ASSESSMENT OF HEALTH RELATED QUALITY OF LIFE AND COPING BEHAVIOUR IN CARDIOVASCULAR DISEASE PATIENTS

ABSTRACT

THESIS

SUBMITTED FOR THE AWARD OF THE DEGREE OF

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in

PSYCHOLOGY

BY

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ABSTRACT

The present study is concerned with the assessment of health-related quality of life and coping behaviour in cardiovascular disease patients. Cardiovascular diseases include myocardial infarction, angina pectoris and hypertension.

Diseases of the heart and blood vessels constitute a major health problem today. Cardiovascular diseases which include heart disease and stroke, are now the leading cause of death and disability in India. Today, about 40 million Indians are suffering from coronary artery disease. In fact cardiovascular diseases are soon expected to be responsible for one out of four deaths in developing countries. High blood pressure is a major contributor to the India's population's morbidity mortality, and related cardiovascular diseases-stroke and renal insufficiency-. With the globalization and life-style changes that are now taking place in the region, around 10-15% of the adult population is already affected by hypertension in India.

A variety of methods has been proposed for the measurement of quality of life. However, the present investigator viewed that there is a need to develop an instrument for measuring health-related quality of life which should be based on a broad range of variables, not on a single issue such as
disease. Health-related quality of life scale is developed to explore what impact cardiovascular diseases have on the patients' psychological, physiological, organizational, personal and social, and physical effects of life, rather by focussing exclusively on the disease itself.

The term “coping” is used to denote the way of dealing with stress, or the effort to master conditions of harm threat, or challenges when a routine or automatic response is not readily available. Psychologists have identified two different ways estratégias in which people cope with stress. They are: active/effective/functional, passive/ineffective/dysfunctional. These approaches are explained in greater detail in chapter one.

The present study has set the following objectives:

1. To examine the impact of awareness of coronary artery disease (Myocardial Infarction, angina pectoris) in patients on various health-related quality of life dimensions (Psychological, physiological, organizational, personal and social, physical).

2. To examine the impact of awareness of hypertension in patients on various health-related quality of life dimensions.

3. To explore various coping styles or strategies in patients who are suffering from myocardial infarction and angina pectoris.

4. To explore various coping styles or strategies in patients who are suffering from hypertension.
During the last decade of the century that has passed, numerous studies have been carried out on the topics of health-related quality of life and coping behaviour in cardiovascular disease patients, which are reported in chapter two under three major heads, i.e., quality of life, measurement of health-related quality of life, and coping with cardiovascular disease. A major breakthrough occurred in 1995 when The WHOQOL group defined the term quality of life. An effort is underway to give the precise definition of the term quality of life in order to determine the nature of the cardiovascular diseases and their impact on psychological, physiological, organizational, personal and social, and physical changes observed by the patients. Most attempts to evaluate quality of life in cardiovascular disease patients have focussed on psychological outcomes. Few studies have attempted to characterize the health status and impacts of cardiovascular disease on the health-related quality of life.

For the purpose of the present investigation, 105 myocardial infarction, 35 angina pectoris, and 60 hypertensive patients or subjects were drawn from the OPD of the department of Cardiology and the department of Medicine, Institute of Medical Sciences, B.H.U. Varanasi.

Patients were contacted individually and were administered Health-Related Quality of Life (HRQOL) scale, Coping Behaviour Scale (CBS), and Personal Data Sheet (PDS) on one day. They were assured that their response would be kept strictly confidential and will be used for research only.
Simple percentages and rank-difference correlation coefficients were calculated. Rank-difference correlation coefficients revealed the following results:

- Rank difference correlation coefficients were found to be significant at 0.01 level in the ranking between myocardial infarction and angina pectoris, myocardial infarction and hypertensive, and angina pectoris and hypertensive patients on the psychological, physiological, organizational, and physical effects of HRQOL scale.

- On the 'personal and social effects' dimension of HRQOL scale rank-difference correlation coefficient was not found to be significant in the ranking between myocardial infarction and angina pectoris, myocardial infarction and hypertension and angina pectoris and hypertensive patients.

- Rank difference correlation coefficients were found to be significant at 0.01 level in the rankings between myocardial infarction and angina pectoris, myocardial infarction and hypertension, and angina pectoris and hypertensive patients on coping behaviour scale.
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“THE LORD OF ALL THAT EXISTS. WHO HAS CREATED ME, AND IT IS HE WHO GUIDES ME. AND IT IS HE WHO FEEDS ME AND GIVES ME TO DRINK. AND WHEN I AM ILL, IT IS HE WHO CURES ME...”

(The Noble Qur’an, 29:77, 78, 79, 80).
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CERTIFICATE

It is certified that Mr. Wael Mustafa Fayez Mahmoud has worked under our supervision for his Ph.D. Thesis entitled "Assessment of Health Related Quality of Life and Coping Behaviour in Cardiovascular Disease Patients". This study was carried out by him and it is an original piece of work. The thesis can be forwarded to the examiners for its evaluation.

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Chapter One

INTRODUCTION

Cardiovascular Disease : Brief History, Nature and Causes

Human atherosclerosis is not a new disease. Paleopathological study of ancient Egyptian mummies has revealed that atherosclerosis was present, at least in some individuals, during the time of pharaohs. Hippocrates (1982) described probable coronary sudden death in his Aphorisms: "Persons who are naturally of a full habit die suddenly, more frequently than those who are slender." Although ischaemic heart disease seems to be an ancient disorder, the 20th century has witnesses logarithmic growth in numbers of individuals affected with this disease.

