SES</td>
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<td>Family history of CAD</td>
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<td>Obesity</td>
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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”. Mc Grath (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; Extrapersitve; and Interpersitve.

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
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 life 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.
CHAPTER TWO

REVIEW

OF

LITERATURE
The review of literature involves only those studies which have relevance and relation with the variables of the present study. The main variables of the present study are coronary artery disease risk factor, coping strategies, and attitude towards life.

In the following sections many of the very important studies concerning these variables have been reviewed.

**Coronary Artery Disease Risk Factors**

A large numbers of studies have thrown light on the role of various conventional and emerging risk factors in the occurrence of and maintenance of coronary artery diseases. This section presence some of the relevant studies conducted during the late 20\textsuperscript{th} and early 21\textsuperscript{st} century.

Davis et al. (1995) analyzed the changes from 1980 to 1990 in the knowledge of acquired cardiovascular risk factors perceived knowledge of risk reduction strategies; and interest in risk modification by socio economic status (SES) using level of education. The study population included 2,455 women and men (aged 25-74yrs) from three population-based cross-sectional surveys in two northern California cities. Significant differentials were found in baseline knowledge that widened over the 10 year study period, resulting in larger disparities across educational group at the final survey in 1990. From 1980
to 1990, individuals with under 12 years of education experienced only slight improvement in their knowledge of cardiovascular risk factors; those with 16 years of education experienced twice as much improvement. There were similar time-effect disparities in knowledge of risk reduction strategies. In contrast, interest in risk modification was high for all educational groups and remained uniform across time.

Kuczmierczyk et al. (1996) investigated risk for cardiovascular disease in 38 patients with general anxiety disorder (GAD), as well as the effects of comorbid major depression (MD). Predrug-trial serum cholesterol and triglyceride levels were assessed in subjects with pure GAD and compared with those of 21 patients with mixed GAD and comorbid MD. Significantly higher cholesterol and triglyceride levels were found in the GAD group. It was concluded that increased noradrenergic activity may be responsible for elevations in lipid levels in patients with pure GAD.

Smith et al. (1996) explored the relations between psychological factors and coronary heart disease Measures included were the Beck Ratings Scale of mood disorders, the Beck Depression Inventory, and the Jenkins Activity Survey for Type A Behaviour Pattern (TABP). Subjects were 94 angina patients, 47 non-cardiac patients, and 217 adults randomly
sampled from the general population. Result indicated that anxiety and depression scores were significantly higher in angina patients than in each of the other two groups. Angina patients' scores for the hard-driving and competitive component of the TABP were also significantly higher than in the general population. The Diagnostic and Statistical Manual of Mental Disorders III (DSM-III) criteria for anxiety and depression were reported more often by angina patients than by subjects in the other groups. Anxiety was reliably correlated with depression in all the three groups.

Fana Maurizio et al. (1996) assessed the possible relationship between coronary artery disease (CAD) risk factors and anger and anxiety in a sample of 138 outpatients (18-65 years) diagnosed with major depressive disorder. Measurement instruments included the Anger Attacks Questionnaire and the Hamilton Rating Scale for Depression among others. Results show that patients with higher state anxiety scores had a profile of greater CAD risk compared with the patients with low anxiety scores, as cholesterol levels were associated with increased anxiety scores. The depressed patient group as a whole had cholesterol levels within the normal range, but patients with anger attacks tended to have higher cholesterol levels than the patients without these attacks. Findings partially
support the hypothesis that hostile or anxious depressed patients and at greater risk for CAD than other depressed patients.

Cotiporic-Veselica et al., (1996) examined the prevalence of type-A behavior indicated on Bartner’s (1969) scale and the Emotion Profile Index in 134 male and 56 female patients (aged 23-70 years) with acute coronary heart disease (ACHD), assessed at hospital admission and discharge, and 1,084 control subjects. Type A classification was significantly more common for ACHD patients than for controls. ACHD patients also scored lower on Distrust and Dyscontrolled emotions. Patients with unstable angina (UA) had significantly higher mean scores on Bartner’s scale than patients with acute myocardial infarction and recurrent myocardial infarction (RMI) at hospital discharge. RMI patients scored lower on District and higher on Timid than UA patients at hospital admission and discharge. Results suggest an association between type A behavior, emotions, and different types of ACHD. They suggested the addition of counseling for type A behavior to the standard cardiac counseling.

Weidner et al. (1997) studied certain standard coronary risk factors (plasma lipids and lipoproteins, blood pressure, heart rate, age, body mass index) and psychosocial variables (job strain, Type-A behavior, hostility, illnesses, medical and
psychological symptoms, health damaging behavior) in a community sample of 324 employed men, 203 employed women and 155 female homemakers. Employed women reported less hostility and fewer illnesses than homemakers and had lower cholesterol levels than homemakers and men. Job characteristics were unrelated to standard coronary risk factor levels in both sexes, but predicted medical symptoms and health damaging behavior in men. These findings suggest that employment is associated with enhanced medical and physical well being among women and point to possible behavioral and psychological pathways by which job strain may adversely influence men's health.

Milligan et al. (1997) examined relationships between cardiovascular risk factors and behaviors, specifically physical activity, smoking and drinking alcohol. Subjects were first studied at the age of 9 years, and continued to be surveyed at 3 year intervals. Anthropometry, blood pressure, non-fasting serum cholestrol, and physical fitness were measured in 301 male and 282 female Australian 18 years olds. Usual physical activity, smoking and drinking habits were assessed by questionnaire. Systolic Blood Pressure (SBP) related positively to weight, height, age and unsafe drinking and negatively to fitness and birth weight. Total cholesterol, which was positively
associated with waist-hip ratio and negatively with fitness was higher in females than in males. In 24% males and 48% of females, usual levels of physical activity were low, consistent with lower scores on fitness tests in females. 30% of males and 24% of females regularly drank at unsafe levels while 26% of males and 29% of females smoked. Smoking was associated with unsafe drinking.

Jennings et al. (1997) conducted a study in which they asked whether cardiovascular responses to psychological challenge changed with age and whether such changes were intrinsic to aging or could be attributed to the influence of disease and medications. Cardiovascular reactivity to mental challenge was examined in 902 men ranging in age from 46-64 years who participated in the Kuspio Ischemia Heart Disease Risk Factor Study. A battery of 4 tasks was used to induce cardiovascular responses Current disease status, age, and medication use were entered into hierarchical regression analysis to assess their relation with measures of cardiovascular reactivity. Age and hypertension contributed independent, approximately equal, but small amounts of variance in the cardiac and vascular reactivity indexes. Medications also influenced reactivity independently of age and disease. Performance on the tasks was more consistently altered by age
than by disease or medication. Cardiac and vascular reactivity increased with increasing age and the presence of hypertension. They conclude that both age and disease state must be considered when examining cardiovascular reactivity as a risk factor for disease.

Gupta et al. (1997) determined the prevalence of coronary heart disease (CHD) and the risk factors in the elderly (age 60-85 years) and young (age 50-59 years). A sample of 2,212 urban and 3,148 rural subjects was subjected to a clinical examination, ECG, and administered the Rose Questionnaire. Risk factors were hypertension, diabetes, smoking, obesity, low physical activity, truncal obesity, and blood lipid levels. CHD was present in 10.3 percent of the elderly. The prevalence of CHD was higher in the elderly as compared to the younger age groups of both sexes and in both urban and rural population. CHD was more common among urban than among rural men and women. While the risk factors of CHD were same for the elderly as well as for the younger subjects, the prevalence of these risk factors was higher in urban than in rural population. There was no significant difference in the prevalence of leisure time physical activity and mean cholesterol levels.

Schmidt et al. (1998) conducted coronary risk factor analysis comprising anthropometry, blood pressure, fasting
plasma lipids and lipoproteins, glucose, and body composition, and documented self-disclosed physical activity (PA) patterns for primary and secondary school children (aged 6-18) in Singapore. Subjects were 730 boys and 849 girls. A PA and leisure pursuits self reported survey was used to group subjects into five categories ranging from “inactive” to “vigorous” activity. The self-reported questionnaire also recorded individual responses to exercise behavior, leisure activities, and participation in organized games and sports. Body weight body mass index (BMI), and percent body fat were compared by age and gender. Results show that PA was correlated with total cholesterol and triglycerides for boys, and with body fat and BP were greater for each age 10-14 years, after which there was less recorded body fat for boys. Comparing by gender and age, significant differences were found between PA groups and total cholesterol and body fat. Although few children were at risk for heart diseases, this study provides baseline coronary risk and physical activity data for further longitudinal analysis in this population.

Fried et al. (1998) reported the independent, joint contributions to total mortality over 5 years of sub clinical, clinical, and end stage disease measures of frailty, impairments of physical and cognitive function, and sociodemographic
characteristics, including sex, health habits, and cardiovascular disease risk factors, in a multicenter study of community-dwelling men and women aged 65-101 years at baselines. 5, 201 subjects completed standardized interviews and an extensive examination at the field center and were reinterviewed every 6 months for 4.5-5.5 years of follow up, there were 646 deaths representing 12% of the population. Mortality rates increased with age for both men and women, while survivorship was substantially higher for women in each age group. Death rates declined with increasing education and income, with the lowest rates for those with high school education or more for those with annual incomes of $50,000 or more. The strongest predictions of mortality included noninvasive objective measures of both sub clinical and clinical chronic diseases such as ECG, EKG, and cognitive function education.

Lilla et al. (1998) studied psychological factors in the development of coronary artery disease in two aspects: rigidity and type A behavior pattern, and the connections between them. Subjects were myocardial infarct patients, patients with psychosomatic disorders, and healthy subjects. Rigidity of type A patients was assessed with measures such as the Jenkins Activity Survey (JAS) and was found to be significantly higher than of type Bs. Psychosomatic and healthy subjects did not
differ from each other in their type A scores. Findings suggest that type A behavior measured by the JAS does not distinguish patients with infarction from other patients or healthy subjects. Rigidity may be a basic component of psychological factors in the development of coronary artery disease.

Kopp et al. (1998) assessed the differences between two psychosocial risk indicators (depressive symptoms and vital exhaustion) for coronary artery disease (CAD) in a nation-wide sample of 12,640 Hungarians aged 16+years, and analyzed whether these risk indicators are differentially related to several illness behaviors (including history of cardiovascular treatment and cardiovascular sick days), cognitions, mood states, and socioeconomic characteristics generally associated with increased CAD risk. Results showed that vital exhaustion and depressive symptomatology are differentially associated with relevant external criteria, vital history of cardiovascular treatment, whereas depressive symptomatology was more closely connected to disabilities and complaints related to alcohol, drug, and congenital-disorder, and to dysfunctional cognitions and hostility.

Dressler et al. (1998) examined cultural influences in the relationship between SES and health. Cultural definitions of material lifestyles were investigated as a correlate of disease
risk in an African American community in the rural south. A new technique called “cultural consensus analysis” was used to test for a cultural model of lifestyles indicative of success. Survey data on a sample of 600 individuals (aged 25-65 years) randomly selected from the community were then used to operationalize the degree to which individuals adhere in their own behavior to that cultural model; this measure is referred to as “cultural consonance in lifestyle”. The present analysis is based on 48 key informants, representing 4 SES clusters in the African American Community. Cultural consonance in lifestyle was more strongly associated with hypertension and smoking (but not serum lipids) than were conventional measures of SES (occupation, income, and education). Results suggest that, the extent to which individuals are unable to live in accordance with cultural norms regarding lifestyle mainly contribute to the risk of coronary heart disease in the African American Community.

Mein & Winkleby (1998) conducted five focus groups with 20-76 year old Hispanic women (primarily of Mexican American heritage) from low-income neighbourhoods in San Jose, California, to learn about their knowledge of cardiovascular disease (CVD) risk factors, the relative importance of risk factors, and ideas about effective CVD risk-reduction programs. Despite language barriers and economic disadvantages, women
were highly aware of heart disease and described it as a health priority. However, they articulated many misconceptions about CVD and experienced multiple barriers to healthy lifestyles. The most frequently mentioned risk factor was poor nutrition, especially high dietary fat. The next most frequently mentioned risk factors were physical inactivity, obesity, and smoking. Few women viewed CVD as a progressive, chronic process; few associated obesity with heart disease; and few emphasized the importance of diabetes and hypertension as primary CVD risk factors.

Bosma et al. (1998) examined the association between two alternative job stress models, the effort-reward imbalance model and the job-strain model, and the risk of coronary heart disease (CHD) among male and female British civil servants. The logistic regression analyses were based on a prospective cohort study (Whitehall II Study) comprising 6,895 men and 3,413 women (aged 35-55 years). Three indicators of CHD were analyzed: angina pectoris, doctor-diagnosed ischemia, or either of these outcomes. Baseline measures of both job stress models were related to new reports of CHD over a mean 5.3 years of follow-up. The imbalance between personal efforts (competitiveness, work-related overcommitment, and hostility) and rewards (poor promotion prospects and a blocked career)
was associated with a 2.15-fold higher risk of new CHD. Job strain and high job demands were not related to CHD, however, low job control was strongly associated with new disease.

Kochar et al. (1999) attempted to angiographically evaluate the severity of CAD and to see its relation with risk factors in Indian subjects. Sixty-seven consecutive patients with mean age of 52 ± 9 years and non-conventional risk factors were analyzed. They were matched with 30 age- and sex-matched controls who had no previous CAD. Mean age of the controls was 51 ± 6 years. The risk factors studied were - smoking, emotion, hypertension, diabetes, dyslipidemia, previous CAD, BMI, W/H ratio, and Lp(a). It was observed that all the risk factors were significantly higher in patients as compared to controls. However, only Waist-Hip ratio correlated with severity of CAD.

Kumar, Kaur, and Singh (1999) studied the risk factor pattern of 1026 selected cases of CAD along with their dietary and behavioral pattern. Of the total 1026 cases, 680 (66.3%) were males and 346 (33.7%) females; 572 (55.7%) were from rural and 454 (44.3%) from urban population. Diabetes was present in 19.7 percent of the total cases (17.6% male, 23.9% female) and 84/572 (14.6%) in rural versus 119/545 (26.2%) in urban cases. Hypertension was seen in 306/1026 (29.8%) of the
total cases (29.3% male, 30.9% female; 20.9% in rural, 40.9% in urban cases). Cigarette smoking was observed in 20.4 percent of total cases (30.0% male, 1.4% female; 15.0% in rural, 27.1% in urban cases). Significant obesity by definition was present in 314/1026 (30.1%) cases (27.6% male, 36.4% female; 23.1% rural, 40.0% urban). Significant hyperlipidemia was observed in 346/1026 (33.7%) cases (32.9% male, 35.2% female; 26.2% rural, 43.1% urban). Higher alcohol consumption was observed in 549/1026 (53.5%) cases (56.1% in rural, 50.2% in urban cases; 78.4% male, 4.6% female). On the basis of detailed questionnaire, 696/1026 (67.8%) had type A personality and 330/1026 (32.2%) had type B personality (male 76.4%, female 50.8% of type A personality, and male 23.6%, female 49.2% of type B personality). Out of the total 1026,760 (74.1%) cases were non-vegetarian and 266 (25.9%) vegetarian (69.9% non-vegetarian, 30.1% vegetarian in rural and 79.3% non-vegetarian, 20.7% vegetarian in urban cases). 86.9 percent male and 48.8 percent female cases were non-vegetarian and 13.1 percent male and 51.2 percent female cases were vegetarian. It was concluded that, in a selected group of 1026 cases of CAD in Punjab, the conventional risk factors of diabetes, hypertension, obesity and hyperlipidemia were more frequent in urban than in the rural population. Smoking is less common than that seen in other
parts of the country whereas the consumption of alcohol and non-vegetarian diet shows much higher trends than in the rest of the country.

Marisic et al. (1999) investigated biological and psychosocial risk factors in groups of 187 male ischemic heart disease (IHD) patients (mean age 56.8 years) and 187 controls. A multivariate logistic regression was used to compare the two groups on 11 standard biological and 7 suggested psychosocial risk factors. The multivariate regression model supported 9 risk factors for IHD; 5 individual ones with sensitization among them and 4 interactions of risk factors including a synergistic one between neuroticism and smoking. Next, a principal component analysis of all 18 was used to extract 4 biopsychosocial and 2 biological correlates of IHD risk factors. They concluded that psychosocial coronary proneness plays an important role in predicting IHD, even after taking into account the main biological risk factors.

Achari and Thakur (1999) conducted a study on a sample of 3832 patients (3301 males, 531 females) with stable IHD who attended Patna Medical College Hospital & Heart Hospital between 1992-1997 were assessed for the presence of major modifiable risk factors, namely, hypertension, dyslipidemia, smoking and diabetes mellitus. All the patients had complete
clinical did biochemical data; 4591 individuals who attended these hospitals for routine check-up or for non-specific cardiac symptoms but in whom major medical or cardiovascular disease was ruled out by appropriate investigations, served as controls. The mean total cholesterol level was higher in the IHD group (194.67 mg/dl vs. 190.13 mg/dl) as compared to controls as was the mean total cholesterol /HDL ratio (4.65 vs. 4.47); both these differences were significant (p=0.01). The mean HDL, LDL, and triglyceride levels were not significantly different in the two groups. When the lipid levels were classified according to the National Cholesterol Education Program (NCEP) guidelines, 1425 patients (37.18%) had hypercholesterolemia as compared to 1480 controls (32.49%) , this was also significant as was the prevalence of low HDL cholesterol in the IHD group (27.1% vs. 18.2% in controls ; p<0.01). The most common form of dyslipidemia was an abnormal total cholesterol/HDL ratio which was found in 2235(58.3%) of the IHD population as compared to 2034 (44.3%) of the controls (p=0.01). Six hundred and ninety eight (18.2%) patients were hypertensives; most had stage-I hypertension; 1188 (31.01%) had a history of smoking, this was more common than in the control group (19.45%) (p<0.01) and was particularly common in young patients (<40 yrs) with IHD; 509 (13.28%) were diabetic . When all the risk factors were
analyzed 3380 (88.2%) patients (<40 yrs) with IHD; 509 (13.28%) were diabetic. When all the risk factors were analyzed 3380 (88.2%) patients had at least one modifiable risk factor. They concluded that dyslipidemia was the most prevalent risk factor in this series, followed by smoking, hypertension, and diabetes mellitus, and therefore, these factors, particularly; dyslipidemia and smoking need intensive control and treatment.

Iriyo et al. (1999) followed 2,722 women from the Cardiovascular Health Study (CHS), who were free of baseline CVD and provided baseline and annual information on their depressive mood, for a median of 6 years for the development of CHD, stroke and total mortality. It was found that depression is an independent risk factor for the development of CAD, stroke and all-cause mortality.

Gupta et al. (1999) carried out a case control study to assess the relative importance of various cardiovascular risk factors in Indian women. Forty-eight consecutive female patients with a mean age of 57.5 ± 6.6 years presenting with acute MI were taken up for the study. Twenty-nine age-matched controls with mean age of 56.0 ± 8.9 yrs were also included in the study. Various risk factors were evaluated including lipoprotein (a). They found that the presence of hypertension, diabetes and raised levels of total cholesterol triglycerides,
LDL-c and Lp(a) correlated directly with increased risk of cardiovascular events. A positive correlation was found between increased Lp(a) levels and high total cholesterol and LDL-c among cases, but not in controls. There was no significant difference in BMI between the cases and controls; however, apple-shaped body habitus was present more in cases as compared to controls. They concluded, that it is important to identify as many modifiable risk factors as possible in Indian women, so as to institute a comprehensive stage for prevention of cardiovascular risk.

Data from several recent studies have focused on the seasonal impact on cardiovascular mortality. Sheth et al. (1999) analyzed 159,884 deaths from acute MI and 136,157 deaths from stroke in the Canadian mortality database from 1980 to 1982 and 1990 to 1992. They found that acute MI deaths were highest in January and lowest in September, producing a relative risk difference of 18.6%. This seasonal variation in acute MI between winter and summer increased with age from 5.8% for < 65 years old to 15.8% for > 85 year old. The investigators suggested that environmental factors accompanying the cold weather may play a major role in triggering these acute CV events or determining their outcome.

Kloner et al. (1999) analyzed 222,265 reports from the
monthly death certificate data in Los Angeles County for death due to CAD from 1985 through 1996. The mean number of deaths was 33% higher in December and January than between June and September. During December and January, there was an increase in deaths that peaked around the holiday season and then fell. These deaths could not be explained solely on the basis of daily temperature, but factors other than temperature, such as superimposed respiratory infection, behavioral changes around the holiday time, including increased food, salt, and alcohol consumption, and emotional and psychological stress, contributed to the increased in death in December and the fall after January.

Khurana, Wander and Singh (1999) studied the coronary risk factor profile in 80 individuals. Forty individuals (25 males, 15 females) aged 30 years or above were compared to their respective siblings of the same age group who had migrated to urban areas and had been residing there for at least a period of 8-10 years. Only such subjects were selected from rural areas in Ludhiana district whose one sibling was residing in Ludhiana city. It was observed that the prevalence of important coronary risk factors like sedentary lifestyle, body-mass index (BMI), and central obesity were significantly higher in urban siblings as compared to their rural counterparts. The
difference in BMI in the two groups was statistically significant. Prevalence of obesity was 45% in urban vs 22.5% in rural group and central obesity was 75% in urban vs 40% in rural group. Waist-hip ratio (WHR) was significantly higher in urban as compared to rural group. The prevalence of hypertension and diabetes mellitus was 30% vs 20% and 7.5% vs 5% in urban and rural subjects, respectively. Similarly, HDL-cholesterol levels were higher in rural subjects and triglyceride levels were higher in urban group. Thus, the whole coronary risk factor profile was found to be worse in urban as compared to rural siblings. The study showed that urban migration in Indian situation worsens the coronary risk factor profile in individuals and environmental factors play a significant role in coronary risk factor profile of rural and urban siblings.

Hazra et al. (1999) conducted a study to determine the significance of Lp(a) and lipid profile in young patients (upto 40 years) with MI. A total number of 27 young infarcts with 29 age-matched controls were included in the study (control group 17 to 40 years, mean 27 ± 7 years; infarct group 17 to 38 years, mean 31 ± 3.7 years). Fasting blood samples were taken within 24 hrs of AMI and subjected to analysis for Lp(a) and complete lipid profile. The results indicated that Lp(a) level was significantly higher in the infarct group, whereas HDL-
cholesterol was low in infarction patients. Triglyceride levels were also significantly higher compared to the control group. They concluded that Lp(a), HDL-cholesterol, and triglycerides are important risk factors in young infarct patients.

Raghu et al. (1999) determined the association between various haemostatic factors and CAD. Eighty patients with angiographically proven CAD were compared with 20 age-matched controls without CAD. The prevalence of various traditional risk factors, i.e., diabetes, hypertension, dyslipidemia, smoking and obesity were similar in both the groups. The levels of factor VIII, factor V, and fibrinogen were estimated. Patients with CAD had higher levels of factor V and fibrinogen but this was not statistically significant. The level of factor VII coagulant activity were not different between the two groups, even through the patients with CAD had lower levels. They suggested that larger prospective controlled studies are needed to determine the prevalence and significance of various non-conventional risk factors in the Indian setting.

Espnes et al. (1999) carried out a study to investigate the presence of negative emotions and Type -A behavior in a group of 102, 40 year old men and women. The National Institute of Public Health in Norway carried out the data-collection as a part of their CHD risk factor screenings. The correlation between
hostility and total cholesterol is negative as is that between systolic blood pressure and the feeling of guilt for women. There was no further support for earlier findings of relationships between either Type-A behavior pattern and negative emotions or Type-A and elevated cholesterol values.

Murberg et al. (1999) evaluated the relationship between depressed mood (depression, emotional distress) disease-specific subjective health symptoms and mortality risk among patients with congestive heart failure. Proportional hazard models were used to evaluate the effects of selected biomedical subjective health and psychological variables on mortality among 119 clinically stable patients (71.4% men; mean age 65.7 years.) with symptomatic heart failure, recruited from an outpatient cardiology practice. 20 deaths were registered during the 24-month period of data collection, all from cardiac cases. The results indicated that depressed mood was a significant predictor of mortality. In contrast, subjective health was not a significant predictor of mortality. The results indicate that depressed mood is significantly related to increased mortality risk among heart failure patients.

Moller et al. (1999) studied anger as a trigger of acute MI and explored potential affect modification by usual behavioral patterns related to hostility. Exposure in the period immediately
preceding MI was compared with exposure during a control period for each case. From April 1993 to December 1994, 699 patients admitted to coronary care units in Stockholm County were interviewed. During a period of one hour after an episode of anger, with an intensity of at least “very angry”, the relative risk of MI was 90. In patients with premonitory symptoms, the time of disease initiation may be misclassified. When restricting the analyses to those without such symptoms, the trigger risk was 15.7. The possibility of examining effect modification was limited by a lack of statistical power (8 exposed cases). Results of the analyses suggested, however, an increased trigger effect among subjects reporting non-hostile usual behavior patterns, non overt strategies of coping with aggressive situations (not protesting when being treated unfairly), and nonuse of β blockers. The hypothesis that anger may trigger MI is further supported with an increased risk lasting for approximately 1 hour after an outburst of anger.

Bages et al. (1999) conducted a study in which 32 first MI cases (mean age 50.69 years) and 42 healthy controls (mean age 47.76 years) were compared with respect to vital exhaustion (VE), a state characterized by loss of energy, increased irritability, and feelings of demoralization. This state has been found to precede the onset of cardiac events. Subjects also
responded to questionnaires on Type A behavior; anger expression (Anger In, Anger Out, and Anger Control), and positive and negative self-concept. The results show that VE discriminated well between MI patients and controls even when controlling for age, smoking, and exercise. The odds ratio decreased to 12.34 when controlling for SES. Groups also differed in Anger In but not in Anger Out, Anger control, negative or positive self-concept. Anger In was correlated to VE in all subjects pointing to the relevance of withholding emotions in relation to exhaustion. Exhaustion was strongly associated with negative self-concept in the MI case group only but significantly discriminated between cases and controls when adjusted for negative self-concept.

Gabhainn et al (1999) examined CHD attitudes in 74 adults of varying backgrounds and employed by a local government organization or a local teaching hospital. Group discussion questions were based on a number of models of health behavior, and constructed to examine subject’s knowledge and views about control and change. Results show that subjects displayed significant knowledge about the disease, but exhibited mixed Loci of control and low motivation to change behaviors. Men were generally less motivated to change than women; older men considered it too late to make positive
changes, while young men considered it too soon.

Terris et al. (1999) presented a paper in which they pointed out that social class differences have been largely ignored in the development of programs to prevent coronary heart disease. They gave specific recommendations to correct this glaring defect, including giving priority to the reduction of risk factor prevalence among low-income blue collar and white collar workers, strengthening regulatory taxation, and other measures that directly impact all classes of the population, reversing the declining living standards of large segments of the US population which result from current economic and political policy, and greatly expanding the resources available for public health programs from their grossly inadequate level at the present time.

Winkleby et al. (1999) analyzed data taken from 10,029 black, Mexican-American, and White females and males, ages 25-64 from a large national survey to examine the independent associations of two indicators of socio-economic status (SES) (education and income) and ethnicity with six primary cardiovascular disease (CVD) risk factors. They then used data on smoking that reflected a temporal sequence to examine the extent to which SES and ethnicity influenced smoking at three different time points, from smoking onset, to a serious quit
attempt, to successful quitting. These analyses provide an understanding of the relationship between SES, ethnicity, and CVD risk factors and suggest that if the timing, focus, and content of intervention programs take pathways into account they will result in more successful outcomes.

Pickering (1999) discussed the gradient between the prevalence of cardiovascular disease (CVD) with socioeconomic status (SES). He points out that people from lower SES have more disease. Several studies have examined the roles of major CVD risk factors for explaining this gradient. There is a strong SES gradient for smoking which parallels the gradient in disease, but the gradient for hypertension and cholesterol are weak or absent. Central obesity and physical inactivity may also be contributory factors. In the US, there is a strong association between SES and race, and it is suggested that the higher prevalence of hypertension and cardiovascular disease in blacks may be attributed to psychosocial factors, including those related to SES. The possible pathways by which SES affects CVD include effects of chronic stress mediated by the brain, differences in lifestyles and behavior patterns, and access to health care. At the present time, the second of these is the strongest candidate, while the effects of stress have been little studied.
Peter and Siegrist (1999) presented an effort-reward imbalance model to identify particular work related stressors and coping characteristics that are likely to elicit sustained strain reactions and thus, in the long run, to impair the health of exposed individual. The model focuses on cardiovascular disease (CVD), as disease where health-adverse behaviors and psychosocial stress, in addition to genetic and physico-chemical determinants, were shown to have a direct impact on the development of other sclerosis and thrombosis as well as on the development to important somatic risk factors, such as hypertension.

Varma, et al. (2000) aimed at comparing stressful life events, self-efficacy beliefs and psychological distress of acute myocardial infarction patients admitted in a coronary care unit, with those at coronary risk (two or more major coronary risk factors) and normal controls. The normal controls were drawn from general population on the basis of a psychological screening test. The subjects of coronary risk and normal controls were age-and sex-matched for baseline characteristics with myocardial infarction patients. All the patients were subjected to psychometric tests including Presumptive Stressful Life Events Scale, Self- Efficacy Scale and General Health Questionnaire – 28 (GHQ). The trends of this study including 15
consecutive myocardial infarction patients, 15 coronary risk subjects and 15 normal controls show that myocardial infarction patients and those at coronary risk have higher Stressful Life Events score and psychological distress levels as compared to normal population (p<0.01). The three subgroups do not differ in their self-efficacy beliefs.

Parale et al. (2000) carried out a study on 60 cases of acute coronary syndrome admitted in General Hospital, Solapur. The age group was 25 to 80 years (mean 52.5 years). The sample included 43 males and 17 females. Thirty-eight patients had anterior wall acute myocardial infarction (AMI). 15 had inferior wall AMI; 4 had non Q infarction and 3 had unstable angina. A detailed history of happenings in 48 hours prior to index episode was elicited so as to know whether a particular factor could have triggered it. A questionnaire developed by Holmes and Rahe was used to study life changes events in each case. A score of more than 150 is indicative of 37 percent chance of illness in the next year. Type of personality in each case was assessed. Thirty-two (53.3%) patients had definite triggering factors out of which 9 patients gave history of traveling, 5 gave history of quarrel, 8 had history of financial problems, 7 patients gave history of physical strain and 3 had history of emotional stress. In more than 50 percent of the cases, a triggering factor can be
identified which could have led to acute coronary syndrome. A triggering factor is more likely to be present in the group of patients with type A personality, significant Rahe’s Scale score and with risk factors than in other patients. A better understanding of these triggers can help in preventive strategies in acute coronary syndromes.

Abraham et al. (2000) carried out a prospective cohort study of 4493 elderly Americans (≥ 65 years), who were enrolled in the Cardiovascular Health Study. These participants were free of CVD at baseline and provided annual information on their depressive status, which was assessed using the Depression Scale of the Center for Epidemiological Studies. These subjects were followed for 6 years for the development of CHD and mortality. The cumulative mean depression score was assessed for each participant up to the time of event (maximum 6-year follow-up). Among participants with the highest cumulative mean depression scores, the risk of CHD increased by 40% and risk of death by 60% compared with those who had the lowest mean scores. It was concluded that among elderly Americans, depressive symptoms constitute an independent risk factor for the development of CHD and total mortality.

Mayou et al. (2000) investigated emotional distress immediately after MI as a predictor of physical, psychological,
and social outcomes and resource use. Demographic and cardiological data were obtained for 347, 30-79 year olds who had an MI. Hospital survivors were interviewed and completed self-report assessment of mental state and quality of life at baseline and 3 months and 1 year later. 15% of patients scored as probable cases of anxiety and depression. They were more likely than noncases to report pre-MI distress and poor adjustment. There was an improvement at 3 months, but little overall or individual change after that time. Anxiety and depression (measured with the Hospital Anxiety and Depression scale) did not predict subsequent mortality but did predict poor outcome at 1 year on all dimensions of the 36-item short form quality of life measure and on specific measures of every day activity and reports of chest pain, use of primary care resources, and secondary prevention lifestyle changes. Subjects who are distressed in the hospital are at high risk of adverse psychological and quality of life outcomes.

Sher (2000) discussed the role of psychological factors in occurrence of heart disease in his paper. Studies of psychiatric patients, community samples, and patients with known heart disease demonstrated that depressive disorders, stressful life events, and poor social support are associated with increased incidence, morbidity, and mortality of atherosclerotic heart
disease. Considerable evidence suggests that depression is an independent risk factor in the pathophysiologic progression of CVD. Although depression, stress, and poor social support are risk factors, the exact mechanism by which they affect heart disease is not as yet well understood. She proposes that the immune system may be involved in the effects of psychological factors on the cardiovascular system.

Kubzansky and Kawachi (2000) considered the nature and function of emotion, reviewed epidemiological evidence for an association between three negative emotions (anger, anxiety, depression) and CHD, discussed the mechanisms by which emotions may be linked to CHD, and considered this evidence in light of theoretical insights provided by mainstream psychological research. The authors collected articles published between 1980-1999 on the relationship between each negative emotion and CHD. Review articles or chapters published during the same time period that considered mechanisms by which emotions may increase CHD risk were also collected. The results show that anxiety is involved in the onset of CHD, whereas evidence for an association between anger and CHD is limited but suggestive. Although depression has consistently been linked to mortality following a MI, evidence for its role in the onset of coronary disease is quite mixed. They concluded
that numerous unresolved issues leave the current understanding of the emotion-health relationship incomplete. Psychological theories of emotion are considered to help address gaps in knowledge. Growing evidence indicates that negative emotions may influence the development of CHD.

Weilgosz and Nolan (2000) examined the development of current thinking on the relationship between behavioral factors and ischemic heart disease with the latter being viewed as an epidemic. A nonsystematic review of the subject was conducted. The results show that atherogenic components of the coronary prone on type A behavior pattern, including hostility, cynicism, and suppression of anger as well as stress, reactivity, depression, and social isolation, are emerging as particularly significant behavioral characteristics although their pathophysiology is not yet fully understood. The authors maintain that effective patient management, particularly for lifestyle modification, requires an appreciation of an individual’s stage in their readiness to change. They concluded that the control and prevention of CVDs depend on a multidisciplinary approach that recognizes the importance and intricacies of lifestyle behaviors.

Mahajan, Mohan ,and Sehgal (2000) studied the role of psychological risk factors, e.g. personality, stress, anger
expression, styles and hostility in addition to classical risk factors like heredity, cholesterol, smoking and blood pressure in coronary artery disease (CAD). The sample comprised of 100 patients (50 males and 50 females) of CAD and of 100 matched healthy controls. Results gave an overwhelming support to the aetiological role of psychosocial factors in CAD. Further, it was revealed that they play more toxic role in female patients. Search from type A behavior has moved to the role played by anger, hostility, and aggression triad.

Whiteman et al. (2000) wrote about the periodic reviews and meta-analyses which reinforce the importance of prospective, longitudinal studies for revealing causal directions and identified the specific relationship between Type A traits or expressive hostility and CHD. In the Edinburgh Artery Study (EAS), hostility related traits and data on CV events were collected over 5 years for 55-74 year olds (809 men and 783 women). Two EAS studies investigated possible biological pathways by analyzing personality in relation to physical risk factors. Follow-up EAS studies focused on the temporal relationship between personality traits and incident CV events (both clinical detectable and sub clinical levels of disease). Results showed that (1) hostility-and dominance-related personality traits related to CV risk factors, and (2) these traits
also related to incident CV disease outcomes.

Fleet et al. (2000) reviewed existing literature examining the relationship between panic disorder (PD) and CAD. The authors specifically sought answers to the following questions: (1) what is the prevalence of PD in CAD patients? (2) what is the directionality of the relation between PD and CAD? (3) what mechanism may mediate the link between PD and CAD? Medline and Psychlit searches were conducted for the years 1980-1998. The results show that the prevalence of PD in both Cardiology outpatients and patients with documented CAD ranges from 10-50%. The association between PD and CAD appeared strongest in patients with atypical chest pain or symptoms that could not be fully explained by coronary status. There is some evidence linking phobic anxiety but not PD per se to CAD risk, but little evidence linking CAD to PD risk. Studies of the mechanisms linking PD to CAD are still in their infancy, but there is preliminary evidence linking PD to reduce heart rate variability and myocardial ischemia, to pathophysiological mechanisms related to CAD. They concluded that PD is prevalent in CAD patients, but the extent to which PD confers risk for and /or exacerbates CAD is unclear.

Jeejeebhoy et al. (2000) examined panic disorder’s cardiovascular symptoms and treatment in patients with and
without organic heart disease. Patients with Syndrome X, CAD and/or palpitations, in addition to panic disorder all present to Cardiologists. However, many patients go undiagnosed and ultimately place large costs on the health care system as a result. They concluded that panic disorder is a treatable condition and cardiologists could easily identify patients with panic disorder and intake appropriate therapy.

Appels et al. (2000) investigated the association between sudden cardiac arrest (SCA) and the behavioral factors of exhaustion and non expression of emotions. 99 victims of SCA (aged 36-70 years) and 119 coronary controls (mean age 60.9 years) participated in this study. With each case, information was collected from ambulance personnel, general practitioners, and/or family members or other witnesses about age, gender, circumstances surrounding SCA, and whether and by whom SCA had been witnessed. Information about the mental and physical state of cases and controls was collected by means of structured hetero anamnestic interviews and from the clinical records of general practitioners. The results show that victims of SCA were more often assessed as exhausted and closed by their family members than controls. A significant interaction between exhaustion and closeness on the risk of SCA was observed. Those who were exhausted and did not express their emotions
had a seven-fold greater risk of SCA. They concluded that the behavioral factor of exhaustion and non-expression of emotions may contribute to the identification of persons at elevated risk for SCA.

Siegman et al. (2000) investigated the relationship between antagonistic behavior, dominance, attitudinal hostility, and Coronary Heart Disease (CHD). 101 men and 95 women (mean age 55.2 years) referred for thallium stress testing were administered the Structured Interview and the Cook-Medley Hostility Scale. The Hostile Behavior Index (HBI) served as an index of antagonism and the frequency with which interviewees interrupted their interview served as a measure of dominance. On the basis of their medical history and thallium stress test results, 45 subjects were classified as having and 99 as not having CHD. Multivariate logistic regression revealed that both the HBI and dominance were independent risk factors for CHD. Of the two HBI component scores, indirect challenge and irritability, only the latter correlated significantly with CHD. Separate logistic regressions for men and women suggest that subtle, indirect manifestations of antagonism confer CHD risk in women and that more overt expressions of anger confer risk in men.

Davis et al. (2000) tested the hypotheses that high hostile
(HH₀) individuals show enhanced vascular responses and that low hostile (LH₀) individuals show enhanced myocardial responses to social stress, by examining hemodynamic responses of a low-anger interpersonal stressor. 40 male and 40 female undergraduates (age 18-30 yrs.) were categorized as high or low in hostility on the basis of median splits on the MMPI-derived Cook-Medley Hostility Scale. Subjects discussed a controversial topic with a confederate who disagreed with them and hemodynamic responses were assessed with impedance cardiography. HH₀ subjects exhibited greater increases in diastolic BP and total peripheral resistance and smaller increases in cardiac output during the interpersonal stressor than did LH₀ subjects. Systolic BP and heart-rate increases were greater among HH₀ relative to LH₀ females and comparable among LH₀ and HH₀ males. Affective responses (anger and anxiety) and task perceptions were generally similar for HH₀ and LH₀ subjects, but the relationship between task perception and hemodynamic responses varied on the basis of hostility level. Findings suggest that hostility in both men and women is associated with heightened vascular and dampened cardiac responsivity to interpersonal stress.

Smith et al. (2000) tested the hypotheses concerning the relationship of gender, hostility, and their interaction to blood
pressure (BP) and heart rate. 48 high and low hostile male and female college students were selected on the basis of the Cook Medley Hostility Scale. BP and heart rate were then recorded during a series of three experimental tasks: a physical stressor, a combined physical/emotional stressor, and a cognitive task. It was found that men had consistently higher BPs than women, while women had higher heart rates on two of the three stress tasks. High and low hostile subjects differed in heart rate and systolic BP under the cognitive and combined physical/emotional stress conditions. Moreover, hostility and gender interacted to affect heart rate. Results are discussed in terms of possible implication for the earlier development of CVD in men and women and the role of hostility in these disorders.

Rankin-Esquer et al. (2000) describes the physical expression of CHD, discusses non modifiable and modifiable risk factors, and focuses on the role of couple functioning in both the development of CHD and the recovery from a cardiac event. The effects of a cardiac event on the couple and family functioning are also described.

Weidner (2000) discussed the biological, behavioral, and psychosocial contributions to the gender gap in CHD. CHD is the No. 1 cause of death for both sexes in the industrialized
world, however, CHD mortality rates between these countries are larger than those between men and women, suggesting that biological factors are not the sole influences on the gender gap in CHD. Traditional coronary risk factors cannot explain the rapid increase in CHD mortality among middle-aged men in many of the newly independent states of Eastern Europe. However, Eastern European men score higher on stress-related psychosocial coronary risk factors (e.g. social isolation, vital exhaustion) than men living in the West. Comparisons between the sexes also reveal gender differences in psychosocial and behavioral coronary risk factors, including excessive alcohol consumption and smoking, favoring women. Overall, it appears that men's coping with stressful events may be less adaptive physiologically, behaviorally, and emotionally, contributing to their increased risk for CHD.

Roger et al. (2000) tested the hypothesis that female sex was negatively associated with the care delivered to and the outcome of persons diagnosed in the emergency department (ED) with stable angina. Between 1985 and 1992, 2,271 residents of Olmsted County, Minnesota (1,306 men and 965 women), were seen in the ED for chest pain meeting criteria for unstable angina. Outcome measures included procedure used within 90 days after ED visit, all-cause mortality, and cardiac
events. There was an association between female sex and lesser use of cardiac procedure that could not be explained by measured sex differences in baseline characteristics. 88 percent of subjects receiving an ED diagnosis of unstable angina were classified as intermediate or high risk according to the Agency for Health Care Policy and Research guidelines and their survival was significantly worse than expected survival. This indicates that unstable angina partends a poor prognosis irrespective of sex. In survival analyses and after adjustment for age and other baseline characteristics, men were at increased risk for cardiac events and death.

Kumar et al. (2000) carried out a case-control study to assess the relative importance of various cardiovascular risk factors in Indian women. Sixty consecutive female patients (mean age 56.5 ± 6.2 years) presenting with acute myocardial infarction were taken up for the study. Fifty age-matched controls (mean age 56±6.5 years) were also included in the study. Several risk factors were included. It was observed that presence of hypertension, diabetes mellitus, elevated total cholesterol, raised LDLC, raised triglycerides and decreased HDLC correlated directly with increased risk of cardiovascular events. Apple-shaped obesity was present in more patients with acute MI. They concluded that it is important to identify as
many modifiable risk factors as possible in Indian women, so as
to institute comprehensive measures to prevent cardiovascular
risk.