Sudden death was recognised as early as in the 5th century BC by the Greek Physician Hippocrates and was noted to be more common in obese. The role of disease in affecting the heart itself did not become apparent until the 17th century, when examination of the body after death become acceptable.

Gradually, the involvement of the heart valves, the blood vessels, and the heart muscle was observed and categorized in an orderly fashion. The
circulation of the blood through the heart was described in 1628 by the British physician William Harvey.

The recognition of the manifestations of heart failure came later, as did the ability to diagnose heart ailments by physical examination through the techniques of thumping, listening with the stethoscope, and other means. It was not until early in the 20th century that the determination of arterial blood pressure and the use of X-rays for diagnosis became widespread. Now, electrocardiograms and angiography are also used for diagnosis.

Cardiovascular surgery in the modern sense began in the 1930s, and open-heart surgery in the 1950s. In 1967, Christian Barnard performed first heart transplant operation in Capetown, South Africa. Today, many surgical options exist. The relatively non-invasive balloon and stent angioplasty as well the use of lasers can help minimize blockages in the blood vessels taking blood to the heart.

Coronary Artery Disease (CAD) is the consequence of atherosclerotic changes in the larger coronary arteries. These properly start as fatty tracks in the arterial wall in youth, but then progress with the progressive deposition of lipid and fibrous tissue in the succeeding years. The lesions occur as plaques, which are most commonly located at the bends and bifurcations of the vessels. The plaques vary in their characteristics. Some are largely composed of fatty tissues; if these are covered by a thin cap, as they may be, they
are liable to rupture. Rupturing or fissuring is likely to lead to platelet and then fibrin deposition. The clot so formed may completely occlude that affected artery and result in myocardial infarction. In other cases, the lesions are predominantly fibrous. Plaques may gradually encroach upon the lumen of the artery. When the lumen is reduced by 50% or more, the blood supply to the muscles beyond the obstruction is limited, leading to ischemia when the demand increases on exercise.

Environmentally, the cardiovascular system is vulnerable to stress and feelings of isolation. The functions of the cardiovascular system are to carry materials and to regulate temperature. Every cell of the body needs a continuous supply of oxygen and nutrients that furnish the energy and raw materials for cellular metabolism. The importance of the cardiovascular system to the survival of the body is illustrated by the fact that it is the first system to develop in the foetus. The cardiovascular system consists of the heart, arteries, capillaries and veins. If blood supply is obstructed cellular death occurs within minutes.

The mechanisms that link psychosocial and behavioral factors to the process of cardiovascular system or to some other recognised risk factors are known for some psychosocial and behavioural factors but not for others, even though relationships have been established.
Coronary Artery Disease and its Prevalence

Cardiovascular disease, and particularly coronary artery disease (CAD), is now the leading cause of death and disability worldwide, not only in developed countries but also in most developing countries.

Recent reports suggest that the prevalence of coronary artery disease is increasing at an alarming rate. Today, about 40 million Indian are suffering from CAD. This is likely to increase to 100 million during the next decade if the present trend continues, cardiologists participating at the 51st annual conference of cardiological society of India (1999) have said. Morbidity and mortality due to cardiac disease 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 subcontinent. A review of the literature indicates that within India 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).

The number of deaths due to ischaemic heart diseases in India is projected to increase from 1.175 million in 1990 to 1.591 million by the year 2000, and to 2.034 million by 2010. Population surveys do not provide clear time trends, and the vast geographical,
ethnocultural and socioeconomic diversity of India has not been adequately encompassed.

A large body of data exists on the occurrence of CAD in hospital patients. However, there are few studies on its prevalence in the general population. In a study of Sarvotham and Berry (1968) conducted at Chandigarh on urban population over the age of 30 years by a 12 lead ECG, the prevalence was found to be 65.4 and 47.8 per 1000 males and females respectively. In a village in Haryana the prevalence was 22.8 and 17.3 per 1000 males and females respectively (Dewan et al., 1974). Gupta and Malhotra (1975) revealed prevalence of CHD in 36.3 per 1000 population. Two Indian studies from metropolitan cities have also reported that young patients (below 40 years of age) constituted 5-25 percent of the total patients of ischaemic heart disease (Gupta et al., 1987; Pahlajani et al., 1989).

Chadha et al. (1990) conducted a survey in Delhi which indicated that the prevalence of ischaemic heart disease is 9.67% in the age range 25-64 years, while electrocardiographic criteria alone yielded an estimate of only 3.14%.

Community-based epidemiological survey of CAD and its risk factors was carried out over the period 1984-87 on a random sample of adults aged 25-64 years. 13723 adults living in Delhi and 3375 in adjoining rural areas. The overall prevalence of CAD among adults
based on clinical and ECG criteria was estimated at 96.7 per 1000 and 27.1 per 1000 in urban and rural populations (Chadha et al., 1997).