Grover, Talwar, Bahl, and Ramamurthy (2000) examined
data on 210 women, aged less than 49 years who were referred
for coronary angiography, while being evaluated for chest pain
during the period January 1996 to January 2000. Out of these,
124 (59%) patients had disease (group A) whereas 85 (41%)
patients had insignificant disease or normal coronary arteries
(group B). A review of their previous clinical records revealed
that 35 patients had history of acute myocardial infarction.
Group A patients had CAD on angiography and Group B patients
had no CAD. A comparison of risk factors between the two
groups revealed that there was a higher prevalence of
hyperlipidemia (70.2% vs. 40%), diabetes mellitus (43% vs.
15%), hypertension (44% vs. 2.18%) in group A patients.
Overall incidence of smoking was very low in all the 210
patients. 198 (94.2%) were subjected to treadmill test (TMT)
prior to coronary angiography. TMT was positive for ischemia
in 93 (75%) patients in group A and 56 (65%) in group B. Of the
124 patients with significant CAD, 70 percent patients had
single vessel disease; 25 percent had double vessel disease; and
only 5 percent had triple vessel disease.
Panigrahi, Baruah, Srinivas, and Abbayi (2000) set up the objective of their retrospective study to find out angiographic pattern of CAD in Indian women and to correlate it with the clinical and angiographic spectrum of CAD in men. Out of 1019 patients with angiographic evidence of CAD, 121 (12%) were female and 898 (88%) male. The mean age was $62 \pm 6.7$ years (female) and $56 \pm 5.8$ years (male). In females, more patients were referred for acute coronary syndrome [unstable angina (40%), myocardial infarction (39%)] than for chronic stable angina (21%). In males, referral pattern was equally distributed among all three subsets (unstable angina 33%; myocardial infarction 36%, and chronic stable angina 36%). At presentation, left ventricular dysfunction was less frequently seen in females than in males (11% vs 23%; $p<0.05$). Twenty six percent of total female patients were premenopausal in whom myocardial infarction was the commonest presentation (55%) and hypertension and hyperlipidemia were common risk factors (36% each). In the entire female population, hyperlipidemia was the commonest predisposing factor compared to male (55% vs 36%; $p<0.01$). The angiographic findings in female vs males were: 1-vessel disease (40% vs 32%), 2-vessel disease (31% vs 16%), 3-vessel disease (26 % vs 38%), left main stenosis (2% vs 12%), coronary ectasia (0.9% vs 2%) and cogenital anomaly
Gupta and Gupta et al. (2000) conducted two epidemiological studies in Jaipur. The first was performed in 1992-1994 and the second in 1999-2000. Subjects aged 20 years or older in randomly selected municipal blocks using voters' lists for enrollment were examined. Details of smoking or tobacco use, physical inactivity, hypertension, diabetes, and dyslipidemia were obtained. In the first study, 2112 subjects (1415 men, 797 women) were examined. In the second study, 632 subjects (346 men, 286 women) were examined. The study shows that there was a significant increase in prevalence of smoking or tobacco use, physical inactivity, diabetes, truncal obesity, and population cholesterol, low density lipoprotein, and triglyceride levels in an urban Indian population.

Hemingway et al. (2000) determined the impact of SES on CHD mortality in people with and without prevalent CHD at baseline. 17,907 male civil servants (aged 40-69 years) participated in this cohort study with a 25 year follow-up. SES was defined by four civil service employment grades. The main outcome measure was CHD mortality (2,695 deaths). Results show that SES was inversely associated with CHD mortality in civil servants with and without prevalent CHD at baseline.

Farooqi et al. (2000) identified key issues relating to
knowledge of and attitudes to lifestyle risk factors for CHD amongst South Asians aged over 40 years in the UK. A qualitative focus group analysis was carried out using randomly selected South Asians from general practitioner (GP) lists and South Asians attending community centers. Group discussions were taped, translated and transcribed. Participants expressed a range of attitudes to and different levels of knowledge of lifestyle risk factors for CHD. Barriers to improving lifestyle with respect to diet and exercise were identified, including lack of information (e.g. of how to cook traditional Indian food more healthily) and cultural barriers, such as lack of “women-only” exercise facilities. Participants perceived stress as an important cause of CHD, and stress directly related to ethnic minority. Status was described frequently. Language was identified as a key barrier to accessing health services. It is concluded that health professionals need to provide individually tailored health promotion for South Asians which avoids stereotyping, but recognizes potential cultural obstacles to change.

Ford, Ahluwalia, and Galuska (2000) examined the association between the frequencies of organizational and individual relationships and cigarette smoking, not having had a BP check during the proceeding 12 months, not having had a cholesterol check, not engaging in physical activity, and eating
fruits and vegetables fewer than five times per day among men and women (aged 18-70+ years). After adjusting for age, sex, race, educational attainment, marital status, and employment status, increases in organizational relationships were associated with decreases in all five behaviors; significant inverse linear trends were noted only for smoking and physical activity. For individual relationships, significant inverse linear trends were noted for not having a BP check, not having a cholesterol check, and inadequate fruit and vegetable consumption. For physical inactivity, the shape of the relationship approximated threshold responses. For smoking, a significant positive linear trend was present. Results indicate that social relationships have a beneficial effect on several behaviors that directly or indirectly affect the risk of CHD.

Wamala et al. (2000) examined the occupational gradient in CHD risk in relation to job stress and other traditional risk factors in currently employed women. Data were used from the Stockholm Female Coronary Risk Study, a population based case-control study, comprising 292 women with CHD aged 65 years or younger and 292 age-matched healthy women (controls). An inversely graded association was observed between occupational class and CHD risk. Compared with the highest (executive/professional), women in the lowest
occupational class (semi/unskilled) had a four-fold increased age-adjusted risk for CHD. Simultaneous adjustment for traditional risk factors and job stress attenuated this risk to ≥ 45. Neither job control nor the Karasek demand-control model of job stress substantially explained the increased CHD risk of women in the lowest occupational classes. It is likely that lower occupational class working women face multiple and sometimes interacting sources of work and non-work stress that are mediated by behavioral and biological factors that increase their CHD risk.

Sarma and Sarma (2000) conducted a study on a total of 500 asymptomatic people from the Occupational Health Centre of Refinery Hospital and examined and looked for their various coronary risk factors like smoking, obesity, hypertension, family history of CHD, diabetes, dyslipidemia, body mass index, and sedentary lifestyle. These findings were compared with 400 people outside used as controls. The patients were in the age group 30 to 58 years. Smoking was found in 50 (10%) in study group and 60 (24%) in the control group; obesity in 24 (4.8%) in study group and 50 (12.5%) in control; family history of CHD in 22 (4.4%) in study group and 14 (3.5%) in controls; diabetes was found in 88 (17.6%) in study group and 8 (0.2%) in controls. In the lipid profile study, hypercholesterolemia (> 200
mg\%), hypertriglyceridemia (>250 mg\%), and low HDL (35 mg\%) were found in 120 (24.0\%), 66 (13.2\%), and 15 (3.0\%) in the study group as compared to 64 (16\%), 52 (12.4\%), and 9 (2.2\%) in the control group. Sedentary lifestyle was seen in 400 (80\%) subjects in the study group and 44 (11\%) in the control group. Association of hypertension and sedentary lifestyle was found in 106 (21.2\%), hypertension and diabetes in 45 (9.0\%).

This study show that sedentary lifestyle along with a high prevalence of hypertension and dyslipidemia constitute the three major risk factors in the industrial population for the development of CAD. Combination of two or three risks factors is more commonly encountered in the industrial population.

Molokhia et al. (2000) investigated cardiovascular risk factors and Dundee risk rank in Afro-Caribbeans attending one inner city general practice, and which methods of health promotion patients preferred. The authors assessed cardiovascular risk, including systolic and diastolic blood pressure, in 98 patients (aged 15-79 years) of Afro-Caribbean origin. Fifty percent of the patients had at least two risk factors for cardiovascular disease. Focus groups suggested that the barriers to effective health promotion included lack of risk awareness, cultural and lifestyle influences, time restrictions and language difficulties.
Lynch (2001) discussed how socioeconomic (SE) factors influence important behavioral and psychosocial risk factors for CAD. The first point of reference is to recognize that CVD itself is not randomly distributed among the population and the important risk factors for CVD are also not randomly assigned. Greater awareness of SE differences in these behavioral and psychosocial risk factors is important because they are the focus of many public health intervention efforts. Conceptualizations of the psychosocial and behavioral correlates of low SE position can be located somewhere on a continuum, with one end defined by the view that these psychosocial and behavioral characteristics are essentially maladaptive phenomena that result from poor lifestyle management and as such are amenable to cognitive, emotional, and behavioral modification. The other end of the continuum is represented by the idea that although these psychosocial states and health behaviors may be maladaptive in terms of health and longevity, they must be viewed primarily as responses to adverse conditions imposed by broader social and economic structures acting over the entire life course.

Albert et al. (2001) compared the risk of sudden death during and up to 30 minutes after an episode of vigorous exertion with that during periods of lighter exertion or none.
The study then evaluated whether habitual vigorous exercise modified the risk of sudden death that was associated with vigorous exertion. In addition, the relation of vigorous exercise to the overall risk of sudden death and non sudden death from CHD was assessed. During 12 years of follow up, 122 sudden deaths were confirmed among the 21,481 male physicians (aged 40-84 years) who were initially free of self-reported CVD and who provided information on their habitual level of exercise at baseline. The relative risk of sudden death during and upto 30 minutes after vigorous exertion was 16.9. However, the absolute risk of sudden death during any particular episode of vigorous exertion was extremely low (1 sudden death per 1.51 million episodes of exertion). Habitual vigorous exercise attenuated the relative risk of sudden death that was associated with an episode of vigorous exertion. The baseline level of exercise was not associated with the overall risk of subsequent sudden death.

Praveen et al. (2002) have identified patterns of Acute Coronary Syndromes (ACS) in India. Demographic and clinical data were recorded in hospital and at 30 days. There were 3092 males (77%; mean age 56.6±11.82 years) and 989 females (23%; mean age 61.84 ±10.49 years). Subjects ≤ 50 years of age comprised 29%. There were 1546 (37.8%) with unstable angina (UA) and 2535 (62.2%) with acute MI (AMI). Lower middle
class and poor patients comprised 68.7%. Demographic characteristics, risk factors and time profile of subjects with UA and AMI were analyzed. Current smokers were 1110 (27.2%). Significantly more women had a history of hypertension (53% vs 30.1%; p<0.0001) and diabetes (40% vs 26.8%; p<0.0001). At 30 days, mortality was higher in those with known hypertension (6.2% vs 4.2%; p<0.05), diabetes (6.6% vs 4.1%; p<0.01) and previous MI (6.3% vs 4.5%; p=0.052). This study has shown that Indian patients with ACS are younger, are from a poorer socioeconomic background, and have high rates of hypertension and diabetes. Proven therapies were being prescribed to patients for risk factors. Patients with previous hypertension, diabetes and MI had higher mortality at 30 days.

Yadav et al. (2002) examined conventional and non-conventional risk factors in 100 acute myocardial infarction (AMI) patients. Conventional risk factors like smoking, hypertension, diabetes, and dyslipidemia were studied in addition to some non-conventional risk factors like lipoprotein (a) [Lp(a)], homocysteine and hemostatic factors. They concluded that patients with AMI had a higher Lp(a) concentration than controls without AMI with a statistically significant difference. A significant number of patients (24%) were younger than 40 years of age and Lp(a) has a strong
association with AMI as an independent risk factor. Also an elevated plasma homocysteine level is an independent risk factor for AMI, and treatment with folic acid can decrease it effectively. This study highlights the importance of identifying as many modifiable risk factors as possible amongst conventional and non-conventional risk factors so as to evolve a comprehensive strategy for the prevention of cardiovascular risk.

Chandra and Dash (2002) have reported that 10 percent of the adult population in India is expected to suffer from coronary artery disease (CAD). The aim of their study was to determine the percentage of people harboring conventional risk factors of CAD which they were unaware of, in an asymptomatic healthy population. Five hundred healthy executives working in NTPC were screened for conventional risk factors. Their age range was 35 to 66 years (mean age 46.9 ± 5.0 years) and gender distribution was 446 males and 54 females. The body mass index was calculated and 45% of the study population was found to be obese (BMI>25). Hyperuricemia (uric acid>7.8) was found in 2.8%, hyperglycemia was found in 18.8% and hypertension in 28.6%. Increased total cholesterol (> 200 mg/dl) was found in 32.0 and low HDL cholesterol (< 30 mg/dl) was found in 3.4% high
triglycerides (>150 mg/dl) were found in 47.6% and increased LDL cholesterol (>150 mg/dl) in 10.0%. The commonest association was obesity (45%). Of the total number of people screened, 73.2% of patients were suffering from at least one risk factor; 22.3% had two and 26.8% had three or more risk factors for the development of CAD.

Achari, Thakur, and Sinha (2002) assessed five hundred twelve diabetics (335 males, 177 females) for the presence of coronary artery disease (CAD) by appropriate invasive and non-invasive methods (ECG, TMT, and coronary angiography when necessary) as well as for risk factor profile. Two hundred eighty-eight (56.25%) tested positive for CAD. Patients with CAD were older than those without CAD (mean age 59.4 vs 52.14 years; p<0.01) and also had a longer duration of diabetes (mean 10.99 vs 7.21 years in those without CAD, p=0.038). Hypertension was present in 118 with CAD (41%) as compared to 84 without CAD (37.5%) (p<0.01). Diabetes with CAD was more commonly seen in current or ex-smokers, 100 (34.7%) as compared to 45 without CAD (20.1%) (p<0.001). Obesity was commoner in diabetics with CAD (159 of 288, 55.2% as against 99 out of 224, 44.2%, without CAD) (p<0.001). Mean lipid levels showed slightly higher total cholesterol and LDL cholesterol: 205.3± 31.7 mg/dl and 121.6 ± 31.8 mg /dl in
diabetics with CAD vs 196.7 ± 32.8 mg/dl and 113.2±32.4 mg/dl in patients without CAD (p<0.05). HDL, triglycerides, and lipoprotein (a) levels were not significantly different in the two groups. Microalbuminuria was present in 102 diabetic patients with CAD (35.4%) as compared to 65 patients without CAD (29.1%) (p<0.001). When these data were subjected to multivariate logistic regression analysis, only four factors were found to be strongly significant: age, obesity, microalbuminuria, and smoking. The importance of hypertension and dyslipidemia was eliminated. These findings suggest that apart from age, obesity and microalbuminuria may be better markers for diabetic CAD than traditional risk factors.

Patil et al. (2002) studied 152 women with Acute MI (AMI) for risk factors complications and mortality. Of these, 16 were pre-menopausal and 136 were post-menopausal. The mean age was 60.08 years. Hypertension (48.6%) and diabetes (30.9%) were the commonest risk factors; 21.3% had a previous history of MI, of whom 8.8% were on aspirin therapy and 14% were on beta-blocker therapy. Complications and mortality were more common in post-menopausal women. It was concluded that age and duration of post-menopausal period have a direct correlation to complications and mortality in women.

Kumbkarni et al. (2002) have reported that an epidemic of
coronary artery disease (CAD) is engulfing the northern Indian population. However, to formulate effective preventive strategies to check this disease, the epidemiological data are deficient. They present the data of 383 (325 males, 58 females) consecutive healthy urban individuals who attended the executive health check-up program in the past six months. The mean age group of the individuals was 50.2±11 years. Sixty-one individuals (16%) were detected to be hypertensive while 56 (14.6 %) were detected to have fasting blood sugar of more than 120 mg %. Two hundred seventy-five individuals (71%) were overweight (BMI>25) and 102 (27%) were obese (BMI>30). Mean cholesterol of the population was 188±38.75 mg % and the mean HDL was 45.25±9.77 mg%. One hundred fourteen individuals had HDL less than 40 mg%. LDL more than 100 mg% was present in 223 individuals (58.2%). Hypertriglyceridemia was present in 130 individuals (33%). Thirty-eight individuals (10%) were smokers in the study. They concluded that healthy urban individuals of Punjab are at high risk for developing CAD.

Gupta et al. (2002) examined the association of educational level as a marker of socio-economic status, with coronary risk factor prevalence in an Indian urban population. They performed surveys in randomly selected individuals aged ≥
20 years. One thousand one hundred twenty-three subjects (550 males, 573 females) were studied. Details of major coronary risk factors, i.e., smoking, physical inactivity, hypertension, diabetes, body mass index (BMI), waist-hip ratio and blood pressure were determined. Fasting blood was examined for glucose and lipid levels in 1082 (532 males, 550 females). Educational status was classified into group O (no formal education); group I (1-10 years); group II (11-15 years); and group III (≥16 years). In men, smoking/tobacco use was seen in 36.6%, physical inactivity in 28.5%, hypertension in 36.4%, history of diabetes or fasting glucose >125 mg/dl in 13.1%, obesity in 24.5%, and truncal obesity in 57.4%. In women, these were 11.7%, 22.6%, 37.5%, 11.1%, 30.2%, and 68.4%, respectively. In men low HDL-cholesterol (<40 mg/dl) was seen in 54.9%, high total cholesterol (≥ 200 mg/dl) in 37.4%, high LDL-cholesterol (≥130 mg/dl) in 37.0%, and high triglycerides (≥150 mg/dl) in 32.3%; while in women these were in 55.1%, 43.1%, 45.8%, and 28.6%, respectively. A significant inverse correlation of educational level was seen with smoking, fasting glucose, total cholesterol, LDL - cholesterol, and triglycerides. Positive correlation was seen with BMI, waist hip ratio, and hypertension prevalence. This study shows a significant burden of traditional coronary risk factors of smoking, obesity, truncal
obesity, diabetes, hypertension, high total and LDL-cholesterol and triglycerides and low HDL-cholesterol in the urban Indian population. Illiterate and low-education status subjects who are socio-economically disadvantaged have a greater prevalence of smoking, diabetes, and dyslipidemias.

Xavier et al. (2002) studied 4040 subjects, of which 3092 (76.5%) were males (mean age 56.6±11.82 years) and 948 (23.5%) were females (mean age 61.84±10.49 years). Of the total, 1157 (28.7%) were ≤ 50 years of age; 1546 (38.7%) had unstable angina; and the rest acute myocardial infarction (AMI). There were more smokers in the younger age group. Interventions were more common in the ≤ 50 years age group. Death was lower in the younger group. Other outcomes such as reinfarction, stroke, shock and cardiac arrest were not different. There are two key messages from this study: first, younger patients smokes more, were more aggressively managed and had better outcomes. Second, with such a large proportion of young patients (almost 30%), definitive measures for primary and secondary prevention must be instituted at the earliest, especially anti-smoking measures.

Singh, Arora, Nayyar, Arora, and Singh (2002) have studied the clinical profile and risk factors for MI in a young population. Fifty cases of acute MI of either sex, less than 45
years of age were studied. The diagnosis of MI was based upon clinical spectrum, ECG and rise in the level of the cardiac enzyme. The risk factors for CAD, site of MI and its complications were evaluated. Forty-two patients were male and 8 female. The mean age was 36.85 years. Thirty six patients had anterior, two had posterior, and 15 had inferior wall MI. Twenty had history of smoking; 19 were hypertensive; 12 were obese; 5 had diabetes mellitus; 19 had dyslipidemia; 17 had a positive family history of IHD whereas 5 did not have any risk factors. Three (5.55%) of the patients expired. They concluded that MI can occur at a younger age. The incidence was maximum in the fourth decade and there was a male preponderance. Anterior wall MI was more common than inferior and posterior wall MI. Complications were more in those who had a previous history of IHD. Smoking, dyslipidemia, hypertension, obesity and diabetes mellitus were the leading risk factors, either single or in combination, but in 10% no risk factor could be identified.

Singh, et al. (2002) have examined the clinical profile of fresh myocardial infarction (MI) and risk factors for CAD in young vs old patients. Seventy-five patients of fresh MI of either sex were studied. The risk factors for MI were recorded. Young MI was considered if the age of the patient was less than 45 years and old if above 60 years of age. The patients were
divided into two groups: group I comprised young and group II old patients. Fifty patients were in group I and 25 in group II. The mean age of patients was 36.85 years (group I) and 69.84 years (group II). In group I, 35 had anterior, 2 had posterior, 13 had inferior wall MI; in group II, 8 had anterior; 6 anteroseptal; 10 inferior; and 1 had RV infarction. Risk factors in group I were smoking in 18, hypertension in 16, obesity in 9, diabetes mellitus in 5, dyslipidemia in 16, and positive family history of ischemic heart disease in 14, and no risk factor could be identified in 5, whereas in group II the risk factors were smoking in 15, hypertension in 6, DM in 5, and family history of IHD in 1. Smoking was a dominant risk factor for CAD in young as well as old patients followed by hypertension and dyslipidemia. Two patients died in group I, and 4 in group II. They concluded that, in the present scenario, MI can occur at any age. In the younger age group, the incidence was maximum in the fourth decade and there was male preponderance, anterior wall MI was more common; whereas in group II, inferior wall MI was more common. Smoking was the dominant and major risk factor in the young as well as the older age group along with dyslipidemia, hypertension and obesity.

Shakar et al. (2002) made an attempt to assess the incidence of mortality due to AMI and associated risk factors.
Sample was divided into two groups according to age group I (20-35 years) and group II (36-80 years). Criteria assessed were associated diseases, site of infarction, surgical interventions, and biochemical parameters investigated. Results show that the incidence of myocardial infarction (MI) was significant in younger individuals (47.22%) vs in the elderly (52.78%), the peak being in the age group of 30-45 years in males and 40-55 years in females. Males predominate in both the groups. Smoking was the main risk factor—both in the younger as also in the elderly population (77% and 67% respectively) followed by hypertension (72% vs 80%) and diabetes mellitus (22% vs 34.5%). Mortality was higher in the elderly (22.68%) compared to the younger group (12.52%). Inspite of the fact that atherosclerotic changes are higher as age advances in this study a significant number of patients below the age of 35 years developed MI. Stress, smoking, and hypertension are the precipitating factors in the initiation of AMI in young populations.

Yadav et al. (2002) studied ninety consecutive cases of coronary artery disease (CAD). Their levels of lipoprotein (a) [Lp(a)] were compared with 30 matching controls. There were 55 cases of acute myocardial infarction (AMI), and 22 cases of unstable angina and 13 of stable angina. The lipid profile and
Lp(a) levels were analyzed. The mean serum Lp(a) in cases of CAD was 41±2.58 mg/dl which is significantly higher than the control value of 24±3.18 mg/dl (p<0.01). Analysis of subgroups of AMI and angina revealed that there was a significant difference in Lp(a) level of 47.4±2.5 mg % in the AMI group as compared to 30±25 mg % in the angina group (p<0.01). Taking 30 mg% Lp(a) as cut-off value, 71% of cases of CAD had high Lp(a) as compared to 23% in control cases (p<0.01). Dyslipidemias were present in 73% of CAD cases and 53% of controls. The commonest lipid abnormality observed was increased LDL levels in cases of CAD and hypertriglyceridemia in controls. CAD cases with dyslipidemia had high levels of Lp(a) in 81% as compared to 54% in controls. It is observed that Lp(a) levels are significantly high in CAD cases and dyslipidemias are commonly associated with CAD.

**CAD Risk Factor Intervention**

Several studies have been conducted and research articles written on the various interventional strategies which help control the rising incidence of CAD risk factors, both in India and aboard. Some relevant literature reviewed in this context has been presented under this section.

George et al. (1998) assessed the effectiveness of a cognitive-behavioral intervention program in (a) modifying
Type A Behavior Pattern (TABP), (b) reducing anxiety, and (c) changing maladaptive cognitions in a 55-years old married male patient with coronary heart disease (CHD). Pre-, mid-, and post-treatment assessment were done using Jenkins Activity Survey, Emotional Control Scale, State-Trait Anxiety Inventory, Dysfunctional Attitude Scale, and Physiological measures of galvanic skin response. The cognitive-behavioral intervention program consisted of coronary counseling, education about TABP, behavioral counseling of significant others, and stress inoculation training. Clinically significant assessment scores indicate the effectiveness of the intervention program in the modification of TABP and associated problems.

Lowensteyn I, et al. (1998) examined the degree to which family physicians are willing to adopt a new diagnostic tool into their busy clinical practice, examined patient response to this new approach, and provided a preliminary evaluation of its effectiveness in terms of risk factor modification. Subjects included 253 community-based physicians, randomized into profile and control groups, and 958 of their patients (aged 30-74 years). The profile group physicians received coronary risk profile for the patients within 10 working days after the baseline patient assessment providing early feedback. Patients’ coronary risk factors were evaluated at baseline and at 3-6 months.
follow-up. The profile group had a significantly higher ration of high-risk/ low-risk patients who returned for a follow-up visit. Computer-generated coronary risk profile can be effective in assisting physicians to identify high-risk patients. Their use is also associated with significantly greater improvements in the serum profiles and the overall coronary risk of these patients.

Hiremath, Sathe, and Durairaj (1999) assessed the effect of comprehensive lifestyle change on atherosclerotic coronary artery stenosis in 20 patients. These patients were assigned a low-fat vegetarian diet, aerobic and yogic exercises, and stress management techniques like meditation etc. After 15 months of rigorous implementation of this program, these patients showed improvement in their exercise capacity and decrease in total serum cholesterol and low-density lipoprotein (LDL) levels. Regression of atherosclerosis was seen angiographically in 38% of coronary lesions. The results demonstrate that comprehensive lifestyle changes favorably affect the regression of atherosclerotic CAD.

Magdum et al. (1999) assessed the feasibility, cost – effectiveness and short-term benefits of aggressive and sustained lifestyle modification measures in regression of CAD. Sixty patients with angiographically demonstrated CAD were included in the study. Thirty patients in the study group
underwent an aggressive in-hospital lifestyle modification program under direct supervision. The program included a 5-day workshop consisting of lectures about health education and dietary intervention and practical demonstration of various exercises, yoga, and relaxation. Patients requiring counseling assistance to stop smoking were counseled at multiple sessions. The patients were followed-up at monthly intervals for assessment of compliance with respect to various interventions and for further motivation. Thirty patients in the control were advised usual lifestyle modification measures. Both the groups were similar with respect to baseline clinical characteristics, risk factor profile, and drug therapy. All the patients were followed up for a period of 3 months and assessed for changes in risk factors and clinical events. Dietary compliance was satisfactory in 90% patients in the study group as compared to 23.3% in the control group. A significantly higher number of patients were able to quit smoking in the study group. There was a significant reduction in the mean stress score in patients of the study group and significant fall in total cholesterol and LDL cholesterol. The changes in HDL and triglyceride levels were not statistically significant. Also, there were no significant differences in the blood sugar levels and the number and dosage of ant diabetic and antihypertensive medications. There were
significant reductions in the number of angina episodes per week in the study group. More patients in the study group reported sense of well-being and an improved ability to cope with stress in daily life. There was no new MIs or deaths in either group at the end of 3 months. Comprehensive lifestyle changes are effective in producing significant beneficial alternations in various risk factors for CAD. These changes are useful in providing symptomatic relief and improvement in the quality of life. The long-term benefit of these alternations remains to be studied.

Nisbeth, Klausen, and Andersen (2000) studied the need for counseling and its effect on willingness and ability to change lifestyle, and subsequent changes in CHD risk factors. 85 male employees in a computer company (aged 25-45 years) participated. Subjects were randomized into an intervention group (I group) and a control group. The I group was divided into subgroups based on baseline behavior and risk factor status. After an initial health examination, participants from the I-group were counseled at baseline and after 5 months. An exercise group was advised to exercise aerobically 3 times/week, a diet group to reduce the intake of saturated fat and increase fish products, and smokers to quit smoking. 40 subjects were recommended one or more behavioral changes and eight
had no need. 34 were willing to make behavioral changes. Changes were evaluated after one year. Compared to the control group the fitness level increased and body weight decreased in the I group.

Sebregts, Falger, and Bar (2000) questioned whether nonpharmacological interventions actually contribute favorably (1) to risk factor modification in patients with CHD, and in doing so, (2) to a reduction in mortality and morbidity or to favorable changes in atherosclerotic stenosis. A computer search was performed on Medline and Psychlit, and relevant articles mentioned with the references but not found in these files, were also used. The authors restricted themselves to nonpharmacological interventions aimed at modification of smoking, serum cholesterol, physical exercise, type A behavior, hypertension, or body weight. The findings show that interventions aimed at healthy lifestyles may stimulate smoking cessation rates, reduce elevated serum total and LDL cholesterol concentrations, and favorably modify type A behavior in CHD patients. Moreover, reduction of coronary atherosclerosis has been reported after intensive lifestyle and exercise interventions, whereas exercise, and type A interventions may also lead to reduced CHD morbidity and mortality. As for hypertension and obesity, studies aimed at secondary prevention
are lacking.

Frasure Smith, Lesperance, and Talojic (2000) examined the prognostic importance of a variety of psychosocial factors, including depression, following MI. Baseline interviews, including standardized measures, were conducted with patients with a diagnosis of acute MI. Data on patients' medical condition was obtained from hospital charts. Patients or their family members were contacted at 6, 12, and 18 months after MI to assess patient survival status. Over the full 18 months of follow-up, 21 patients died, including 19 from cardiac causes and two from cancer. Major depression significantly increased the risk of mortality at all 3 timepoints. However, the majority of its impact was during the first 6 months. Results suggest that the identification of important psychological variables after a heart attack facilitates the development of therapeutic interventions to improve the prognosis following MI.

Pant et al. (2000) evaluated the efficacy of intensive care over usual care in modifying the modifiable risk factors in manifest CAD patients over 6 months follow-up. Sixty patients (mean age 51 years) were prospectively evaluated by randomizing 30 each in two groups, usual and intensive care group. In intensive care group, intensification of care was achieved by more frequent visits, group discussion, education
program, and advice of dietician. At the end of 6 months follow-up, analysis was done to see the effect of intensive care over usual care in achieving the desirable status among some modifiable risk factors such as hypertension, diabetes mellitus, smoking, obesity, LDL and HDL levels, and triglyceride levels. The study indicates that patients getting intensive care show positive trend in efficacy, although statistically not much significant. So, it is proposed that intensive care may be useful over usual care in achieving desirable status of modifiable risk factors in a more effective way.

Krishnamoorthy and Dash (2000) analyzed the motivation for cessation of smoking in 120 patients with coronary artery disease admitted for acute coronary syndromes (ACS) or for coronary revascularization (CR) at one-year follow-up. Age of ex-smokers (group I, n=84) was 42.4 ± 12.8 years and that of continuing smokers (group II, n=36) was 46.3± 18.5 years. Thirty-three of the 38 patients admitted for CR stopped smoking. But only 51 of the 82 patients with ACS did so. For group I, the motivation was provided by doctor, paramedic staff, family or friends, media etc. and the reasons given for motivation included-health, economic, suffering, family, and others. The group II gave various reasons for continued smoking like doctor did not tell, media advertising, withdrawal
symptoms, peer pressure, passive smoking etc. the researchers concluded that counseling is more effective when done repeatedly and by multiple persons. Doctors should spend more time on counseling. Emphasis should be on socio-economic factors as a motivator to stop smoking since many are aware of the health factor. Passive smoking and media are important contributors to continued smoking. Media as well as medical and paramedical curricula need to emphasize more on the evils of smoking.

Priscilla, Paul, and Cherian (2002) aimed to identify the risk factors prevailing before the onset of CAD in Post Coronary Artery Bypass Graft (CABG) patients. The purpose of their study was to prevent relapse or reoccurrence of the disease through lifestyle modification based on Dr. Dean Ornish's program for reversing heart diseases. The study sample consisted of 167 patients (147 men and 20 women) who underwent CABG. The age group of the patients ranged from 28 to 64 years with the mean age of 51.5 ± 6.0 years. A qualitative analysis of the data revealed certain psychological risk factors like sleep disturbance, anxiety, and depression to be the predominant factors prevailing before the onset of the CAD.

Kaul, Seth, and Manchanda (2002) observed the effects of Yoga lifestyle intervention on enthothelial dysfunction in
patients with CAD. Eighteen patients with angiographically proven CAD were enrolled in the study. They took part in the yoga lifestyle modification program consisting of dietary changes, exercise and stress relaxation exercises. Endothelial function was studied at baseline and at four months of yogic lifestyle change. Four months of yogic lifestyle modification showed a trend towards improvement in endothelial dysfunction, though it did not reach statistical significance, perhaps due to the short period of yogic intervention as well as the small sample studied.

Varma et al. (2002) evaluated the scope of psychological intervention in the management of acute coronary syndromes (ACS). Consecutive patients of ACS were enrolled at the time of discharge from CCU. They were assigned either usual medical care (group I) or additional psychological intervention (group II) after psychological assessment based on self reporting questionnaires. The exclusion criteria included inability to participate or age > 70 years. All the patients were put on a comprehensive psychological intervention including psychologist- administered group therapy and education, muscle relaxation and breathing techniques, stress management, biofeedback, cognitive behavioral treatment, interpersonal and individual therapy administered in 12 sessions over 6 months.
The effect was observed on psychological distress levels, biological risk factor reduction, cardiovascular morbidity and mortality at 1 month and 6 month intervals. Preliminary results suggest significant reduction in psychological distress in group II and a superior biological factor modification.

Kumar et al. (2000) evaluated prospectively the dietary pattern and role of dietary modification in 58 patients of proven coronary artery disease. Of these, 52 were male, and their mean age was 42.6 ± 12.3 years. These patients were advised a diet according to the NCEP step II diet alongwith advice for weight reduction and regular aerobic exercise. After 6 weeks of dietary modification there was no significant change in weight. Fifty-six patients adhered to the exercise program as advised. Their mean caloric intakes was 1757.2 ± 375.0 Kcal. There was a significant increase in the intake of polyunsaturated fat, soluble and total fiber, but there was no significant change in total calories, carbohydrate, protein, non saturated fat, saturated and total fat after dietary therapy. There was a significant decrease of 19.5% of total cholesterol (TC), 14.5% decrease of HDL cholesterol, 24.8% decrease of LDL cholesterol, but no significant decrease in triglyceride and TC-to-HDL ratio. They concluded that the dietary pattern of Indian patients with CAD is different from their western counterparts. ATP III guidelines
may not be useful for Indian patients. Lifestyle medication is more important than dietary therapy alone.

**Coping Behavior of CAD Patients**

Review of literature reveals numerous studies related to the coping behavior of coronary artery disease patients. The studies reported under this section highlight the role of psychosocial and physical coping process in managing coronary artery diseases.

Gerin, Pieper, Marchese, and Pickering (1992) examined the effects of active and passive coping on cardiovascular response to stress. The study was designed to vary level of control and availability of active coping responses while maintaining effort constant. Sixty female undergraduates performed word-search puzzles while blood pressure and heart rate were monitored. Subjects were divided into three groups: In condition 1, reinforcement was continued on the subjects’ performance only; in condition 2 and 3, reinforcement was continued on the joint performance of the subject and a poorly performing confederate. In condition 2, subjects could help their partners (active coping); in condition 3, they could not (passive coping). Cardiovascular responses were significantly greater in the passive-coping condition than in the other two conditions, thus indicating that with effort held constant,
enhanced control diminishes reactivity.

Demollet and de Potter (1992) have used cluster analysis to delineate coping subtypes in 166 Belgian men (aged 35-73 years) with coronary heart disease who completed an outpatient rehabilitation program. These subtypes were identified on the basis of three well-defined superordinate traits: negative affectivity, social inhibition, and self-deception. Four coping subtypes were identified: low-negative affectivity, high negative affectivity, inhibited, and repressive. The accuracy of the resulting classification was demonstrated across parallel data set and was further validated against external, health-related correlates. The identified coping subtypes were significantly related to Type A behavior and anger-in, return to work, prevalence of chest-pain complaints, and use of minor tranquilizers and sleeping pills.

Landerville and Vezina (1994) determined if elderly coronary artery disease (CAD) patients high and low in depression differ on how they appraise stressors associated with CAD and how they cope with such stressors. 20 old CAD patients high in depressive symptoms and 35 old CAD patients low in depressive symptoms (aged 65-84 years) reported their most severe stressor and related how they coped with it. Groups were homogenous in sociodemographic, health, and stressor-
related characteristics. CAD subjects high in depressive symptoms reported more harm to their own physical well-being and more threat to their self-esteem and a loved one's well-being. They also reported more escape-avoidance coping. Primary appraisal and escapist coping may be useful in the explanation of depressive symptoms in elderly CAD patients.

De Ridder et al. (1997) used a concept mapping method to sort out the beliefs of 172 patients on coping with illness and coping with the health care system into two dimensions (priority and content). Statistical analysis revealed 10 beliefs on coping with illness, with "autonomy" and "acceptance of illness" as the most important. Ten beliefs on coping with health care system were also identified, of which the most important was a professional relationship with the physician, based on mutual trust and respect between two equal partners. They argued that these beliefs represent idealized images of coping with illness and coping with the health care system.

Suls et al. (1997) studied the relationship between protective buffering (a style of coping in which the individual hides his/her concerns from spouse) and distress level among post-myocardial infarction (MI) patients and their spouses. Forty three male married MI survivors (aged 31-86 years) and their wives completed measures of psychological distress and
protective buffering at 4 week and 6 months post-hospital discharge. At both time periods, a greater propensity for protective buffering by the patient was related to higher levels of patients' distress. Protective buffering by wife was also associated with higher levels of wife distress. In addition, patient buffering at 4 week predicted increased patient distress at 6 months. Results suggest that male MI patients who conceal their worries from their spouses adjust more poorly over time.

Dath et al. (1997) studied the efficacy of biofeedback induced relaxation and behavioral counseling in reducing anxiety related symptoms in coronary heart disease (CHD) cases. A single case study design with pre-post 2 years history of CHD in the age group of 35 to 45 years was administered to Hamilton’s Anxiety Rating Scale, Symptom Check List, and Jenkins Activity Survey-Form “C”. Therapy continued for 30 days with each case. Comparison of pre-post assessments revealed marked reduction in clinical symptoms and anxiety among the clients. Further, the therapy enhanced the client’s psychological well being and quality of life.

Schwarzer and Schroder (1997) have advocated that the quality of life after surgery can be improved by optimistic self-beliefs and social support. 248 patients undergoing heart surgery were surveyed once before and twice after surgery.
Study examined whether pre-surgical (Time 1) personal and social resources would predict quality of life 1 week after heart surgery (Time 2). Synergetic effects emerged upon degree of worry and mental activity as quality of life indicators. Study 2 examined resources of social network members. A sample of 114 significant others, most of them spouses, reported about their own resources at Time 1. Spouses' optimistic self-beliefs and social support as measured at Time 1 predicted patients' quality of life after half a year (Time 3).

Schwarzer and Schroder (1997) have advocated that coping with stressful events can be facilitated by personal and social resources, such as perceived self-efficacy and social support. This applies also to the adaptation to surgical stress and to severe diseases. 248 patients (mean age 58 years) were surveyed before and after heart surgery. Degree of worry, emotional states, reading activity, and physical activity were chosen as characteristics of the recovery process. Whether presurgical personal and social resources would predict readjustment after heart surgery was examined. Hierarchical regression analyses identified an interaction between the two resources underscoring the existence of the well-known support buffer effect. Covariance structure analysis revealed that perceived self-efficacy was a better predictor of recovery than
Fontana et al. (1998) used an anger-provocation paradigm to assess coping and stress reactivity during different phases of the menstrual cycle in 20 women with a positive parental history of cardiovascular disorders (mean age 39.5 years) and 14 women whose parents had no cardiovascular disease. Frequency of seeking social support in the natural environment was assessed, as were systolic and diastolic blood pressures, while the women performed anger-inducting arithmetic and speech-stressor task during the premenstrual and postmenstrual phases. Premenstrually, the women with a positive cardiac history sought support less frequently than those with a negative history. No differences were found between the groups postmenstrually. When the women were identified according to the frequency with which they sought social support, those who more often sought support registered lower baseline blood pressure levels than those women who less often sought support during both cycle phases.

Agrawal and Pandey (1998) examined the role of future orientation (FO) and optimism in coping with chronic diseases and in satisfaction with life (SWL). The sample comprised 44 middle class women (age 24-45) years (22 women were suffering from chronic diseases like cancer, diabetes,
cardiovascular disease or asthma, and 22 were normal healthy women). Story writing technique and semantic differential strategies were used. Findings indicate significant differences between the groups in FO and optimism. High FO patients portrayed an active positive, and optimistic future. There were differences in the coping techniques and expressed greater satisfaction with life.

Varma et al. (1999) conducted a study designed to score angina patients on stressful life events (SLE). Psychological distress experienced and coping behavior adopted were compared to the normal controls. The sample included 45 patients (30 male, 15 female; mean age 48 ± 6 years) of stable and unstable angina pectoris including 10 post-myocardial infarction patients. They were selected on the basis of clinical presentation and investigations. Thirty-five normal, age-matched controls without any psychiatric disease were also studied. Test materials used for collecting data included, Presumptive Life Events Scale (PALE), Coping Check List (CCL), General Health Questionnaire (GHQ), and Self Reporting Questionnaire (SRQ). PALE score was significantly higher in angina patients as compared to controls. Stress score for psychological distress too was higher in angina patients. Coping behavior was not significantly different; however,
angina patients used avoidance-positive and avoidance-negative approaches for coping more frequently than active cognitive approach. Angina patients had higher magnitude of stress during lifetime as compared to controls.

Ben-zur, Rappaport, Ammar, and Uretzky (2000) conducted a study in which a mail questionnaire was completed by 171 patients (aged 40-70 years) two to twenty months after undergoing Coronary Artery Bypass Graft Surgery (CABG). The post-CABG period was characterized by fewer working hours, a higher level of physical exercise, a reduction in smoking, and more appropriate nutritional habits, compared with the preoperational period. At the same time, the anxiety level of post-CABG patients was higher than that measured in a community sample. Post-CADG high psychological distress (anxiety and mood states) and low functional capacity was associated with high-levels of pessimism and ineffective emotion-focused coping strategies. These findings may be used by social workers in devising psychological interventions aims at improving post-CABG patients' quality of life and bolstering their coping strategies.

Piferi and Lawler (2000) examined the relationship of women’s hostility to cardiovascular (CV) reactivity during stressful, interpersonal confrontations. Hostility level, coping
methods, and perceived social support were evaluated in 90, 17-41 year old female undergraduates. Blood Pressure (BP) and heart rate were monitored in the subjects during discussions with a disagreeing confederate. In 1st discussion, subjects were given positive feedback concerning their performance; in a 2nd discussion, they were given non-positive feedback on their effectiveness in expressing their views. Low hostile women displayed greater systolic BP and heart rate increases than high hostile women. In addition, the women showed greater systolic and diastolic BP reactivity during the positive feedback than during the non-positive feedback conditions. However, for diastolic BP, these results were qualified by an interaction, such that low hostile women displayed greater reactivity during positive feedback than during the non-positive feedback while high hostile women were equally reactive in both conditions. Assessment of coping styles indicated that high hostile women may be less reactive due to withdrawal and lack of engagement during the task, while low hostile women may show greater engagement, especially when encouraged by positive feedback.