**Myocardial Infarction - (the heart attack) : Nature and Causes**

Myocardial infarction is a pathological term used to describe death (necrosis) of a portion of a heart muscle. Myocardial infarction is nearly always due to clot blocking a coronary artery previously narrowed by atherosclerosis; thus the term coronary thrombosis and coronary occlusion are often used synonymously with myocardial infarction. The expression heart attack covers both myocardial infarction and sudden coronary deaths, which can occur in patients with coronary disease in the absence of a fresh (MI). Myocardial infarction is the deadliest of all heart diseases, killing one fourth of its victims in less than three hours of attack.

**The Psychological Impact of MI**

In MI patients and their relatives the fear ingendered by the idea of a heart attack inevitably causes anxiety. This anxiety usually subsides quickly when the pain is relieved and patients are reassured by the individual attention and high standard of care they receive in coronary care units (CCU). The process of psychological
rehabilitations must start at this time with adequate but simple and brief explanations of what has happened. Some people respond to the situation by denial - apparently refusing to believe that they could possibly have had the heart attack. This may help them to cope with the immediate crisis but it causes problems later when the true nature of their illness becomes undeniable.

The transition to end ordinary ward may be accompanied by the recurrence anxiety as patients move to a new unfamiliar environment with less privacy and a less close relationship with the staff (Wallace, 1968). Anxiety may occur again but it often gives way to depression. Mild decrease of depression is common but it may become severe and prolonged in some cases (Leng, 1994). The depth of depression is not related to the extent of coronary disease, move to preceding psychological problems and medical illness (Cay et al., 1972).


‘Angina’ means strangling while ‘pectoris’ means breast. As early as in 1768 William Heberden, and English physician described angina as pain that develops after exercises causing feelings of forebading doom. His student, Edward Jenner, thought that his boss’s pain was due to the syphilis. It was only around 1905 William Osler, postulated that the chest pain that Heberden had could have been due to heart
disease. The Shushrutha Samhita (1915), the most important textbook in Ayurveda, clearly describes the pain of myocardial ischaemia (anginal pain) in great detail. Shushrutha about 3000 years ago gave a vivid description of the disease and named it as “Vyayama Soshi”.

Vyayamashoshee bhuyishtambhivireva samanvithaha

Linghairusakshathakruthaihi samyukthashwa kshatham vinaa

Adhwashoshee cha swasthangaha sambrushtapurushaschavihi

Prasuptagathraavayavaha shushka-kloma-galaananaha.

“Person on exercise suffers from numbers of extremities, dryness of mouth and throat and weakness of limbs” - such a person is known as “Vyayama Soshi”.

Angina has its well documented authentic description in Ayurveda, Hegde (1999) describes :

Thrichatwarimshathammodhyayah

“Athaatho Hradrogaprathishedam Vyakyswamyah

Yathovaacha Bhagvan Dhanvantharim

(suthruthaya)”

Aayammyathe Maaruthaje Hradayam Thudyathe,

Nirmathyathe Dheeryathe Cha Spotyathe Paaticha,
Thrishnoshadaahachoshaam Syuhu Paithikecha,

Dhoomaayananam Cha Moorcha Cha Swedhahako.

(In this chapter Bhagvan Dhanvanthari, the God of Healing, personally describes the symptoms of heart disease and impending death due to heart attacks. Patient may feel pricking pain, vibrations (palpitations), burning pain, at times the pain may be very severe resembling the pain of splitting the chest into two halves with an axe. He may have unusual thirst, burning all over, breathlessness, extreme exhaustion, mouth breathing because he cannot have enough breath through his nostrils, profuse sweating, pale face, stiffness of the body parts, and finally even unconsciousness may result!) Julian (1991) defines angina as “a painful, a most disgusting sensation in the breast which seems as it would extinguish life...”. Angina is a symptom of coronary artery disease, usually described as a burning, squeezing, crushing, tightness in the chest that radiates to the left arm, neck, jaw, or shoulder. Angina results from ischaemia - a transitly inadequate supply of blood to the heart muscle. The majority of cases of angina can be attributed to coronary atherosclerosis but a small proportion is due to such conditions as aortic stenusis and cardiomyopathies. Spasm of the coronary arteries causes a rare form of angina: Prilzmetal’s or variant angina. In this condition angina usually occurs at rest in the
early morning and is accompanied by ST elevation in the ECG in contrast to the ST depression usual in other forms of angina.

There are two types of angina: (1) Stable angina which is characterized by fixed obstruction level and this limits any increase in blood flow. The pain is predictable and related to certain exercises. (2) Unstable angina is characterized by unpredictable pain and obstruction varies. At least 90-95 percent of patients with angina are beyond the age of 40 and more than 70 percent are beyond the age of 50. For angina the ratio of occurrence between men and women is 3:1 while for M1 it is 5:1 under 50. The general symptoms of heart disease include pain, palpitation, weakness, fever, nausea, vomiting, giddiness, anxiety, and high blood pressure, etc.

Hypertension : Prevalence

Hypertension is a chronic disorder characterized by sustained elevation of diastolic and/or systolic blood pressure. It may be the result of dysfunctions within other (e.g., Kidneys, Thyroid, Pituitary, Parathyroid), neurological disorders or pregnancy, or it may result from the breakdown or an inappropriate response to intrinsic regulatory mechanisms. Hypertension may occur when the narrowing of blood vessels from vasoconstriction or plaque building creates resistance to blood flow. In medical terms, hypertension can be
defined as physiological conditions characterized by sudden rise in blood pressure. Personality and Stress, obesity, dietary, diabetes, oral contraception, environmental and genetic, and high intake of fats and sodium are risk factors. This cardiovascular disease kills 12 million people annually worldwide, more than any other single disease.