Beresnevaite (2000) conducted a study in which 20 post myocardial infarction (MI) patients (19 men and 1 woman; mean age 51.75 years) were placed in a treatment group, which received weekly group psychotherapy for 4 months. 17 post MI
patients (16 men and 1 woman; mean age 48.47 years) were placed in a comparison group which received two educational sessions ever a period of 1 month. Subjects completed the Toronto Alexithymia Scale (TAS) before the start of group therapy, at the end of the 4 months period and in follow-up assessment after 6 months, 1 year, and 2-year intervals. In the psychotherapy treatment group, there was a significant reduction in the mean TAS score following group therapy which was maintained over the 2-year follow-up period. In the educational group, there were no significant changes in mean TAS scores between the initial testing and any of the follow-up intervals. Over the 2-year follow-up period, patients with decreased alexithymia following group therapy experienced fewer cardiac events than patients whose Alexithymia remained unchanged.

Whittemore et al. (2000) examined the experiences of peer advisors participating in a social support intervention for single patients recovering from MI. Subjects were 10 actively involved peer advisors (aged 62+ years) previously experiencing MI who provided social support for a randomized component group of post-MI single elderly patients (mean age-76 years). Collected data included peer advisor logs, a focus group, and interviews with peer advisors. Results show that helping, mutual sharing,
committing, and benefitting were characteristics of peer experiences, with some negative aspects associated with many positive ones. Subjects found advising experiences generally meaningful. Primarily because of their personal experience of recovery from MI, peer advisors displayed a remarkable ability to relate to assigned subjects, offering a unique form of social support complementary to current health practices.

Dornelas et al. (2000) evaluated an intervention that consisted of brief inpatient counseling and follow-up telephone calls among 100, 27-83 year old cigarette smokers consecutively admitted during 1996 with MI. Subjects were assigned to minimal care or to a hospital-based smoking cessation program. Intervention consisted of bedside cessation counseling followed by 7 telephone calls over the 6 months following discharge. Primary outcomes were abstinence rates measured at 6 months and 1-year post discharge. Results show that at follow up, 42 and 34 % of subjects in minimal care and 67 and 55% of subjects in intervention were abstinent at 6 and 12 months respectively. Abstinence rates were calculated assuming that subjects lost to attrition were smokers at follow-up. Low self-efficacy combined with no intervention resulted in a 93% relapse rate by 1 year. It is concluded that a hospital based smoking cessation program consisting of inpatient counseling
and telephone follow-up substantially increases smoking abstinence, 1 year after discharge in patients post-MI. Patients with low self-efficacy are almost certain to relapse without intervention. Such smoking cessation programs should be part of the management of patients with MI.

Newell, Bowman, and Cockburn (2000) critically reviewed literature about the effectiveness of interventions aims at improving cardiovascular patient compliance with non pharmacologic treatments. The authors searched the bibliographies of located studies; contacted Australian government departments and NGOs; and two experts examined the resulting study list. They selected 27 studies which randomly allocated patients to groups and were published. These trials were critically appraised against 8 methodologic criteria and classified as of good, fair, or poor quality. Information about target groups, samples, trial intervention strategies and their effectiveness were extracted from the 18 good- and fair-quality trials. Interater reliability was high on the 20% of references that were double-coded. The studies described the effectiveness of 27 intervention strategies at improving compliance with dietary, smoking cessation, exercise, weight-loss, stress-reduction, general lifestyle, relaxation, and blood-pressure screening programs. Partner-focused and structural
strategies showed the most consistent benefits; physician-focused strategies were unanimously unsuccessful; and patient focused strategies were of mixed benefit.

Garvin and Kim (2000) suggested that seeking information is a common coping strategy of patients facing a stressful event but people differ in how much information they want to help them in their coping process. Research-based practice related to patients' preferences for information is hampered by the lack of reliable, valid, and clinically useful instruments to measure preference for information. Also, it is important for researchers and clinicians to understand that preferences for information might differ in different cultures. These investigators determined the reliability and validity for three measures of preference for information: the Miller Behavioral Style Scale (MBSS), the Krantz Health Opinion Survey-Information subscales (KHOS-I), and the Preference for Information Scale. The subjects were 106 cardiac catheterization patients (37 from the US and 69 from South Korea). The MBSS and the KHOS-I were found to have fair-to-excellent reliability and fair-to-moderate convergent validity. The lack of a correlation of either of these instruments with Preference for Information Scale does not support convergent validity for that instrument.

Harenstam, Theorell, and Kaijser (2000) explored the
association among coping, psychosocial work factors, and signs of CHD among prison staff (777 men, 345 women). ECG recordings at rest, health examinations, and a questionnaire were used. A high level of covert coping in men and a low level of open coping in women showed the strongest association with signs of CHD. Among several traditional biological and lifestyle risk factors, only age and systolic blood pressure in men and none in the case of women were significantly associated with CHD signs in the final multivariate regression analyses. A coping style of repressed emotions and actions in anger-provoking situations, independent of traditional risk factors, seems to be associated with a prevalence of ECG sings in male and female prison staff.

Strizenec (2000) described that research concerning the effects of religion on coping with stressful situations has brought new specific data. In terms of theory and research, this subject area has been developed most by K.I. Pargament, who delineated three styles of religious coping: Self-directing, Deferring, and Collaborative. In a research project involving 228 adolescents (mean age 16 years) who completed Pargament's scale of religious coping, the authors confirmed the reliability for the Slovak translation of the above authors scale and found a prevalence of the collaboration with God coping
style. Similar results were found in other smaller samples of subjects. The collaborative style is connected with intrinsic religious orientation.

Heilman and Witztum (2000) described the way that people for whom religion is at the heart of their cultural and personal life, try to cope with their problems via religious dogma or practice. He illustrates this through the three cases drawn from the ultra-Orthodox Jews of Jerusalem. The first describes a situation wherein religious beliefs and practices become the patient’s vehicle for configuring and articulating his disorder. The second and third illustrate a situation where religion provides a means for the believers to relate to and create a religious structure and meaning around it, and thus, help organize their lives and cope with the pain of their disorder. In all three cases, their religious beliefs and practices furnish these patients with the means of destigmatizing the illness and redefining it in acceptable religious narratives or spiritual terms. This in turn makes therapy and treatment personally and culturally acceptable for the therapist, the religious beliefs and practices offer help in identifying the disorder or act as agents in its treatment or even bases for rehabilitation. The authors suggest that understanding this complex relationship facilitates the therapeutic relationship.
considerably.

Donker (2000) gave an overview of the current status of cardiac rehabilitation and its effects on morbidity and mortality. While there is an emphasis in most current programs upon physical exercise as an important autonomous risk factor for CHD, there is at the same time a tendency in cardiac rehabilitation to go beyond mere physical exercise towards adding more multimodal psychoeducational modules in rehabilitation programs; these approaches are aimed at educating the patient about a less risky and neat way of life. Such psychoeducation is more and more aimed at the "toxic" aspects of negative emotions. The in-between classic Type-A Behavior Pattern (TABP) might, in general, be less powerful in predicting later CHD morbidity or mortality than some specific emotional components of TABP, such as anger and hostility. The literature is reviewed as to risk factors and CHD and the role of negative affectivity in development and/or maintenance of CHD. Approaches for modification are discussed against the background of their effectivity in cardiac rehabilitation.

Jaarma et al. (2000) advocated that heart failure–related self-care behavior is important to optimize outcomes for patients with heart failure. Such behaviors include adherence to medication, diet, and exercise, but self-care also refers to such
things as seeking assistance when symptoms occur and daily weighing. Their study assessed the effects of education and support on heart failure-related self care behavior. Data were collected from 128 heart failure patients (mean age 72 years) during a hospital stay and at 1,3 and 9-month follow-ups. The effects of intensive systematized and planned education from a nurse in hospital and at home were evaluated in an experimental design. Results showed that education enhanced self-care behavior significantly at 1 and 3 month follow-ups. Despite intensive education and support, patients did not manifest all self-care behaviors that might be expected. Patients in both the intervention and control groups described limitations in knowledge, judgment/decision-making, and skills. They concluded that supportive-educative intervention is effective in enhancing heart failure-related self-care behavior early after discharge. To optimize such intervention, more emphasis must be placed on behavioral strategies (self-medication), social support (from family members) and reinforcement (home visits).

Ng. Jenny and Tom (2000) adopted an experimental design with a nonequivalent, post test-only control group to study the rehabilitation outcomes of 152 persons who received cardiac surgery. 37 subjects (mean age 53.31 years) in a rehabilitation group participated in a 2-month exercise based cardiac
rehabilitation program, and another 115 subjects who did not attend the program formed the control group. The subjects' self-esteem was measured on the Adult Source of Self-esteem Inventory; their mobility skill was measured by a simple mobility test. Analysis of covariance indicated that the experimental group scored higher on positive self-esteem and showed significantly better improvement in mobility skill. The exercise-based cardiac rehabilitation program positively affected physical and psychological outcomes. Subjects' self-esteem was significantly correlated with their mobility skills among those aged under 60 years but not among those aged 60 or above.
CHAPTER THREE

METHODOLOGY
This chapter describes the methodology of the present investigation. It explains the statement of the problem, sample, tools, procedure of data collection, and statistical analysis of data.

**Statement of the Problem:** The present investigation is an attempt to study the awareness of Coronary Artery Disease (CAD) risk factors and prescribed-nonprescribed coping strategies in relation to attitude towards life among myocardial infarction and angina pectoris patients.

**Sample:** The sample for the present study consisted of 200 CAD patients, drawn from the OPD of the Centre of Cardiology, JNMC, A.M.U., Aligarh. The sample was divided into two main groups. The first group comprised 100 Angina Pectoris patients while the second group consisted of 100 Myocardial Infarction patients. The sample was further split in terms of the variable of gender, i.e., males and females. The criteria for the selection of patients included: (a) confirmed diagnosis of disease by physicians, (b) proof Electrocardiograph (ECG) documentation of angina and MI, (c) manifestations of coronary insufficiency and certain ECG irregularities, (d) indices of atherosclerosis, and (e) the patients were having the disease and undergoing treatment and medical check-ups at the outpatients clinic at the time of the investigation. The diagnostic criteria excluded
patients with ambiguous and clinically unexplained cardiovascular disorder (CVD) and with established medical conditions known to be of physiological origin. The age range of the sample was from 30 to 82 years. Mean ages of the first group (Angina Pectoris) males and females were 55.15 years and 50.08 years, respectively. The mean ages of MI males and females were 58.53 years and 51.37 years, respectively.

The distribution of the sample is given below:

Sample
(N=200)

↓

Angina Pectoris
(N=100)

↓

Male Female
(n₁=61) (n₂=39)

↓

Myocardial Infarction
(N=100)

↓

Male Female
(n₁=70) (n₂=30)
Tools: The following tools were employed in the present study:

*Personal Data Sheet (PDS)* The PDS included the following information about the patient: Name, age, marital status, occupation, weight, address, diagnosis, family history of CAD, and clinical features and investigations.

*CAD Risk Factors Questionnaire* The CAD Risk Factors Questionnaire was developed by the investigator. For this, the investigator reviewed the existing literature about the risk factors of CAD and selected the major risk factors. The investigator approached a physician and a cardiologist to prepare the final format of the questionnaire.

The CAD risk factors questionnaire consisted of 46 risk factors represented into seven sections. The seven groups of risk factors include lifestyle, psychosocial, environmental, personal, dietary, physical, and organizational factors. The lifestyle factors include three items, viz. sedentary lifestyle, diabetes mellitus, etc. The psychosocial factors include eight items, viz. depression, Type A Behavior, etc. Under the environmental factors four items are included, viz. pollution, living in crowded environment etc. Personal factors cover six items, viz. substance abuse (alcohol, smoking), family history of CAD, etc. The dietary factors include six items, namely, high intake of salts, fast food consumption, etc. The physical factors comprise five...
items, viz., ageing, hypertension, etc, and last factor, i.e., organizational includes ten items, viz., departmental politics, job insecurity, etc. The responses to the questionnaire were obtained on a 5-point rating scale. The response categories correspond to the extent of awareness of the risk factor to CAD and were: very much aware (4); much aware (3); somewhat aware (2); not much aware (1); and definitely not aware (0). For scoring the response of the respondents the numbers given in the parenthesis were used.

**Coping Strategies Check List** The Coping Strategies Checklist consisted of 33 items, each of them describes a way to cope with the disease. The items have been classified into five types of coping strategies viz., behavioral coping (10 items); social coping (5 items); Avoidance coping (6 items); Religious/Spiritual coping (6 items); and cognitive coping (6 items). There were two additional items, viz., 'use of prescribed drugs' and 'any other' coping strategies.

There were two sections, under which the respondents were asked to give their responses, viz., 'prescribed' and 'non-prescribed'. The respondents were asked to indicate whether the coping strategies which they adopt were prescribed by the doctor, non prescribed, or both, by putting a check-mark (✓) against the items under these two sections. The investigator
developed the coping strategies checklist. For scoring purpose the percentage for each item was computed for each group of patients.

**Life Attitude Profile** The investigator used the Life Attitude Profile (LAP) developed by Reker and Peacock (1981), to assess the attitude towards life of the CAD patients. The LAP is a multidimensional measure of attitudes toward life. The LAP is an instrument designed to assess the degree of existential meaning and purpose in life and the strength of motivation to find meaning and purpose.

The LAP is a 44 item, 7-point [strongly disagree (1) to strongly agree (7)] Likert scale. The scale comprised seven dimensions/factors, viz., Life Purpose, Existential Vacuum, Life Control, Death Acceptance, Will to Meaning, Goal Seeking, and Future Meaning to Fulfil.

The respondents were asked to indicate the degree of their agreement or disagreement with, the items by mentioning the respective number of the response against each item. For scoring purpose, the response i.e. the number indicated by the respondent was treated as the score for each item. However, for two items, under the Death Acceptance factor, i.e. item nos 12 and 40, the scoring was reversed, as these two are negative items. The scores on the LAP could range from a minimum of 44
to a maximum of 308.

Procedure: The data were collected individually from the subjects through face-to-face interview method. The investigator established rapport with each of the subjects and assured them that their responses would be kept confidential and will be used for research purpose only. They were requested to respond candidly as per the instructions given. Subjects, on an average, took about 45 minutes' time in completing all the questionnaires. After data collection, the investigator did the scoring for all the three tests herself, and analyzed the data.

Data Analysis: The data were analyzed by means of certain appropriate statistical methods such as critical ratio of percentages and t-test. For analyzing data on the CAD Risk Factors Questionnaire, t-test was applied for each item, and significance of difference between the mean scores of males and females of each group was computed. For the Life Attitude Profile (LAP) the t-test was applied to know the significance of difference between the mean scores of males and females of each group, on each of the seven factors and for the overall score obtained on LAP. The data obtained for Coping Strategies was converted into percentages for analysis. It helped in understanding which coping strategies were used mostly by each group of patients and the percentages of prescribed and non-
prescribed coping strategies. Critical Ratio of percentages was used to examine the differences between the comparison groups for both prescribed and non-prescribed strategies.
CHAPTER FOUR

RESULTS & DISCUSSION
The data analyzed by means of t-test are presented in the following tables:

**Table 1:** Indicating differences between the mean scores of *Male* and Female Angina Pectoris patients on Lifestyle Risk Factors.

### Item No.1 Sedentary Lifestyle

<table>
<thead>
<tr>
<th>Subjects</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>61</td>
<td>1.97</td>
<td>1.27</td>
<td>0.00</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Female</td>
<td>39</td>
<td>1.97</td>
<td>1.05</td>
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</table>

### Item No.2 Diabetes Mellitus

<table>
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<tr>
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<th>Mean</th>
<th>SD</th>
<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>61</td>
<td>1.48</td>
<td>1.51</td>
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<td>&lt;0.05</td>
</tr>
<tr>
<td>Female</td>
<td>39</td>
<td>2.10</td>
<td>1.39</td>
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</table>

### Item No.3 Obesity

<table>
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<tr>
<th>Subjects</th>
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<th>Mean</th>
<th>SD</th>
<th>t-value</th>
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</thead>
<tbody>
<tr>
<td>Male</td>
<td>61</td>
<td>2.90</td>
<td>1.14</td>
<td>0.22</td>
<td>&gt;0.05</td>
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<tr>
<td>Female</td>
<td>39</td>
<td>2.95</td>
<td>1.11</td>
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</table>
Table 2: Indicating differences between the mean scores of Male and Female Angina Pectoris patients on Psychosocial Risk Factors.

**Item No.1 Anxiety**

<table>
<thead>
<tr>
<th>Subjects</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>61</td>
<td>3.43</td>
<td>0.74</td>
<td>0.62</td>
<td>&gt;0.05</td>
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<tr>
<td>Female</td>
<td>39</td>
<td>3.51</td>
<td>0.59</td>
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</table>

**Item No.2 Depression**

<table>
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<tr>
<th>Subjects</th>
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<th>p</th>
</tr>
</thead>
<tbody>
<tr>
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<td>3.13</td>
<td>0.93</td>
<td>1.65</td>
<td>&gt;0.05</td>
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<tr>
<td>Female</td>
<td>39</td>
<td>3.41</td>
<td>0.74</td>
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**Item No.3 Psychosocial Stress**

<table>
<thead>
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<th>Subjects</th>
<th>N</th>
<th>Mean</th>
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<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>61</td>
<td>3.33</td>
<td>0.59</td>
<td>0.79</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Female</td>
<td>39</td>
<td>3.44</td>
<td>0.67</td>
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### Item No. 4 Fear and Panic

<table>
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<th>Subjects</th>
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<th>Mean</th>
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<th>t-value</th>
<th>p</th>
</tr>
</thead>
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<td>Male</td>
<td>61</td>
<td>2.38</td>
<td>0.98</td>
<td>0.52</td>
<td>&gt;0.05</td>
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<tr>
<td>Female</td>
<td>39</td>
<td>2.49</td>
<td>0.98</td>
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</table>

### Item No. 5 Frustration

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<th>Mean</th>
<th>SD</th>
<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>61</td>
<td>2.34</td>
<td>1.06</td>
<td>2.39</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Female</td>
<td>39</td>
<td>2.77</td>
<td>0.66</td>
<td></td>
<td></td>
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</tbody>
</table>

### Item No. 6 Poor Social Support

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<th>Subjects</th>
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<th>Mean</th>
<th>SD</th>
<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>61</td>
<td>2.21</td>
<td>1.12</td>
<td>3.05</td>
<td>&lt;0.01</td>
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<td>Female</td>
<td>39</td>
<td>2.79</td>
<td>0.85</td>
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</table>

### Item No. 7 Type A Behavior

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<th>Subjects</th>
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<th>Mean</th>
<th>SD</th>
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</thead>
<tbody>
<tr>
<td>Male</td>
<td>61</td>
<td>2.80</td>
<td>1.02</td>
<td>0.63</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Female</td>
<td>39</td>
<td>2.92</td>
<td>0.86</td>
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</table>
### Item No.8 Unpleasant Emotions (aggression, hostility)

<table>
<thead>
<tr>
<th>Subjects</th>
<th>N</th>
<th>Mean</th>
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</thead>
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<tr>
<td>Male</td>
<td>61</td>
<td>2.75</td>
<td>1.07</td>
<td>0.63</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Female</td>
<td>39</td>
<td>2.87</td>
<td>0.88</td>
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</table>

**Table 3:** Indicating differences between the mean scores of Male and Female Angina Pectoris patients on Environmental Risk Factors.

### Item No.1 Weather Conditions

<table>
<thead>
<tr>
<th>Subjects</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>61</td>
<td>1.52</td>
<td>1.31</td>
<td>0.79</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Female</td>
<td>39</td>
<td>1.74</td>
<td>1.34</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Item No.2 Living in crowded environment

<table>
<thead>
<tr>
<th>Subjects</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>61</td>
<td>2.02</td>
<td>1.31</td>
<td>3.26</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Female</td>
<td>39</td>
<td>2.77</td>
<td>0.99</td>
<td></td>
<td></td>
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</tbody>
</table>
### Item No.3 Pollution

<table>
<thead>
<tr>
<th>Subjects</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>61</td>
<td>2.82</td>
<td>1.19</td>
<td>1.37</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Female</td>
<td>39</td>
<td>3.08</td>
<td>0.66</td>
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</table>

### Item No.4 Drug Misuse

<table>
<thead>
<tr>
<th>Subjects</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>61</td>
<td>2.12</td>
<td>1.32</td>
<td>0.38</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Female</td>
<td>39</td>
<td>2.23</td>
<td>1.42</td>
<td></td>
<td></td>
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</tbody>
</table>

Table 4: Indicating differences between the mean scores of Male and Female Angina Pectoris patients on Personal Risk Factors.

### Item No.1 Substance Abuse (Alcohol, Smoking)

<table>
<thead>
<tr>
<th>Subjects</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>61</td>
<td>3.59</td>
<td>0.64</td>
<td>1.64</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Female</td>
<td>39</td>
<td>3.36</td>
<td>0.73</td>
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<td></td>
</tr>
<tr>
<td>Item No.2 Taking of Oral Contraceptive Pills by Women</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>---------------------------------</td>
<td>------</td>
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<td>-------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>Subjects</td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
<td>t-value</td>
<td>p</td>
</tr>
<tr>
<td>Male</td>
<td>61</td>
<td>0.93</td>
<td>0.93</td>
<td>3.59</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Female</td>
<td>39</td>
<td>1.72</td>
<td>1.12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Item No.3 Family history of CAD |
|---------------------------------|------|-------|-------|------|------|
| Subjects                        | N    | Mean  | SD    | t-value | p    |
| Male                            | 61   | 2.23  | 1.14  | 2.43   | <0.05 |
| Female                          | 39   | 2.74  | 0.93  |        |      |

| Item No.4 Male Gender           |
|---------------------------------|------|-------|-------|------|------|
| Subjects                        | N    | Mean  | SD    | t-value | p    |
| Male                            | 61   | 1.62  | 1.03  | 0.14   | >0.05 |
| Female                          | 39   | 1.59  | 1.08  |        |      |

| Item No.5 Socio-Economic Status |
|---------------------------------|------|-------|-------|------|------|
| Subjects                        | N    | Mean  | SD    | t-value | p    |
| Male                            | 61   | 1.67  | 1.18  | 0.91   | >0.05 |
| Female                          | 39   | 1.87  | 0.97  |        |      |
### Item No. 6 Lack of Religious Affiliations

<table>
<thead>
<tr>
<th>Subjects</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
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<td>0.90</td>
<td>1.17</td>
<td>4.28</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Female</td>
<td>39</td>
<td>1.97</td>
<td>1.27</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 5**: Indicating differences between the mean scores of Male and Female Angina Pectoris patients on Dietary Risk Factors.