The prevalence of hypertension has been studied in several urban and rural communities, and has ranged from 4.3% to 12.1% on the criterion of systolic blood pressure exceeding 160 mm Hg and diastolic blood pressure exceeding 95 mm Hg (Sapru, 1983). In a survey in progress in urban Delhi, a prevalence of 17.4% has been observed in persons aged 35-64 years on the basis of threshold values of 140 mm Hg systolic pressure and 90 mm Hg diastolic pressure. The prevalence of hypertension increases with age, socioeconomic status, urbanization and stressful living (Reddy, 1993). Gupta and others (1998) have reported the prevalence of hypertension in urban men and women, and rural men and women.

In India hypertension has in fact emerged as the leading lifestyle disease in the population segment over 35. According to national projections of Indian Council of Medical Research (ICMR) and All India Institute of Medical Sciences (AIIMS), 40-45 million Indians are believed to be suffering from this disease, that is key risk factor for Coronary Artery Disease strobe including myocardial infarction,
congestive heart failure, and cerebrovascular stroke, diabetes and kidney failure. The number is expected to rise to 54-60 million by the year 2001 (Jain & Jain, 1998).

**Hypertension: Historical Perspective**

For centuries, the blood pressure was assessed to feel the pulse, and interpreting its force and rhythm proved to be a useful predictor of disease and death. In about 2500 B.C., a Chinese physician remarked: “when the pulse is abundant but tense and hard like a cord, there are dropsical swellings”.

In 1827, the British Physician Richard Bright suggested that the dropsical swellings he encountered in a patient were due to obstruction in the kidney’s circulatory system. Bright’s argument was so persuasive that throughout the remainder of the 19th century most physicians considered a strong or tense pulse a symptom of kidney disease.

By the late 19th century, the earlier discoveries on the measurement of systolic blood pressure by Stephen Hales, Samuel, Vont Basch, and other led to the invention of the Sphygmanometer (blood pressure cuff). This device effectively replaced diagnosis by “pulse”, and its wide-spread use led observers to the realization that most patients with elevated arterial pressure did not have a kidney disorder. This newly discovered condition was given various names including angiosclerosis, presclerosis, hyperpiesis,
primary hypertensive, cardiovascular disease and essential hypertension. The condition was soon recognized as one of the most common types of cardiovascular disorders.

In the 1910s, the medical director of the Northwestern Mutual Life Insurance Company, J.W. Fisher, reported the results of several years of study of the relationship between blood pressure levels and premature death. Fisher was probably the first to offer a quantifiable definition of “high blood pressure”.

During the 1930s and 1940s, researchers conducted detailed examinations of the influence of the sympathetic nervous system, the endocrine system, and the renal system on arterial pressure, and were successful in cataloging several types of secondary hypertension. Pheochromocytoma was reported in 1929, Cushing’s syndrome in 1932, Pyelonephritis in 1937, renal artery stenosis in 1938, and Conn’s Syndrome (Primary aldosteronism) in 1955.

In the 1920s, Henry Goldblatt progressively constricted blood flow to the kidney in a dog, which produced a rapidly developing high blood pressure that resulted in death due to heart failure. The experiment said by T.A. Stamey to have “stimulated more medical research than any single experiment in medical history”, sparked a worldwide search for a kidney (renal) - based pressor substance that produced hypertension. By the end of 1930s, two teams, one in the United States and one in Argentina,
simultaneously discovered that the blood from a Goldblatt Kidney contained a substance that caused vasoconstriction (squeezing of the arteries). The American group called their substance "angiotonin", while the Argentine group christened the compound "hypertensin". These two teams met and, deciding they were working on the same substance, combined their two names for the compound; the substance became angiotensin. These discoveries led to extensive biochemical research into the neural, cellular, and hemodynamic systems that control blood pressure, and eventually to the development of the most widely prescribed antihypertensive medication today. The discovery and elucidation of the biochemical mechanisms controlling blood pressure were extremely important in understanding and controlling high blood pressure, but researchers were still a long way from finding the ultimate cause of the disease.

In the 1950s and 1960s, an important debate occurred between the British physicians over the influence of heredity on high blood pressure in humans. Robert Piatt argued that essential hypertension was a "qualitative" disease, controlled by a single gene, with a bimodal population distribution. George Pickering, on the other hand reasoned that what was termed "hypertension" was only the upper end of a continuous unimodal distribution of blood pressure levels. He thought that hypertension was a "quantitative" disease and was controlled by multiple genes in combination with environmental influences. The debate was never resolved by the two participants.
Today, both environmental and genetic factors are under intense study as possible etiologic factors at the individual level and the population level. However, it is still the case that the cause of abnormally elevated blood pressure in over 90 percent of the cases remains unknown. Fortunately, however, successful efforts are being made to lower blood pressure through diet, stress reduction, exercise weight control, medication, and other means, in the hope that the frequency of premature deaths from hypertension will be reduced throughout the world.

**Classification of Hypertension**

Clinically hypertensive individuals are characterized according to the severity of their illness from the basis of either diastolic or systolic blood pressure. The precise cut-off points are arbitrary and vary between different classification systems but generally WHO classification (1978) depends on diastolic blood pressure level

1. Mild-diastolic pressure 95-110 mm Hg
2. Moderate 111-120 mm Hg
3. Severe 125 mm Hg

Hypertension is generally divided into two broad groups.

1) **Primary or Essential Hypertension**: This constitutes about 90% patients of the total hypertension. Two third of all cases of
essential hypertension are in the 45-60 age group (WHO, 1996). Causes of primary hypertension is unknown but several factors seem to play a role that includes

- Hyperactivity of sympathetic nervous system
- Increased renin secretion
- Expanded vascular volume
- Excessive dietary intake of salt etc.

2) **Secondary Hypertension**: This accounts for less than 10-12% of all hypertension. It can occur at any age. Hypertension is classified "secondary" when some other diseases process on abnormality is involved in its causation: (i) diseases of kidney - chronic glomerulonephritis, chronic pylonephritis, polyaystic disease, diabetic nephropathy, renal artery stenosis, (ii) endocrinal disease - cushing's syndrome, tumours of adrenal glands, (iii) cardiovascular disease - congenital narrowing of aorta, (iv) miscellaneous - toxemias of pregnancy, drugs, oral contraceptives containing destroying anabolic steroids NSAID, Corticosteroid carbenoxolone.

According to clinical course, both essential and secondary hypertension may be: (i) Benign, and (ii) Malignant
**Benign hypertension**: About 90-95% patients are benign hypertensives. It is moderate elevation of blood pressure and rises slowly as the years pass.

**Malignant hypertension**: Less than 50% hypertensive patients develop malignant hypertension. Malignant hypertension is marked with rapid increase of blood pressure to 200/140 mm Hg and has serious damaging effect.

The World Health Organization (1988) has recommended that the following blood pressure levels be used to classify adults:

(a) **Hypertensive**, greater than or equal to 160 mm Hg systolic and/or greater than or equal to 100 mm Hg diastolic in ages between 17 and 60. When blood pressure is above 175/100 at age over 60.

(b) **Normotensive**, Less than or equal to 140 mm Hg systolic and less than or equal to 90 mm Hg diastolic in ages between 17 and 40. Less than or equal to 160 mm Hg systolic and less than or equal to 100 mm Hg diastolic at age over 60.

(c) **Borderline hypertensive**, Blood pressure ratings between the hypertensive and normotensive range.

(d) **Arterial hypertension**, This indicates a chronically elevated systolic and diastolic arterial B.P. The higher the arterial pressure systolic or diastolic, the greater the cardiovascular risk.
Blood pressure consisted of two phases, that is, upper or systolic and the lower or diastolic pressure. The upper pressure corresponds to the phase of cardiac cycle during its contraction, i.e. systole and lower pressure corresponds to the resting phase or diastole. A normal person doesn’t have a fixed value of blood pressure. Unlike body temperature which is more or less fixed for the human beings in normalcy at (98.6° F), blood pressure reading varies from time to time, depending upon the physical and mental state of the individual and as per the needs of the body. During physical exercise as the heart beat increases both frequency and force of contraction, the systolic blood pressure rises. In fact, if during physical exercise the systolic blood pressure doesn’t rise above the individual’s normal resting pressure, it is considered a sign of diseased heart.

Blood pressure varies with age. At the time of birth, the pressure normally is around 60-80/40-60 mm Hg and as it grows, so does the blood pressure. A reading of 120/80 mm Hg is considered as average normal in adults. However, the systolic pressure may vary from 100 to 140 mm Hg; and diastolic between 60 to 90 mm Hg. In 1996 WHO redefined the threshold for hypertension as 140/90 mm Hg against 160 mm Hg recommended by the WHO 1978 expert committee.
High Blood Pressure

In adults, if readings taken at different times are found above 140/90 mm Hg, they are termed as blood pressure or hypertension. Depending upon the degree of rise, patients are labelled as suffering from mild, moderate or severe hypertension. In addition to checking the blood pressure readings, the physicians also evaluate the various organs which are affected by high blood pressure, that is the heart, brain and kidneys, by doing an electrocardiogram (ECG), looking at the brain blood vessels through the eye, i.e. fundus examination and urine and blood tests, for kidney function assessment. Blood sugar, uric acid, urea, cholesterol and triglycerides tests are also done and monitored periodically during treatment.

There are various symptoms associated with high blood pressure such as heaviness in head, not simply a headache, pressure in the back of head, impaired vision, breathlessness on exertion, heaviness in whole body, lack of concentration in mental work, sleeplessness and increased irritability. There are some symptoms like, marked palpitation, professed sweating and headache which should be considered as some of the sign to the curable conditions of hypertension. Similarly, weakness and fatigue or pain in back on walking, or general weakness alongwith one or more of the above mentioned symptoms point out the specific causes of high blood pressure called secondary hypertension.
High blood pressure is a major contributor to cardiovascular disorders and is one of the conditions that creates increased risks of heart attacks. Usually it is a silent or symptomless risk because the hypertensive individual might show no observable signs of a medical problem for many years.

**Low Blood Pressure**

There is no such disease as low blood pressure. When a blood pressure is found exceptionally low, one should analyse or see and underline the reason for that - like a silent heart attack, dehydration due to severe gastroenteritis, extreme fasting and an unmonitored access due to diuretics - the drugs that result in more urination. In hot and humid climates there is often excessive water and electrolyte loss in sweating and this results in falling blood pressure also.