### Item No. 1 Fast Food

<table>
<thead>
<tr>
<th>Subjects</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>61</td>
<td>2.74</td>
<td>1.07</td>
<td>1.89</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Female</td>
<td>39</td>
<td>3.08</td>
<td>0.69</td>
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</tbody>
</table>

### Item No. 2 High Intake of Salts

<table>
<thead>
<tr>
<th>Subjects</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
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<td>3.05</td>
<td>0.89</td>
<td>0.00</td>
<td>&gt;0.05</td>
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<tr>
<td>Female</td>
<td>39</td>
<td>3.05</td>
<td>0.78</td>
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</table>
### Item No.3 High Intake of Refined or Processed Sugars

<table>
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<th>Subjects</th>
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<th>SD</th>
<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>61</td>
<td>2.08</td>
<td>1.35</td>
<td>2.65</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Female</td>
<td>39</td>
<td>2.69</td>
<td>0.94</td>
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</table>

### Item No.4 Malnourished Diet

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<tr>
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<th>SD</th>
<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
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<td>1.74</td>
<td>1.16</td>
<td>2.00</td>
<td>&lt;0.05</td>
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<td>39</td>
<td>2.18</td>
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### Item No.5 Over-dieting

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</thead>
<tbody>
<tr>
<td>Male</td>
<td>61</td>
<td>1.51</td>
<td>1.25</td>
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<td>&lt;0.01</td>
</tr>
<tr>
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<td>39</td>
<td>2.26</td>
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### Item No.6 Excessive coffee / tea drinking

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<tr>
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<td>2.49</td>
<td>1.34</td>
<td>1.87</td>
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<tr>
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<td>39</td>
<td>2.92</td>
<td>0.92</td>
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Table 6: Indicating differences between the mean scores of Male and Female Angina Pectoris patients on Physical Risk Factors.

**Item No.1 Aging**

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<td>2.74</td>
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<tr>
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<td>39</td>
<td>2.97</td>
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**Item No.2 Hypertension (High Blood Pressure)**

<table>
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<th>p</th>
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<tbody>
<tr>
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<td>3.15</td>
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<td>1.00</td>
<td>&gt;0.05</td>
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<tr>
<td>Female</td>
<td>39</td>
<td>2.97</td>
<td>0.79</td>
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**Item No.3 Lack of Exercise/Physical Inactivity**

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<tr>
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**Item No.4 Physical Stress**

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<th>p</th>
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<td>0.99</td>
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**Item No.5 High Serum Cholesterol**

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<td>3.02</td>
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<td>39</td>
<td>3.10</td>
<td>0.84</td>
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Table 7: Indicating differences between the mean scores of Male and Female Angina Pectoris patients on Organizational Risk Factors.

**Item No.1 Departmental Politics**

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<tbody>
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<td>1.66</td>
<td>1.51</td>
<td>4.69</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Female</td>
<td>39</td>
<td>0.44</td>
<td>1.10</td>
<td></td>
<td></td>
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<tr>
<td>Item No. 2 Job insecurity</td>
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<td>---</td>
</tr>
<tr>
<td>Subjects</td>
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<td>Mean</td>
<td>SD</td>
<td>t-value</td>
<td>p</td>
</tr>
<tr>
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<td>1.72</td>
<td>1.51</td>
<td>6.00</td>
<td>&lt;0.01</td>
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<tr>
<td>Female</td>
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<td>t-value</td>
<td>p</td>
</tr>
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<td>1.59</td>
<td>1.53</td>
<td>4.62</td>
<td>&lt;0.01</td>
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<tr>
<td>Female</td>
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<td>0.39</td>
<td>1.03</td>
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<table>
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<td>Mean</td>
<td>SD</td>
<td>t-value</td>
<td>p</td>
</tr>
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<td>61</td>
<td>1.74</td>
<td>1.45</td>
<td>4.81</td>
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<td>1.15</td>
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<table>
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<td>p</td>
</tr>
<tr>
<td>Male</td>
<td>61</td>
<td>1.43</td>
<td>1.39</td>
<td>4.46</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Female</td>
<td>39</td>
<td>0.36</td>
<td>0.97</td>
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</table>
### Item No. 6 Poor relations with boss/subordinates/colleagues

<table>
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<tr>
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<th>N</th>
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</thead>
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<td>&lt;0.01</td>
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### Item No. 7 Physically demanding job

<table>
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<th>p</th>
</tr>
</thead>
<tbody>
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<td>1.46</td>
<td>1.39</td>
<td>4.40</td>
<td>&lt;0.01</td>
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<tr>
<td>Female</td>
<td>39</td>
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### Item No. 8 Psychologically demanding job

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<th>p</th>
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<tbody>
<tr>
<td>Male</td>
<td>61</td>
<td>1.74</td>
<td>1.40</td>
<td>5.20</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Female</td>
<td>39</td>
<td>0.44</td>
<td>1.08</td>
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### Item No. 9 Role overload

<table>
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</thead>
<tbody>
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<td>1.69</td>
<td>1.42</td>
<td>4.80</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Female</td>
<td>39</td>
<td>0.49</td>
<td>1.08</td>
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</table>
### Item No. 10 Rushing through work

<table>
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<tbody>
<tr>
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<td>1.72</td>
<td>1.44</td>
<td>5.04</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Female</td>
<td>39</td>
<td>0.46</td>
<td>1.03</td>
<td></td>
<td></td>
</tr>
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</table>

**Table 8:** Indicating differences between the mean scores of Male and Female Myocardial Infarction patients on Lifestyle Risk Factors.

### Item No. 1 Sedentary Lifestyle

<table>
<thead>
<tr>
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<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>70</td>
<td>1.84</td>
<td>1.32</td>
<td>1.16</td>
<td>&gt;0.05</td>
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<tr>
<td>Female</td>
<td>30</td>
<td>2.13</td>
<td>1.06</td>
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</table>

### Item No. 2 Diabetes mellitus

<table>
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<tr>
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<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>70</td>
<td>1.66</td>
<td>1.47</td>
<td>1.44</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Female</td>
<td>30</td>
<td>1.20</td>
<td>1.41</td>
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### Item No.3 Obesity

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<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>70</td>
<td>2.91</td>
<td>1.08</td>
<td>1.26</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Female</td>
<td>30</td>
<td>3.20</td>
<td>1.05</td>
<td></td>
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</table>

Table 9: Indicating differences between the mean scores of Male and Female Myocardial Infarction patients on Psychosocial Risk Factors.

### Item No.1 Anxiety

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</thead>
<tbody>
<tr>
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<td>3.56</td>
<td>0.67</td>
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<td>&gt;0.05</td>
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<td>Female</td>
<td>30</td>
<td>3.63</td>
<td>0.61</td>
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### Item No.2 Depression

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<td>2.99</td>
<td>0.93</td>
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<td>&lt;0.05</td>
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<td>Female</td>
<td>30</td>
<td>3.33</td>
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### Item No. 3 Psychosocial Stress

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</thead>
<tbody>
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<td>Male</td>
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<td>3.23</td>
<td>0.83</td>
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<td>&lt;0.05</td>
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<td>Female</td>
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### Item No. 4 Fear and Panic

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</thead>
<tbody>
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<td>2.33</td>
<td>1.13</td>
<td>2.22</td>
<td>&lt;0.05</td>
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<td>Female</td>
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### Item No. 5 Frustration

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</tr>
</thead>
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<td>Male</td>
<td>70</td>
<td>2.19</td>
<td>1.05</td>
<td>1.81</td>
<td>&gt;0.05</td>
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<td>Female</td>
<td>30</td>
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### Item No. 6 Poor Social Support

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</thead>
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<td>2.36</td>
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<td>&lt;0.05</td>
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### Item No.7 Type A Behavior

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<th>p</th>
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</thead>
<tbody>
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<td>2.83</td>
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<td>0.74</td>
<td>&gt;0.05</td>
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<tr>
<td>Female</td>
<td>30</td>
<td>2.97</td>
<td>0.91</td>
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</table>

### Item No.8 Unpleasant Emotions (aggression, hostility)

<table>
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</table>

Table 10: Indicating differences between the mean scores of Male and Female Myocardial Infarction patients on Environmental Risk Factors.

### Item No.1 Weather Conditions

<table>
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<th>p</th>
</tr>
</thead>
<tbody>
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<td>1.54</td>
<td>1.26</td>
<td>0.46</td>
<td>&gt;0.05</td>
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<tr>
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</table>
**Item No. 2 Living in crowded environment**

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<th>SD</th>
<th>t-value</th>
<th>p</th>
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</thead>
<tbody>
<tr>
<td>Male</td>
<td>70</td>
<td>2.21</td>
<td>1.18</td>
<td>1.08</td>
<td>&gt;0.05</td>
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<td>Female</td>
<td>30</td>
<td>2.47</td>
<td>1.06</td>
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**Item No. 3 Pollution**

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</thead>
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<td>3.06</td>
<td>0.88</td>
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<td>&gt;0.05</td>
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**Item No. 4 Drug Misuse**

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</thead>
<tbody>
<tr>
<td>Male</td>
<td>70</td>
<td>2.09</td>
<td>1.36</td>
<td>0.97</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Female</td>
<td>30</td>
<td>2.37</td>
<td>1.35</td>
<td></td>
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</tr>
</tbody>
</table>
Table 11: Indicating differences between the mean scores of Male and Female Myocardial Infarction patients on Personal Risk Factors.

**Item No.1 Substance abuse (Alcohol, Smoking)**

<table>
<thead>
<tr>
<th>Subjects</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>70</td>
<td>3.54</td>
<td>0.73</td>
<td>0.61</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Female</td>
<td>30</td>
<td>3.43</td>
<td>0.85</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Item No.2 Taking of Oral Contraceptive Pills by women**

<table>
<thead>
<tr>
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<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>70</td>
<td>0.80</td>
<td>0.87</td>
<td>3.68</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Female</td>
<td>30</td>
<td>1.50</td>
<td>0.89</td>
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</table>

**Item No.3 Family history of CAD**

<table>
<thead>
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<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>70</td>
<td>2.37</td>
<td>1.22</td>
<td>1.72</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Female</td>
<td>30</td>
<td>2.80</td>
<td>1.11</td>
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</table>
### Item No. 4 Male Gender

<table>
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<th>SD</th>
<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>70</td>
<td>1.83</td>
<td>1.07</td>
<td>1.09</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Female</td>
<td>30</td>
<td>1.60</td>
<td>0.92</td>
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</tbody>
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### Item No. 5 Socio-Economic Status

<table>
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<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>70</td>
<td>1.60</td>
<td>0.92</td>
<td>0.13</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Female</td>
<td>30</td>
<td>1.63</td>
<td>1.11</td>
<td></td>
<td></td>
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</tbody>
</table>

### Item No. 6 Lack of Religious Affiliations

<table>
<thead>
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<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>70</td>
<td>1.36</td>
<td>1.37</td>
<td>0.10</td>
<td>&gt;0.05</td>
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<tr>
<td>Female</td>
<td>30</td>
<td>1.33</td>
<td>1.34</td>
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</tbody>
</table>
**Table 12:** Indicating differences between the mean scores of Male and Female Myocardial Infarction patients on Dietary Risk Factors.

### Item No.1 Fast Food

<table>
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<th>N</th>
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<th>SD</th>
<th>t-value</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>70</td>
<td>2.63</td>
<td>1.09</td>
<td>1.29</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Female</td>
<td>30</td>
<td>2.90</td>
<td>0.87</td>
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</table>

### Item No.2 High Intake of Salts

<table>
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<th>SD</th>
<th>t-value</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>70</td>
<td>3.51</td>
<td>1.16</td>
<td>2.32</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Female</td>
<td>30</td>
<td>3.07</td>
<td>0.77</td>
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<td></td>
</tr>
</tbody>
</table>

### Item No.3 High Intake of Refined or Processed Sugars

<table>
<thead>
<tr>
<th>Subjects</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>70</td>
<td>2.26</td>
<td>1.20</td>
<td>0.71</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Female</td>
<td>30</td>
<td>2.43</td>
<td>1.06</td>
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<td></td>
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</tbody>
</table>
### Item No. 4 Malnourished diet

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<th>SD</th>
<th>t-value</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>70</td>
<td>2.03</td>
<td>1.11</td>
<td>1.14</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Female</td>
<td>30</td>
<td>2.27</td>
<td>0.93</td>
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</table>

### Item No. 5 Over-dieting

<table>
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<th>Mean</th>
<th>SD</th>
<th>t-value</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>70</td>
<td>1.91</td>
<td>1.29</td>
<td>0.26</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Female</td>
<td>30</td>
<td>1.97</td>
<td>0.91</td>
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</tbody>
</table>

### Item No. 6 Excessive Coffee/Tea drinking

<table>
<thead>
<tr>
<th>Subjects</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t-value</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>70</td>
<td>2.53</td>
<td>1.13</td>
<td>0.33</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Female</td>
<td>30</td>
<td>2.60</td>
<td>0.84</td>
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</table>
Table 13: Indicating the differences between the mean scores of Male and Female Myocardial Infarction patients on Physical Risk Factors.

**Item No.1 Aging**

<table>
<thead>
<tr>
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<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>70</td>
<td>2.84</td>
<td>0.89</td>
<td>1.21</td>
<td>&gt;0.05</td>
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<tr>
<td>Female</td>
<td>30</td>
<td>3.07</td>
<td>0.82</td>
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</tbody>
</table>

**Item No.2 Hypertension (High Blood Pressure)**

<table>
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<tr>
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<th>P</th>
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</thead>
<tbody>
<tr>
<td>Male</td>
<td>70</td>
<td>2.43</td>
<td>1.14</td>
<td>2.67</td>
<td>&lt;0.01</td>
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<tr>
<td>Female</td>
<td>30</td>
<td>3.07</td>
<td>1.06</td>
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</tbody>
</table>

**Item No.3 Lack of Exercise/Physical Inactivity**

<table>
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<tr>
<th>Subjects</th>
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<th>Mean</th>
<th>SD</th>
<th>t-value</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>70</td>
<td>2.14</td>
<td>0.98</td>
<td>1.28</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Female</td>
<td>30</td>
<td>2.37</td>
<td>0.79</td>
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</tbody>
</table>
### Item No.4 Physical Stress

<table>
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<th>t-value</th>
<th>P</th>
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</thead>
<tbody>
<tr>
<td>Male</td>
<td>70</td>
<td>2.66</td>
<td>0.94</td>
<td>0.22</td>
<td>&gt;0.05</td>
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<tr>
<td>Female</td>
<td>30</td>
<td>2.70</td>
<td>0.78</td>
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</table>

### Item No.5 High Serum Cholesterol

<table>
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<th>t-value</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>70</td>
<td>3.01</td>
<td>0.99</td>
<td>0.41</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Female</td>
<td>30</td>
<td>3.10</td>
<td>0.98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Myocardial Infarction</td>
<td>Angina Pectoris</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td>----------------</td>
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<td></td>
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<tr>
<td>27.14</td>
<td>42.86</td>
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<tr>
<td>32.33</td>
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<td>32.82</td>
<td>27.77</td>
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<td>54.90</td>
<td>95.89</td>
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<td>10.26</td>
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<td>69.76</td>
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<td>35.84</td>
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<tr>
<td>10.26</td>
<td>19.67</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender</th>
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<th>Angina Pectoris</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>F</td>
<td>4</td>
<td>3</td>
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</tbody>
</table>

TABLE 14: Indicating percentages of male and female CAD patients on various prescribed and non-prescribed coping strategies.
<table>
<thead>
<tr>
<th></th>
<th>Myocardial Infarction</th>
<th>Angina Pectoris</th>
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</thead>
<tbody>
<tr>
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<td>Prescribed</td>
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<td>0.67</td>
<td>3.33</td>
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<tr>
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</table>

Strategies:

TABLE 14 (Continued): Indicating percentages of male and female patients on the various prescribed and non-prescribed cope.
TABLE 15. Indicating the Percentages of Male and Female CAD Patients on Various Social Coping Strategies

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Male 0%</th>
<th>Male 20%</th>
<th>Female 0%</th>
<th>Female 20%</th>
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<tbody>
<tr>
<td>Engaged in activities</td>
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<td></td>
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<tr>
<td>To help others or members</td>
<td>F</td>
<td>F</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Understand and be understood</td>
<td>F</td>
<td>F</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Try to make family</td>
<td>F</td>
<td>F</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Tying activities</td>
<td>F</td>
<td>F</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Shopping etc.</td>
<td>F</td>
<td>F</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Angina</td>
<td>M</td>
<td>F</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Myocardial Infarction</td>
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</tr>
<tr>
<td>12-14</td>
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<tr>
<td>Non-Prescribed by the Cardiologist:</td>
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117
<table>
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</tbody>
</table>

**Angina**

|                |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|                |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|                |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|                |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

**Side effects**

- Taking more tragraft
- Managing severity
- Managing duration
- Drinking
- Smoking

**Non prescribed by the Cardiologist**

- Lack of interest
- Unimportant things
- Arguments and feelings
- Denying attention
- Behaviors and dysfunction

**TABLE 16** - Indicating the percentages of male and female CAD patients on the various avoidance coping strategies
<table>
<thead>
<tr>
<th></th>
<th>76.67</th>
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<th>50.0</th>
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<th>42.0</th>
<th>50.0</th>
<th>34.29</th>
<th>43.33</th>
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<th>41.43</th>
<th>43.29</th>
<th>100</th>
<th>84.29</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>76.92</td>
<td>88.52</td>
<td>56.41</td>
<td>54.09</td>
<td>53.85</td>
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<td>44.46</td>
<td>38.46</td>
<td>55.74</td>
<td>53.09</td>
<td>43.53</td>
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<td>Church</td>
<td>Recitation of the Holy Book</td>
<td>Congregations</td>
<td>Place of Worship</td>
<td>Devotion to God</td>
<td>Meditation and Pray for Strength</td>
<td>Non-Preached by the Cardiologist</td>
<td></td>
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</table>

TABLE 17: Indicates the percentages of male and female CAD patients for the various religious/spiritual coping strategies.
| Myocardial | 68.57 | 53.33 | 100 | 100 | 3.3 | 3.33 | 3.0 | 4.0 | 62.86 | 64.0 | 77.05 | 94.87 | 96.23 | 77.05 | 69.23 | 64.90 | 48.72 | 50.82 | 64.10 | 77.05 |
|------------|-------|-------|-----|-----|-----|------|-----|-----|------|------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|
| Angina     | 77.05 | 69.23 | 64.90| 48.72| 50.82| 64.10| 77.05| 94.87| 96.23| 77.05| 69.23 | 64.90 | 48.72 | 50.82| 64.10| 77.05| 94.87 | 96.23 | 77.05 |

**Table 18**: Indicating the percentages of male and female CAD patients on various cognitive coping strategies. Non-prescribed by the psychologist.
Table 19: Indicating differences between the mean scores of Male and Female Angina Pectoris patients on the overall scale and factors of Life Attitude Profile.

### Overall Scores

<table>
<thead>
<tr>
<th>Subjects</th>
<th>N</th>
<th>Mean</th>
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### Life Purpose

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### Existential Vacuum

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**Table 20:** Indicating differences between the mean scores of Male and Female Myocardial Infarction patients on the overall scale and factors of Life Attitude Profile.

### Overall Scores

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<tr>
<th>Subjects</th>
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## Existential Vacuum

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## Life Control

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## Death-Acceptance

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### Will to Meaning

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### Goal Seeking

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### Future Meaning To Fulfil

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<th>t-value</th>
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</thead>
<tbody>
<tr>
<td>Male</td>
<td>70</td>
<td>25.24</td>
<td>4.72</td>
<td>1.83</td>
<td>&gt;0.05</td>
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<td>30</td>
<td>23.87</td>
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Discussion

Risk Factors Of CAD

Results presented in the Table 1-13 may now be described. It is evident from Table 1, that the female angina pectoris patients were significantly more aware of Diabetes mellitus (t=2.14, p<0.05) as a lifestyle risk factor as compared to male angina pectoris patients. Significant differences were not found to exist between the male and female angina pectoris patients on the awareness of sedentary life style (t=0,p>0.05), and Obesity (t=0.22, p>0.05), as lifestyle risk factors of CAD.

Female angina pectoris patients, in comparison to male angina pectoris patients, perceived significantly Frustration (t=2.39, p<0.05), and Poor Social Support (t=3.05,p<0.01) as the psychosocial risk factors of CAD. Whereas on Anxiety (t=0.62, p>0.05), Depression (t=1.65,p>0.05), Psychosocial Stress (t=0.79, p>0.05), Fear and Panic (t=0.52, p>0.05), Type-A Behavior (t=0.63, p>0.05), and Unpleasant Emotions (t=0.63,p>0.05) psychosocial risk factors of CAD, significant differences were not found to exist between the mean scores of male and female angina pectoris patients (Cf. Table2).