**Quality of Life: Definitions, concepts and Measurement**

The quality of life of the cardiovascular disease patients has been a matter of concern for many decades. Cardiovascular disease is a major concern for at least three reasons. First, it affects health and day to day functions. Second, it affects life expectancy. Third, it deteriorates quality of life. The interest in quality of life (QOL) reflects a more serious concern for the broader definition of health as "a state of complete physical, mental
and social well-being and not merely the absence of disease" (WHO, 1948). The WHO definition of health introduces the concept of “well-being”. Recently, psychologists have pointed out that the well-being of an individual or group of individuals has objective and subjective components. The objective components explain the term “standard of living” or “level of living”. The subjective component of well-being is referred to as “quality of life”. Quality of life is thus, a multidimensional concept including subjective and objective components (Aaronson, 1987, Campbell et al., 1976; Hallondsworth, 1988; McCall, 1975). Different definitions have been proposed to explain the concept of quality of life. Quality of life has been considered as an abstracted and complex response to physical, mental and social forces which contribute to normal living.

Quality of life is the “subjective” component of “well-being”. “Quality of life” was defined by WHO (1976) as “the condition of life resulting from the combination of the effects of the complete range of factors such as those determining health, happiness (including comfort in the physical, environmental and a satisfying occupation), education, social and intellectual attainments, freedom of action, justice and freedom of expression”. Nagpal and Sell (1985) defines QOL as “a composite measure of physical, mental and social well-being as perceived by each individual or by group of individuals - that is to say, happiness, satisfaction and gratification as it is experienced in such life concerns as health, marriage, family work, financial
situations, educational opportunities, self-esteem, creativity, belongingness, and trust in others". This definition suggests that the quality of life can be evaluated by assessing a person's subjective feelings of happiness or unhappiness about the various life concerns.

The concept of quality of life is also defined by Jonsen et al., (1982), and Dimenas et al. (1990). The QOL refers to the "subjective satisfaction" expressed or experienced by an individual in his physical, mental and social situations. In this concept, health is an important determinant of a person's QOL and health is a subjective as well as objective evaluation of the physical, mental and social status, while welfare reflects the objective environmental factors. Lehman (1983) defined quality of life as "the sense of well-being and satisfaction experienced by people under their current condition" (P. 143).

According to McCall (1975), quality of life consists of obtaining the necessary conditions for happiness in a given society or region. Horquist (1982) defined quality of life in terms of satisfaction of needs in the physical, psychological, social, activity, material and structural realms.

Besides, it has been considered as the capacity of an individual to realize his / her life plans or the difference at particular period in time between the hopes and expectations of the individual's present experience. Quality of life is a multifaceted construct that encompasses the individual's behavioural, cognitive capacities, emotional well-being and abilities requiring the performance of domestic, vocational and social roles.
It is important to add quantity to years, but it is more important to add quality to years. Also, it is not necessary that quality of life will be less in a poor man's home and more in a rich man's home. Dubey et al. (1988) and Kassa et al. (1988) stated that quality of life means the degree of excellence of one's life that contributes to satisfaction and happiness and benefits mental health. In other words, it can be said that quality of life lies in the eyes of the beholder.

Patrick and Erickson (1992) defined quality of life as the level of well-being and satisfaction associated with events or conditions in a person's life and influenced by disease, accidents or treatments.

There has been a considerable controversy regarding the domains to be included in the concept of quality of life in health. Horquist (1982) proposed a general concept of quality of life with following key domains: (i) biological - bodily health, function, specific illness, pain; (ii) psychological - well being, self concept per se and in social interaction etc.; (iii) social - social contacts in general, family life, sexual life, capacity for social contact; (iv) behavioural activity - capacity for self-care, mobility, working capacity, activities of daily living; (v) material - private economy, income from work etc., (vi) structural - position in society and view upon society, life meaning. While Welch-McCaffrey (1985) outlined three dimensions of social, psychological and physiological factors; Padilla and Grant (1985) termed domains as physical well-being, psychological well-being and symptom control.
According to Aaronson (1987), included under this rubric are such factors as the (i) control of physical symptoms; (ii) disruption of social roles and relationships; (iii) disease or treatment related psychological distress; (iv) pain; (v) sexual dysfunction and so on. More positive aspects of quality of life construct include satisfaction with life and feelings of well-being.

Sell and Napgal (1992) identified eleven domains of quality of life which included positive and negative well-being, transcendence, family group support, social supports, social contacts, expectation achievement congruency, mental mastery, competence in coping, primary group concern and perceived health.

Meeberg (1993) identified four critical attributes of quality of life from a review of literature: (i) a feeling of satisfaction with one’s life in general; (ii) the mental capacity to evaluate one’s own life as satisfactory or otherwise; (iii) an acceptable state of physical, mental, social and emotional health as determined by the individual; (iv) an objective assessment by another that the person’s living conditions are adequate and not life threatening. While the presence of life and a state of consciousness are considered to be the antecedents of quality of life, satisfaction, happiness together with a sense of well-being and self-esteem have been identified as the consequences of quality of life.
Quality of life, thus, may be considered as the degree of excellence with which an individual can face the various problems of life and acts in such a way that may result in satisfaction and happiness of an individual, and society as a whole. No doubt, it is a difficult area to define, as many of the factors may be ill-defined inter-related and to some extent interdependent also.