Male and female angina pectoris patients did not differ significantly in their awareness of Weather Conditions (t=0.79,
p>0.05), Pollution (t=1.37, p>0.05) and Drug misuse (t=0.38, p>.05) as the environmental risk factors of CAD. However, female angina pectoris patients showed significantly greater awareness of Living in Crowded Environment (t=3.26,0<0.01) as an environmental risk factor, as compared to male angina pectoris patients (Cf. Table 3).

Significant differences were not found to exist between male and female angina pectoris patients in their awareness of Substance Abuse (t=1.64,p>0.05), Male Gender (t=0.14,p>0.05), and Socioeconomic Status (t=0.91,p>0.05) as the personal risk factors of CAD. Female angina pectoris patients in comparison to their male counterparts exhibited significantly greater awareness of Taking of Oral Contraceptive Pills by Women (t=3.59,p<0.01), Family History of CAD (t=2.43, p<0.05), and Lack of Religious Affiliations (t=4.28, p<0.01) personal risk factors of CAD (Cf. Table 4).

Significant differences existed between male and female angina pectoris patients in their awareness of High Intake of Refined or Processed Sugars (t=2.65,p<0.01), Malnourished Diet (t=2.00,p<0.05), and Over-dieting (t=3.00,p<0.01) as the dietary risk factors of CAD. Male and female angina pectoris patients were not significantly different in their awareness of Fast Food (t=1.89,
p>0.05), *High Intake of Salts* (t=0; p>0.05), and *Excessive Coffee/Tea drinking* (t=1.87, p>0.05) dietary risk factors of CAD (Cf. Table 5).

The male and female angina pectoris patients showed no significant difference in their awareness of all the physical risk factors of CAD, namely, *Aging* (t=1.28, p>0.05), *Hypertension* (t=1.00, p>0.05), *Lack of exercise/physical inactivity* (t=1.48, p>0.05), *Physical stress* (t=1.24, p>0.05), and *High serum Cholesterol* (t=0.38, p>0.05) (Cf. Table 6).

Male angina pectoris patients, as compared to their female counterparts were significantly more aware of all the following organizational risk factors of CAD: *Departmental Politics* (t=4.69, p<0.01), *Job insecurity* (t=6.00, p<0.01), *Job dissatisfaction* (t=4.62, p<0.01), *Job Pressure/hectic job* (t=4.81, p<0.01), *Poor Physical Conditions* (t=4.46, p<0.01), *Poor relations with boss/subordinate/colleagues* (t=5.76, p<0.01), *Physically Demanding Job* (t=4.40, p<0.01), *Psychologically Demanding Job* (t=5.20, p<0.01), *Role Overload* (t=4.80, p<0.01), and *Rushing through work* (t=5.04, p<0.01) (Cf. Table 7).

Significant differences did not exist between male and female myocardial infarction patients in their awareness of any of the three lifestyle risk factors; i.e. *Sedentary lifestyle* (t=1.16,
p>0.05), Diabetes mellitus (t=1.44, p>0.05), and Obesity (t=1.26, p>0.05) (Cf. Table 8).

Female myocardial infarction patients showed significantly greater awareness of Depression (t=2.13, p<0.05), Psychosocial stress (t=2.43, p<0.05), Fear and Panic (t=2.22, p<0.05), and Poor Social Support (t=2.04, p<0.05) psychosocial risk factors of CAD, as compared to male myocardial infarction patients. Significant differences were not found between the awareness of male and female myocardial infarction patients for Anxiety (t=p.50, p>0.05), Frustration (t=1.81, p>0.05), Type A Behavior (t=0.74, p>0.05), and Unpleasant emotions (t=0.33, p>0.05) psychosocial risk factors of CAD (Cf. Table 9).

Significant differences were not found to exist between male and female myocardial infarction patients in their awareness of the environmental risk factors of CAD, which include – Weather conditions (t=0.46, p>0.05), Living in crowded environment (t=1.08, p>0.05), Pollution (t=1.28, p>0.05) and Drug misuse (t=0.97, p>0.05) (Cf. Table 10).

Female myocardial infarction patients in comparison to their male counterparts were significantly more aware of Taking of Oral Contraceptive Pills by Women (t=3.68, p<0.01) as a personal risk factor of CAD. However, on the awareness of remaining Personal
risk factors of CAD, namely, *Substance abuse, Family history of CAD, Male Gender, Socio-economic status, and Lack of Religious Affiliations*, significant differences were not found to exist between the comparison groups (Cf. Table 11).

Male and female myocardial infarction patients differed significantly in their awareness of *High Intake of Salts* \( (t=2.32, p<0.05) \) as one of the dietary risk factors of CAD. No significant differences were found to exist between male and female myocardial infarction patients in their awareness of the remaining dietary risk factors of CAD, i.e., *Fast food, High Intake of Refined Processed sugars, Malnourished diet, Over-dieting, and Excessive Coffee/Tea drinking* (Cf. Table 12).

Significant difference existed between male and female myocardial infarction patients in their awareness of *Hypertension* \( (t=2.67, p<0.01) \) as one of the physical risk factor of CAD. On the awareness of other physical risk factors of CAD – *Aging* \( (t=1.21, p>0.05) \), *Lack of exercise /physical inactivity* \( (t=1.28, p>0.05) \), *Physical Stress* \( (t=0.22, p>0.05) \) and *High Serum Cholesterol* \( (t=0.41, p>0.05) \) – no significant differences were found to exist between the comparison groups (Cf. Table 13).

Among Life style risk factors of CAD, female angina pectoris patients perceived significantly higher *diabetes mellitus* as
the cause of CAD. Significant differences were not found to exist between male and female angina pectoris and myocardial infarction patients on Sedentary lifestyle and, Obesity lifestyle factors. This suggests that the male and female patients equally considered these risk factors as the cause of CAD. There is no doubt that the lifestyle factors are the major reason for the spread of CAD. CAD can be referred to as a disorder of lifestyle and many of its etiological agents are potentially modifiable. Extensive clinical and statistical studies have identified the lifestyle risk factors which increase the risk of CAD. Obesity and diabetes contribute to the CAD risk (Head & Fuller, 1990; Joasilapti et al., 1996; Manson et al., 1990). The WHO reports that the global burden of the heart disease due to diabetes mellitus is twice. Diabetes seriously increases the risk of developing coronary heart disease. Even when glucose levels are under control, diabetes greatly increases the risk of heart disease and stroke. About two-thirds of people with diabetes die of some form of heart or blood-vessel disease.

Data based on unhealthy /sedentary life styles demonstrate that in most of the industrialized countries the great majority of adults in the age group of 35-84 years have levels of serum cholesterol above the optimum in terms of future CAD risk. Obesity, also usually develops due to a sedentary way of life.
Among the Psychosocial risk factors quite different findings emerge for myocardial infarction and angina pectoris patients. The female angina pectoris patients as compared to their male counterparts, perceived significantly higher Poor Social Support and Frustration as the cause of CAD. Female myocardial infarction patients perceived significantly higher than the male myocardial infarction patients, depression, psychosocial stress, fear and panic and Poor Social Support as the causes of CAD.

Some of the earlier studies failed to show any positive associations between emotional distress, including depression and the risk of CAD. For the present findings, it can be argued that the fear and panic, and frustration experiences precipitated or aggravated the feelings of depression and psychosocial stress in the female MI patients. Depression and poor social support increase the risk of mortality after acute MI, independent of other variables such as extent of CAD, heart failure, comorbid conditions, and age (Hubert et al., 1983). The Post-MI depression resolves more rapidly than expected when patients have good social support. (Frasure-Smith, Lesperance, Graves, et al., 2000). Psychosocial and emotional stress have also been shown to cause silent ischemia, presumably by induction of spasm of atherosclerotic arteries (Mehta & Orbach, 1999).
Anxiety, Type A Behavior, and unpleasant emotions have been found to be associated with the development of angina pectoris and myocardial infarction among males and females. Episodes of anger increase the risk of precipitating myocardial infarction in susceptible persons.

Environmental factors such as weather conditions, living in crowded environment, pollution, and drug misuse have been associated with an increased risk of angina pectoris and myocardial infarction. Female angina pectoris patients in comparison to their male counterparts have highly considered Living in Crowded Environment as the environmental risk factor associated with the development of angina pectoris. The literature on the environmental antecedents of CAD is rather scanty.

Environmental factors related to increased risk of CAD might differ widely across populations. These differences may be partly culture-specific. The environment influences coronary risk factors such as blood lipids, blood pressure, glucose tolerance, and clotting mechanisms. Within populations, such factors tend to contribute to the variability of CAD risk between individuals due to differing degrees of exposure to diverse combinations of environmental factors such as weather, pollution, and living in crowded environment. Seasonal variations, in the occurrence of MI
have been reported, with increases in the winter season. (Alexander, et al., 1998).

The factor of Drug misuse also contributes to the CAD risk. Drugs or medicines may be over used or under-used both by the patient himself/herself or by the doctor. The factor of drug misuse in the form of prescribing medication was also notified by the WHO as, “Doctors are too prone to prescribe medication only for those with high blood pressure or high cholesterol levels”. (Ross, 2002). Doctors in many countries are targeting the wrong people for treatment to avert heart attacks and strokes, according to a recent report by the United Nations Health Agency. The World Health Report (Oct. 2002) proposed: “Medication would be better targeted at those who have multiple risk factors such as smoking, lack of exercise, excessive alcohol consumption, and poor diet, even if blood pressure or cholesterol levels are only slightly elevated”. The report found that the main problem is that medication is usually prescribed only when the blood pressure or cholesterol levels pass the arbitrary threshold.

Among the six Personal risk factors of CAD, the female angina pectoris patients showed significantly greater awareness of Taking of Oral Contraceptive Pills. Family History of CAD, and Lack of Religious Affiliations as compared to male angina pectoris
patients. However, only *Taking of Oral Contraceptive Pills* was perceived significantly higher as a personal risk factor of CAD by female MI patients as compared to their male counterparts. For the remaining personal risk factors, i.e. *Substance abuse, male gender* and *socio-economic status*, the male and female angina pectoris and MI patients showed similar awareness. Smoking and drinking are two modifiable risk factors of CAD. Smokers’ risk of heart attack is more than twice that of non-smokers. Cigarette smoking is one of the major risk factors for sudden cardiac death. Cigarette smoking in the presence of other risk factors increases greatly the risk for CAD. Cessation of smoking is associated with a precipitous fall in CAD events. In a previous smoker, the relative risk declines nearly to half that of a nonsmoker in a year or less (Gordon et al., 1974). People who drink alcohol seem to have a higher risk of mortality from CAD, but their risk is not as great as that of smokers. Drinking too much alcohol can raise blood pressure, cause heart failure, and lead to stroke. It leads to obesity and psychosocial stress. New evidence points toward the beneficial effects of alcohol when taken in moderate amounts, but it is better to avoid taking it in any quantity.

Men (i.e. male gender/sex) have a high risk of developing CAD as compared to women, and they also have earlier onsets of
heart disease. In women, the risk for heart disease increases after menopause. However, even after menopause, their risk is not as great as that of men's (American Heart Association, 2002). Gender is one of the major non-modifiable risk factors of CAD.

The Dietary risk factors of *High Intake of refined or processed sugars, malnourished diet,* and *over dieting* were significantly perceived as the causes of CAD highly by female angina pectoris patients as compared to male angina pectoris patients. The other dietary risk factors of *fast food, high intake of salts,* and *excessive coffee/tea drinking* were considered as the contributors to CAD risk equally by male and female angina pectoris patients. Among the male and female MI patients significant difference was found only for the *High Intake of Salts* dietary risk factor.

High intake of sugar develops risk of diabetes mellitus (and hence, CAD). The consumption of fast foods is increasing greatly in India and is emerging as one of the new risk factors of CAD. Indian people consume high quantities of saturated fats, oils, and spices. These lead to malnourishment and have adverse effects on the lipid profile. Coconut oil, consumed highly in India, is the most saturated of all fats; 74 percent of its SAFAs are cholesterol-raising fatty acids. Chief sources of transfatty acids are vanaspati,
fried chicken, butter, and hard margarines. Butter has 60 percent SAFA while stick margarine has 16 percent transfatty acids (Schafer et al., 1995). Over-dieting leads to a number of gastric disorders as well as under weight, which can also lead to heart disease.

High intake of salts, in any form, increases the risk of CAD, and should be avoided. High consumption of salt increases blood pressure. Certain drugs (like, antacids) which have high salt content should not be taken by the CAD patients. Palatability of salt-restricted diet may be improved by adding pepper, coriander, ginger, garlic, onion, or lemon. Coffee, when taken frequently, may increase cholesterol, although it has not been conclusively proved (Ghafoorunisa & Krishnaswamy, 1994). However, in persons with hypercholesterolemia, coffee intake must be withheld.

These days, most people in developing countries, have developed eating habits which include habitual high intake of (a) total fats, saturated fats, and oils; (b) refined and processed sugars and other low fibre foods; (c) foods of high caloric density, with a high ratio of calories to essential nutrients; (d) total calories in relation to caloric expenditure (physical activity); (e) salt and other high-sodium compounds; and, (f) for some populations, alcohol. The widespread adoption of these eating habits has
contributed to the epidemic of coronary and other sclerotic diseases in several ways (WHO Study Group, 1998).

Epidemiological research has identified a set of standard physical risk factors of CAD and many of these have implicated elements of lifestyle and habits of living (e.g., high blood pressure, high serum cholesterol). These risk factors differ in the extent to which they are associated with male and female CAD patients. The most widely accepted physical risk factors are high serum cholesterol and hypertension (Kannel, 1979).

Male and female angina pectoris patients exhibited similar awareness of all the five physical risk factors. Among the MI patients, female patients showed significantly greater awareness of Hypertension as a physical risk factor of CAD. Other physical risk factors of Ageing, Lack of exercise/physical inactivity, Physical Stress, and high serum cholesterol were considered the causes of CAD by male and female MI patients equally.

It has been demonstrated that regular physical activity increases insulin sensitivity and improves glucose tolerance. Recent studies examining exercise outside work have shown that physical inactivity, whether occupational or recreational, is associated with an increased risk of CAD, independent of other risk factors (WHO Study Group, 1998). The risk of CAD increases
in men and women with passing age. After a certain age, even 

women are equally prone to CAD as men.

Hypertension increases CAD risk in middle-aged populations 
in many developed and developing countries. The underlying 
mechanism associated with high blood pressure is that it increases 
the heart’s workload, causing the heart to enlarge and weaken. It 
also increases risk of stroke, heart attack, kidney failure, and 
congestive heart failure (American Heart Association, 2002). WHO 
experts found that elevated blood pressure causes about half of all 
cases of heart disease worldwide (WHO News, Oct. 2002). The 
female MI patients, on an average, had elevated blood pressure, as 
compared to their male counterparts (>150/90). This explains, 
perhaps, the greater awareness of hypertension as a risk factor of 
CAD, among female MI patients as compared to male MI patients. 
Blood pressure can be lowered by weight loss, exercise, salt 
restricted-diet, and avoidance of alcohol.

Levels of total serum cholesterol are elevated by high intakes 
of saturated fat and cholesterol, together with caloric imbalance 
and consequent obesity as well as low fiber intake.

The awareness of organizational risk factors is found to be 
significantly higher among male angina pectoris patients as 
compared to their female counterparts. Departmental politics, job
insecurity, job dissatisfaction, job pressure, poor physical conditions, poor relations with boss/subordinates/colleagues, physically demanding job, psychologically demanding job, role overload, and rushing through work are considered as the organizational factors contributing to the risk of CAD. For the MI patients no relevant results were obtained, as the female MI patients expressed no awareness for the role of organizational factors in contributing to the risk of CAD.

A low level of control over one’s job and an excessive workload seem to be important contributors for heightening job-related stress. In occupational stress literature, several types of working conditions have been associated with CAD risk. These include high job demands, less job autonomy, and lack of job satisfaction (Krantz, et al., 1988).

**Coping Strategies**

Findings on the coping strategies adopted by CAD patients, in the present study, indicate that among the prescribed behavioral coping strategies significant differences were found to exist between the male and female MI patients on engaged in fitness activities (CR=3.36, p<0.01), taking care to maintain good health by exercising (CR=2.53, p<0.05), consult with doctor or Cardiologist (CR=3.41, p<0.01), control of body weight
(CR=7.34, \(p<0.01\)), and maintaining appropriate balance of work (CR=2.18, \(p<0.05\)). Male MI patients adopted these coping ways more than their female counterparts.

The male angina pectoris patients adopted the consult with doctor or cardiologist prescribed behavioral strategy significantly more as compared to the female angina pectoris patients.

Among the non-prescribed behavioral coping strategies, the male MI patients highly adopted engaged in fitness activities (CR=2.18, \(p<0.05\)), control of body weight (CR=2.25, \(p<0.05\)) , and regular physical-checkup (CR=2.21, \(p<0.05\)) as compared to female MI patients. The male angina pectoris patients as compared to their female counterparts greatly adopted maintaining an adequate sleep pattern as one of the non-prescribed behavioral coping strategy.

The most frequently prescribed behavioral coping strategies for CAD patients include taking balanced diet, control of body weight, consult with doctor or cardiologist, engaged in fitness activities, and regular physical check-up.

All the CAD patients adopted the dressing appropriately for weather conditions as a non-prescribed behavioral coping strategy. Other non-prescribed behavioral coping strategies adopted frequently by the CAD patients include maintaining an appropriate
balance of work, maintaining an adequate sleep pattern, control of body weight, consult with doctor or cardiologist, seeking information on illness, and engaged in fitness activities.

Take balance diet is the only behavioral coping strategy which is both highly prescribed by the doctors and is adopted by the patients on their own (i.e. non-prescribed).

Behavioral approaches to coping with cardiac disease have a number of beneficial effects. Physical activity has beneficial effects on blood lipids, blood pressure, and body weight/fat distribution. Light to moderate physical activity like walking, walking-up stairs, housework, and gardening, when performed regularly, prove very beneficial for reducing CAD risk. Weight loss and exercise, caloric restriction for obesity and avoidance of sugar and saturated fat are recommended for checking the risk for CAD. Exercise promotes cardiac fitness, and strengthens the resistance of the circulatory system in the face of stressful events. Exercise helps improve the ability to think clearly, as it improves circulation to the brain.

The WHO urges countries, where CAD prevalence is rising, to adopt policies and programs to promote population wide interventions like reducing salt in processed foods, cutting dietary
fat, encouraging exercise and higher consumption of fruits and vegetables and lowering smoking (WHO Health Report, 2002).

A number of non-prescribed coping strategies have been identified in the present investigation which relate, in one way or the other, to coping with CAD (i.e., angina pectoris and myocardial infarction). The following discussion focuses on these non-prescribed coping strategies:

Among the social coping strategies, majority of the CAD patients, preferred most to discuss with spouse, children, or relatives about the illness. The male angina pectoris patients as compared to their female counterparts, frequently adopted try to make other family members feel comfortable and understood, engaged in recreational activities, discuss with friends about the illness, and engage in activities to help others or provide social support, as the ways of coping with their illness. The male MI patients preferred mostly to be engaged in recreational activities, discuss with friends about the illness, and engaged in activities to help others or provide social support, as compared to female MI patients. However, the female MI patients, as compared to their male counterparts, highly adopted to try to make other family members feel comfortable and understood, as a way to cope with their illness.
Social support is a key variable in stressful life situations. The presence of strong, positive social relationships reduce the experience of stress, improves health, and buffers the impact of stress on health. Positive social support has a significant impact on the physical and psychosocial well-being of CAD patients. Family members, particularly spouses, provide important social support. Family support has a significant positive impact on the progressive improvement of functional status in patients with CAD. Family members should provide encouragement, show confidence in improvement, assure the patients that they are wanted and needed, and permit the recovering person to be as independent as possible. A supportive family plays an important role in providing with social support, emotional encouragement as well as compliance with treatment protocol (Tsouna-Hadjis, et al., 2001). Engaging in recreational activities or activities to help others, forms a social support network and enables the person to cope with stressful life situations (like CAD).

Avoidance coping strategies mostly adopted by male angina pectoris patients as compared to female angina pectoris patients include try to reduce or manage suffering by smoking /drinking and diverting attention from discussion on the illness. Both male and female angina pectoris patients frequently engaged in
arguments and fight over relatively unimportant things, and lack of interest as ways of coping with their illness. A few of the angina pectoris patients adopted behavioral disengagement as an avoidance coping strategy. Among the myocardial infarction group, female patients as compared to male patients preferably adopted lack of interest, arguments and fight over relatively unimportant things, and diverting attention from discussion on the illness as ways of coping with their illness. A small section of male MI patients adopted try to reduce or manage suffering by smoking/drinking, whereas only some female MI patients were engaged in behavioral disengagement for coping with their illness.

People usually adopt a number of diversive or avoidance strategies to cope with a stressful situation. Taking drugs or abusive substances, diverting attention, showing lack of interest, and giving-up the attempt to cope allows a person to temporarily avoid the stress accompanying the problem or illness. However, long-term effects of these ways of coping prove to be harmful for the person. Avoidance coping is found to be associated with increased levels of depression among elderly CAD patients (Landreville & Vezina, 1994). Avoidance coping strategies are generally positively related to increased psychosocial adaptation and decreased levels of physical, medical, and emotional distress,
in the early phases of convalescence following CAD. However, long-term positive effects of these strategies are doubtful (Livneh, 1999).

Almost all of the CAD patients, in the present investigation frequently adopted *pray for strength* as one of the religious/spiritual coping strategies. The male angina pectoris patients as compared to their female counterparts preferred to adopt *expressing moral and religious values in daily living and visiting holy places* as the ways of coping with their illness. The female angina pectoris patients frequently engaged in *meditation and devotion to God, attending religious congregations, and recitation of the Holy Book* to cope with disease, as compared to their male counterparts. The female MI patients in contrast to male MI patients were more inclined towards adopting all the religious coping strategies frequently to cope with their illness.