Quality of life has been seen as consisting of obtaining of the necessary conditions of happiness in given society or region. Another method of trying to understand the concept of quality of life is to consider the many different measures of perceived life quality that have been developed, for instance family life, money, amount of fun, health, friends, sex life, social standards, time to do things and getting a good job (Andrews & Withey, 1976). Investigators have stressed that quality of life can be evaluated by taking a number of aspects, of a person’s life and assessing that person’s subjective feelings of happiness or unhappiness about the various life concerns. Jenkins (1992) suggested that quality of life research is now in the stage of conceptual development.

Quality of life can be affected by a number of significant positive and negative life events. The factors contributing to the quality of life of an individual may be broadly classified under two groups: (i) satisfactory condition: These include factors like group cohesiveness, sharing of each others experiences, helping attitudes, understanding and sharing each others
problems, absence of conflicts among members, absence of mental or severe physical illness, etc.; (ii) satisfying conditions: These include factors like sense of belongingness, subjective feelings of physical, psychological, mental, social and spiritual well-being, absence of unhappy experiences within the family etc.

Besides, factors like socio-cultural milieu, perception about the stressful life events and the response to it, financial consequences of stressful life events, the available social support and personality of the person can influence his/her quality of life. The quality of life has been found to have a solid bearing on mental health and mental health can give quality of life (SEARO, 1984).

With these ends in view, the World Health Organization (WHO) began a project in 1991 to define and create a measure for QOL in such a way as to allow inputs from a broad range of cultures around the world. At the start, the WHO QOL group defined QOL as “individual’s perception of their position in life in the context of the culture and value systems in which they lived and in relation to their goals, expectations, standards and concerns”. It is a broad ranging concept affected in complex way by the persons’ physical health, psychological state, level of independence, social relationships, and their relationship to salient features of their environment (WHO QOL Group, 1995). This definition put emphasis on (a) the subjective nature of QOL and (b) the need to explore all those parts of life considered as having a
significant impact on QOL. Twenty four such aspects of life (facets) have been identified in the WHO QOL project.

Kaplan (1988) was the first person who used the term Health Related Quality of Life (HRQOL) “to refer to the impact of health conditions on function”. Health often relates to quality of life independently of work, housing, air pollution, and so forth (Rice, 1984).

Health is multifactorial. The factors which influence health lie both within the individual and externally in the society in which he or she lives. This is the fact that what man is and to what diseases he may fall victim depends upon a number of factors such as heredity, environment, life-style, socioeconomic conditions, health and family welfare services, and other factors to which he is exposed. Thus, the health of individuals and whole communities may be considered to be the result of many interactions.

Various attempts have been made to assess quality of life measurement systems during the last twenty years or more. These systems represent various traditions in measurement. Two conceptual approaches have been discussed in recent articles concerning to the quality of life measurement. One approach represented to the tradition of health status measurement. This approach was basically guided by the WHO definition of health status, which states that “health is complete state of physical, mental, and social well-being and not merely absence of disease” (World Health Organization, 1948). The National Centre for Health Services Research
funded several major projects to develop general measures of health status, including the Sickness Impact Profile (Bergner et al., 1976; 1981), the Quality of Well-Being Scale (Kaplan & Bush, 1982), the Rand Health Status Measure (Steward et al., 1978), and the McMaster Health Index Questionnaire (Chamber, 1988). Many of the measures examined how disease on disability affects performance of social role, ability to get around the community and physical functioning. Some of the measures included separate components for the assessment of social and mental health.

Other investigators (Croog et al., 1986; Follick et al., 1988; Hunt & McEwen, 1983) have referred to quality of life as something that is independent of health status. Follick et al. (1988) suggested that QOL represents a broader outcome than traditional measures of symptoms and mortality. Croog et al. (1986) used a variety of outcome measures and collectively referred to them as quality of life. These measures included the patient’s subjective evaluation of well-being, physical symptoms, sexual functions, work performance and satisfaction, emotional status, cognitive function, social participation, and life satisfaction. Hunt and McEwen (1983) have regarded quality of life as a subjective appraisal of life satisfaction. In summary, a wide variety of dimensions has been used to describe quality of life. There is no agreement on what constitutes dimension of QOL in the literature. However, researchers tended to agree that QOL is a multidimensional concept which may include, but may not be limited to, an
individual is subjective well-being (Boswell et al., 1998; Fabian, 1990; Fuhrer, 1994; Konstam et al., 1997; Mc Daniel & Beach, 1994; Pain et al., 1998, Parmenter, 1994; Stuifbergen, 1995; Whiteneck, 1994).

Kaplan (1988) has discussed a variety of approaches to quality of life assessment. In his article he discussed unidimensional versus multidimensional and disease-specific versus general approaches. Quality of life is clearly a multidimensional construct. However, there is still a considerable debate about whether or not multidimensional measurements are required, and about the definition of quality of life.

The present investigator views that assessment of health-related quality of life should be based on broad range of criteria or dimensions. The quality of life should be assessed by exploring what impact disease has on the individuals’ psychological, physiological, organizational, personal and social, and physical functioning rather than by focussing exclusively on the disease itself. The present study focuses on subjective assessments of QOL taken directly from individuals with cardiovascular diseases.