Religious and spiritual coping strategies have a facilitative impact on psychosocial adaptation among people suffering from heart diseases. Healthy religious faith and practices can help people get better. The role of prayer and faith has been scientifically proved in the treatment of patients with heart disease. Experts offer several possible explanations for the role of faith and religion in healing process. Going to religious services
guarantees contact with people, thereby strengthening social ties and increasing social support. Faith gives a sense of hope and control that counteracts stress. Praying evokes beneficial changes in the body, like decreases in blood pressure, metabolism, heart and breathing rates. Faith offers people some control over their lives as opposed to just depending on a medical profession that's becoming more distant and mechanized everyday (Mc Intosh, 1997).

The cognitive coping strategy of readjusting the style of living habits and daily routine was highly adopted by majority of the male and female CAD patients. The male CAD patients, as compared to their female counterparts, preferred greatly among all the cognitive strategies to cope with their illness, the optimistic attitude towards life, prepared for the worst, positive outlook on life, preparation for dying, and rational thinking strategies.

Cognitive reappraisal and restructuring can help the heart patients to think of their disease as a positive challenge and can eliminate much of the arousal associated with this stressful disorder. Cognitive efforts to restructure a problem in a positive manner were found to be associated with decreased depressive symptoms among older individuals with cardiac illness (Holahan et
al., 1997). Positive thinking was the only coping strategy to remain stable over time in patients recovering from CAD (King, 1985).

**Attitude Towards Life**

Male in comparison to the female angina pectoris patients have expressed positive attitude towards life (t=2.59, p<0.05). Male angina pectoris patients scored significantly higher than the female angina pectoris patients on *Life Control* (t=4.19, p<0.01) and *Future Meaning to Fulfil* (t=2.12, p<0.05) factors of Life Attitude Profile. Male and female angina pectoris patients did not differ significantly in their mean scores on *Life Purpose* (t=1.29, p>0.05), *Existential Vacuum* (t=0.71, p>0.05), *Death Acceptance* (t=1.16, p>0.05), *Will to Meaning* (t=1.35, p>0.05), and *Goal Seeking* (t=0.94, p>0.05) factors of Life Attitude Profile (Cf. Table19).

Male myocardial infarction patients scored significantly higher than their female counterparts on the Life Attitude Profile (t=3.61, p<0.01). Significant differences were not found between the mean scores of male and female myocardial infarction patients on *Existential Vacuum* (t=0.54, p>0.05), *Death Acceptance* (t=1.74, p>0.05), *Goal Seeking* (t=0.72, p>0.05), and *Future Meaning to Fulfil* (t=1.83, p>0.05) factors of Life Attitude Profile. Whereas, male myocardial infarction patients scored significantly higher than female patients on *Life Purpose* (t=2.12, p<0.05), *Life
Male angina pectoris and myocardial infarction patients scored significantly higher than their female counterparts on the Life Attitude Profile (LAP). This finding implies that even in the face of their disease male CAD patients exhibit a positive attitude towards life. That is to say, they accept life with responsibility irrespective of its difficulties and challenges. High attitude towards life is associated with lesser fear of death. In this context it may be apt to cite McCarthy (1980), that people who have a high purpose in life or a positive attitude towards life have a positive and accepting attitude towards death and they fear it less.

Male angina pectoris and myocardial infarction patients expressed greater life control as compared to female patients. This indicates that the male patients possess more power to control what happens in their life circumstances and they tend to be sure of the effectiveness of their actions.

Male, in comparison to female angina pectoris patients have a strong Future Meaning to Fulfil desire. Salient features about the positive perception linked to this aspect of attitude towards life, appear to explain the behavior of male patients in terms of their social involvement, enhanced performance, increased personal
power, life-control, reduced tension and anxiety. Perhaps these positive states motivate and maintain future meaning to fulfil.

Male myocardial infarction patients as compared to their female counterparts, have scored significantly higher on the *Life Purpose* and *Will to Meaning* factors of Life Attitude Profile. These findings can be explained from the viewpoint of Frankl (1962). For Frankl the primary motivation in man consists of a "will to meaning", which is more basic than the drive for pleasure or power. For the male myocardial infarction patients this meaning is unique and specific to them. Frankl believes that religion defines one's purpose in life. In the present study most of the CAD patients were followers of Islam. The low level of life purpose in female myocardial infarction patients imply that perhaps they may have feelings of depression which is a common feature among patients recovering from a myocardial infarction (Ziegelstein, 2001).
CHAPTER FIVE

CONCLUSIONS, IMPLICATIONS & SUGGESTIONS FOR FUTURE RESEARCH
Conclusions

The findings of the present study have led to certain conclusions. These are summarized as under:

➢ The present research has contributed significantly to the understanding and awareness of various conventional and emerging risk factors associated with CAD. In general, the identification and control of these risk factors can help in improving the health related quality of life and well-being of CAD patients.

➢ Assessment of the coping behavior may be used as an outcome measure in research on the relative benefits of various treatment methods. Identification of prescribed and non-prescribed coping strategies, may have greater use for therapeutic purposes. The dominant role played by non-prescribed coping strategies as compared to the prescribed coping strategies, in adaptation to the stressful situations posed by chronic illness, is highlighted in the findings of present investigation.

➢ The non-prescribed strategies may prove more useful in potentially reducing CAD risk, ameliorating the burden of illness, and promoting recovery and rehabilitation, when prescribed by the cardiologists or health-care professionals.
The present study points out the relationship between attitude towards life and CAD. The assessment of the patient’s attitude towards life can influence the therapeutic and rehabilitation programs. These programs may help patients to come to terms with the negative life events and inculcate in them an optimistic and positive outlook towards life. This will prevent the further deterioration of health and promote recovery and cardiac rehabilitation.

Implications

A combination of psychosocial and physical interventions related to coping behavior and life-style modifications (exercise, walking, relaxation, positive thinking, healthy dietary and activity patterns), can be the best approach to disease prevention and healthy living. The most important application remains, however, in sensitizing health care professionals to look beyond diseases, disabilities and symptoms. The instruments of coping behavior and attitude towards life can help identify the ways in which people are affected by disease and to find suitable interventions. It can also motivate health care professionals to focus attention on the positive aspects of CAD patient’s lives and to develop strategies to strengthen them.
The most important implication associated with the identification of CAD risk factors may be to disseminate the role of emerging risk factors like lifestyle, organizational, and environmental, to the physicians or cardiologists and the general public by the government and professional organizations. This may help cultivate awareness of CAD risk factors in people in general, and development of specific interventions by the health care departments.

The various psychosocial factors may be incorporated into the preventive programs. The health care professionals may attempt to identify and treat depression and anxiety in patients with CAD. Group support and stress management training can be provided in formal cardiac rehabilitation programs. Psychosocial interventions which include strengthening social, emotional, and family support, health education about CAD and reinforcing healthy behavior are associated with reductions in psychosocial stress, heart rate, and blood pressure. Further, the benefits may be enhanced through medication and self-help programs such as exercise, yoga, meditation, walking, stair climbing, etc., both in terms of improving well-being and reducing mortality. Individual control techniques are needed in order to achieve the greatest benefits.
The findings of the present study have clinical utility and implications for cardiologists and health psychologists. These professionals may prescribe the various coping strategies to modify and alter lifestyle of the CAD patients so that they can efficiently cope with their stresses and enhance their well-being. The rehabilitation professionals should focus on instilling in the patients more active, problem focused, and approach oriented coping skills. Cardiologists may get benefit from psychologists’ expertise in using skills training for the rehabilitation of the patients, since coping effectiveness is often enhanced through the use of cognitive behavioral skill training (Devins & Binik, 1996; Meichenbaum, 1977). Health psychologists may employ these cognitive programmes to help the patients, referred by the cardiologists, to improve their skills of managing stress, emotional distress, and enhancing well-being.

Another implication of the present findings is to chalk out a diet intervention programme in order to cultivate healthy eating habits among people in general, and CAD patients in particular. A successful diet programme is based on education and behavioral modification. Emphasis should be on a lifelong programme that includes consumption of diet rich in fibres, whole-grains, poly-unsaturated fatty acid (PUFA) etc. and low in salt, SAFA and
cholesterol. A changeover from non-vegetarian to vegetarian diet should be advised as it is observed that vegetarians die less frequently from cardiovascular causes (Bloor & Sweetnam, 1982). The government should develop successful collaboration with the food industry to reduce salt and fat quantity in the processed foods.

The results of the present study have special implications for the organizations or management. The results of the present study reveal that the various organizational factors add to the CAD risk of people. Therefore, every effort should be made to provide a healthy climate in the organization, thereby enhancing the health of the workers and improving their overall well-being.

**Suggestions for Future Research**

Despite the bulk of research work in the field of health psychology, particularly on the topic of CAD, there are some areas that need to be explored further in order to gain better understanding of the phenomenon.

- The awareness of risk factors associated with other stress-related disorders-gastro-intestinal, urogenital, muscular-skeletal, acne, respiratory, etc.
- Research on the role of positive psychosocial states and behavioral factors-social support, learned optimism, emotional
well-being, happiness, positive attitude in the management of CAD must be expanded.

➢ Further research should also explore certain other emerging risk factors associated with CAD like elevated lipoprotein (a), inflammation and infectious agents etc.

➢ Role of sociodemographic variables such as socioeconomic status, caste, unemployment, geographical region, literacy etc. in the development of CAD.

➢ Impact of individual techniques or engagement strategies such as relaxation techniques or yoga, and meditation, positive reappraisal, recreational activities, in the rehabilitation of CAD patients should be explored.

➢ Community health interventions should demonstrate clearly about the future benefits of preventive interventions on health. For example, prevention of substance abuse, regular physical exercise and reducing cholesterol, proper dietary habits may result in the prevention of heart diseases later in life.

➢ Further research should explore certain other dimensions of attitude towards life among CAD patients and diverse samples.

➢ An important research area concerns the impact of people’s illness on their family members and their health. This must be explored.
Integration of the behavioral or psychological and pharmacological approaches is needed to provide better quality of care and attention to the CAD patients in order to improve their quality of life and enhance their well-being. It is suggested that no single approach will be successful in protecting people from the ravages of the rising burden of CAD and so, a range of intervention techniques including education of health caregivers and patients, use of proper guidelines, clinical audit, and governmental interventions are needed.

Finally, lifestyle modification for the entire population as part of a population based strategy offers the best hope of arresting and reversing the epidemic of CAD among Indians. The population based strategy should aim to reduce the smoking rate and lower the serum cholesterol and blood pressure levels of the entire population by emphasizing the perils of tobacco abuse, the importance of consumption of healthy foods, and the need for regular exercise. This strategy is more likely to be practical and successful in India than the extensive use of expensive medical technology, which is beyond the reach of the overwhelming majority of Indians.
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APPENDICES
PERSONAL DATA SHEET

Name: ........................................ C.C.No.: ........................................

Age: ........................................ Marital Status: ..............................

Occupation: .............................. Weight: .................................

Address: .......................................................... ........................................

Diagnosis: .......................................................... ........................................

Family History of CAD: .......................................................... ..............

Clinical Features and Investigations

Blood Sugar: .......................................................... ........................................

Blood Urea: .......................................................... ........................................

Serum Cholesterol, (mg/100 ml): .......................................................... ........

Fasting serum triglycerides, (mg/100 ml): .......................................................... ........

Electrocardiogram (ECG): .......................................................... ..............

Echo Test: .......................................................... ........................................

Surgical Intervention(if any): .......................................................... ..............

No. of Heart Attacks or M.I.: .......................................................... ..............
### CAD RISK FACTORS QUESTIONNAIRE

Our purpose is to find how far you are aware that the following factors are related to Coronary Artery Disease. You have to write a number against each factor to indicate the extent of your awareness regarding the relationship of the factor with the ailment. The meaning of the numbers from which you have to select your response is as below:

<table>
<thead>
<tr>
<th>Very Much Aware (4)</th>
<th>Much Aware (3)</th>
<th>Somewhat Aware (2)</th>
<th>Not Much Aware (1)</th>
<th>Definitely Not Aware (0)</th>
</tr>
</thead>
</table>

### LIFESTYLE FACTORS

1. Sedentary Lifestyle  
2. Diabetes mellitus  
3. Obesity

### PSYCHOSOCIAL FACTORS

1. Anxiety  
2. Depression  
3. Psychosocial Stress  
4. Fear and panic  
5. Frustration  
6. Poor social support  
7. Type A Behavior  
8. Unpleasant Emotions (aggression, hostility)
ENVIRONMENTAL FACTORS

1. Weather Conditions
   ( ) ( ) ( ) ( ) ( )

2. Living in crowded environment.
   ( ) ( ) ( ) ( ) ( )

3. Pollution (Air, Domestic, Noise, Water, Vehicle smoke)
   ( ) ( ) ( ) ( ) ( )

4. Drug Misuse
   ( ) ( ) ( ) ( ) ( )

PERSONAL FACTORS

1. Substance Abuse – Alcohol, Smoking
   ( ) ( ) ( ) ( ) ( )

2. Taking of birth control pills by women
   ( ) ( ) ( ) ( ) ( )

3. Family history of CAD
   ( ) ( ) ( ) ( ) ( )

4. Male Gender
   ( ) ( ) ( ) ( ) ( )

5. Socio Economic Status
   ( ) ( ) ( ) ( ) ( )

6. Lack of Religious Affiliations
   ( ) ( ) ( ) ( ) ( )

DIETARY FACTORS

1. Fast Food
   ( ) ( ) ( ) ( ) ( )

2. High Intake of Salts
   ( ) ( ) ( ) ( ) ( )

3. High Intake of Refined or Processed Sugars
   ( ) ( ) ( ) ( ) ( )

4. Malnourished diet
   ( ) ( ) ( ) ( ) ( )

5. Over-dieting
   ( ) ( ) ( ) ( ) ( )

6. Excessive coffee/Tea drinking
   ( ) ( ) ( ) ( ) ( )
<table>
<thead>
<tr>
<th><strong>PHYSICAL FACTORS</strong></th>
<th>( ) ( ) ( ) ( ) ( ) ( )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Aging</td>
<td></td>
</tr>
<tr>
<td>2. Hypertension (High Blood Pressure)</td>
<td></td>
</tr>
<tr>
<td>3. Lack of exercise/ Physical Inactivity</td>
<td></td>
</tr>
<tr>
<td>4. Physical stress</td>
<td></td>
</tr>
<tr>
<td>5. High Serum Cholesterol</td>
<td></td>
</tr>
<tr>
<td><strong>ORGANIZATIONAL FACTORS</strong></td>
<td></td>
</tr>
<tr>
<td>1. Departmental politics</td>
<td></td>
</tr>
<tr>
<td>2. Job insecurity</td>
<td></td>
</tr>
<tr>
<td>3. Job dissatisfaction</td>
<td></td>
</tr>
<tr>
<td>4. Job pressure/hectic job</td>
<td></td>
</tr>
<tr>
<td>5. Poor physical conditions</td>
<td></td>
</tr>
<tr>
<td>6. Poor relations with boss/ subordinate/colleagues</td>
<td></td>
</tr>
<tr>
<td>7. Physically demanding job</td>
<td></td>
</tr>
<tr>
<td>8. Psychologically demanding job</td>
<td></td>
</tr>
<tr>
<td>9. Role overload</td>
<td></td>
</tr>
<tr>
<td>10. Rushing through work</td>
<td></td>
</tr>
</tbody>
</table>
**COPING STRATEGIES CHECKLIST**

Every patient adopts various strategies of coping with disease. In this checklist there are items related to different ways of coping. Put a check (√) mark against the coping strategies which you adopt and indicate whether it is prescribed or non-prescribed by your doctor.

<table>
<thead>
<tr>
<th>Prescribed</th>
<th>Non-Prescribed</th>
</tr>
</thead>
</table>

**BEHAVIORAL COPING STRATEGIES**

1. Engaged in fitness activities (walking, stair climbing, cycling) ( ) ( )
2. Taking care to maintain good health by exercising. ( ) ( )
3. Consult with doctor or Cardiologist. ( ) ( )
4. Control of body weight. ( ) ( )
5. Regular physical check up. ( ) ( )
6. Maintaining an adequate sleep pattern. ( ) ( )
7. Take balance diet. ( ) ( )
8. Seeking information on illness. ( ) ( )
9. Dressing appropriately for weather conditions. ( ) ( )
10. Maintaining an appropriate balance of work. ( ) ( )
SOCIAL COPING STRATEGIES

11. Talk with wife/husband, children or other relatives about the problem. ( ) ( )

12. Discuss with friend about the problem. ( ) ( )

13. Engaged in recreational activities (e.g. watching T.V., reading, traveling, shopping etc.) ( ) ( )

14. Try to make other family members feel comfortable and understood. ( ) ( )

15. Engage in activities to help others or provide social support. ( ) ( )

AVOIDANCE COPING STRATEGIES

16. Try to reduce or manage suffering by smoking/drinking. ( ) ( )

17. Try to reduce or manage suffering by taking more tranquilizing drugs (sleeping pills etc.) ( ) ( )

18. Behavioural disengagement (giving-up the attempt to cope) ( ) ( )

19. Diverting attention from discussion on the illness. ( ) ( )

20. Arguments and fight over relatively unimportant things. ( ) ( )
21. Lack of interest. ( ) ( )

RELIGIOUS /SPIRITUAL COPING STRATEGIES

22. Pray for strength. ( ) ( )
23. Meditation and devotion to God. ( ) ( )
24. Visiting to holy places. ( ) ( )
25. Attending religious congregations. ( ) ( )
26. Recitation of the Holy Book. ( ) ( )
27. Expressing moral and religious values in daily living. ( ) ( )

COGNITIVE COPING STRATEGIES

28. Optimistic attitude towards life. ( ) ( )
29. Readjusting the style of living habits and daily routine. ( ) ( )
30. Prepared for the worst. ( ) ( )
31. Positive outlook on life ( ) ( )
32. Preparation for dying. ( ) ( )
33. Rational Thinking. ( ) ( )

Use of Prescribed Drugs.

Any Other:
IV

LIFE ATTITUDE PROFILE

INSTRUCTIONS:

People have different attitudes and opinions about different aspects of life and they vary in expressing the magnitude of their reactions. You are requested to respond to each of the statement and indicate the intensity of your attitude by writing the number corresponding to your response in the bracket given against each statement. While responding to each item you are required to follow the given response categories:

(1) Strongly Disagree
(2) Moderately Disagree
(3) Slightly Disagree
(4) Neither Agree Nor Disagree
(5) Slightly Agree
(6) Moderately Agree
(7) Strongly Agree

1. I feel that some element which I can’t quiet define is missing from my life. (  )

2. I expect the future to hold more promise for me than the past has . (  )

3. A period of personal hardship and suffering can help give a person a better understanding of the real meaning of life. (  )

4. In my life I have very clear goals and aims. (  )

5. Everyone is held accountable for their life. (  )
6. I daydream of finding a new place for my life and a new identity.

7. I look forward to the future with great anticipation.

8. Everyday is constantly new and different.

9. I think about the ultimate meaning of life.

10. I feel a need to develop clearer goals for my life.

11. My life is in my hand I am in control of it.

12. Even though death is inevitable, I cannot help but be concerned about dying.

13. I have experienced the feeling that while I am destined to accomplish something important, I cannot put my finger on just what it is.


15. In achieving life’s goals, I have felt completely fulfilled.

16. In thinking of my life, I see a reason for my being here.

17. I am restless.

18. Concerning my freedom to make my own choices, I believe I am absolutely free to make all life choices.

19. I think I am generally much less concerned about death than those around me.

20. I feel the lack of, and a need to find a real meaning and purpose in my life.
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<table>
<thead>
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<tbody>
<tr>
<td>21.</td>
<td>I hope for something exciting in the future. (   )</td>
</tr>
<tr>
<td>22.</td>
<td>I get a thrill out of just being alive. (   )</td>
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<tr>
<td>23.</td>
<td>The meaning of life is evident in the world around us. (   )</td>
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<td>24.</td>
<td>I try new activities or areas of interest and then these soon lose their attractiveness. (   )</td>
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<tr>
<td>25.</td>
<td>Death makes little difference to me one way or another. (   )</td>
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<tr>
<td>26.</td>
<td>I am seeking a meaning, purpose, or mission for my life. (   )</td>
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<td>27.</td>
<td>I feel the need for adventure and “new worlds to conquer”. (   )</td>
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<td>28.</td>
<td>My life is running over with exciting good things. (   )</td>
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<td>29.</td>
<td>I have discovered a satisfying life purpose. (   )</td>
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<tr>
<td>30.</td>
<td>I seem to change my main objectives in life. (   )</td>
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<td>31.</td>
<td>It is possible for me to live my life in terms of what I want to do. (   )</td>
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<tr>
<td>32.</td>
<td>I would neither fear death nor welcome it. (   )</td>
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<td>33.</td>
<td>Over my lifetime I have felt a strong urge to find myself. (   )</td>
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<tr>
<td>34.</td>
<td>I feel that the greatest fulfillment of my life lies yet in the future. (   )</td>
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<tr>
<td>35.</td>
<td>Life to me seems very exciting. (   )</td>
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36. I have been aware of an all powerful and consuming purpose towards which my life has been directed.

37. Before I achieve one goal, I start out towards a different one.

38. I regard the opportunity to direct my life as very important.

39. New and different things appeal to me.

40. I am more afraid of death than old age.

41. I determine what happens in my life.

42. Basically, I am living the kind of life I want to live.

43. Some people are very frightened of death, but I am not.

44. My accomplishments in life are largely determined by my own efforts.