**Coping Behaviour : Concepts and Definitions**

The term coping has two meanings in literature. The term 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
refers to efforts to master conditions that tax or exceed adaptive resources (Monet & Lazarus, 1977).

The concept of "coping" has been studied in various disciplines. Sociologists, for example, refer to the ways in which a social order adjusts to a crisis, and biologists speak of 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 many definitions of coping, but all share a central theme, namely, the struggle with external and internal demands, conflicts, and distressing emotions.

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 focussed efforts, with "coping" representing mature ego processes and "defenses" representing immature and less serviceable variations of the same essential cognitive processes.
The psychoanalytic tendency to assign positive and negative value to various internal processes or modes of defense without evidence about their effects on the total psychological economy of the person and without reference to context, has lead to an unwise equation of “defense” and “pathology” (Lazarus, 1981). For example, denial and avoidance are widely regarded as poor ways of dealing with stress. Thus, in the psychoanalytical framework, coping is defined as realistic and flexible thoughts and acts that solve problems and thereby reduce stress.

Lazarus and Folkman (1984) recognised 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 the person”. This definition has several important functions. 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.
Functions of coping

In order to understand and evaluate the quality or effectiveness of coping for practical purposes, we must also have some notion about its functions. White (1974, p. 55) cites three functions of coping: to "keep securing adequate information about environment", to "maintain satisfactory internal conditions both for action and for processing information", and to "maintain autonomy or freedom of movement, freedom to use (one's) repertoire in a flexible fashion". Mechanic (1974) also cites three functions: dealing with social and environmental demand, having the motivation to meet such demands, and maintaining a state of psychological equilibrium in order to direct energy and skill toward meeting external demands. Pearlin and Schooler (1978) also identified three functions which include "changing the situation out of which strainful experiences arise", "controlling the meaning of such experiences before they become stressful", and "controlling stress itself after it has been generated". Cohen and Lazarus (1979) described five main coping tasks: (1) to reduce harmful environmental conditions and enhance prospect of recovery. (2) to tolerate or adjust to negative events and realities. (3) to maintain a positive self-image. (4) to maintain emotional equilibrium, and (5) to continue satisfying relationships with others (p. 232).
The distinction between "problem-focussed" and "emotion-focussed" coping has been made by Mechanic (1974), Kahn et al. (1964), and White (1974). Problem focussed coping refers to efforts directed at doing something constructive about the conditions that harm, threaten, or challenge. Emotion-focussed coping refers to efforts directed at regulating the emotion itself, whether the focus of such regulation is in behaviour and expression, physiological disturbance, subjective stress, or all the three (Folkman & Lazarus, 1980; Lazarus, 1975, 1981; Lazarus & Launier, 1978).

According to Lazarus and Launier (1978), coping is the "efforts, both action-oriented and intrapsychic, to manage (i.e., to master, tolerate, reduce and minimize environmental and internal demands and conflicts among them) which exceed a person's resources". McGrath (1976) believed that an array of covert and overt-behaviour patterns, which can help prevent, alleviate or responding to stressful experiences is known as coping. Folkman and Lazarus (1980) have obtained clear evidence that most people have both emotion-focussed and problem-focussed modes of coping in daily stressful encounters.

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

Coping as Trait, Style or Process

In recent years much attention has been paid to the distinction between coping as trait, as style, or as process. "A coping trait" needs that a person is disposed to engage in given coping behaviour under certain eliciting 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.

"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.
In clinical interview dealing with threatening topics among hypertensive and normotensive subjects, Weiner, Singer and Reiser (1962) have noted that the hypertensive engaged in coping strategy of insulating or distancing themselves, a process that learned to control their blood pressure in this particular stress situation. The process of insulating or distancing can also be an overriding style which a person relates to almost everyone and everything, specially in emotional contexts. Psychologically oriented writers have used the terms "isolation", "undoing", and "intellectualization" to refer to this style of coping, which is said to characterize obsessive-compulsive neurosis (Gardner et al., 1959). Shapiro (1965) characterize the hysteria and paranoia as the coping styles.

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 behaviour.

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, 1980; p. 287), 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,
but which tax or exceed his existing adaptation response pattern”.

**Cognitive Process in Coping**

Coping is, in part, a reaction to being in a stressful
relationships with the environment. Three kinds of “cognitive appraisal”
are encompassed by psychological stress, namely, harm, threat, and
challenge. The differences among these are important because they
affect how a person copes. “Harm” (including loss) represents damage
already done; “threat” involves the potential for harm; and “challenge”
means potential for some significant gain under difficult odds. Human
being have developed a highly symbolic mechanism for differentiating
among experiences that harm, threaten, challenge or nurture. Whether
one calls this mechanism “cognitive appraisal” or “evaluative
perception”, without it our actions and feelings would frequently fail
to accord with the values, needs and commitments on which our actual
and subjective sense of well-being depends.

Coping to a large extent is sensitive to the requirements,
constraints, and available resources characterizing a stressful encounter,
as these are appraised by the person. The process of cognitive appraisal can be exemplified by a set of questions a person is asked about the encounter, namely, “what is happening or going to happen?”, “how bad or good could it be?”, “what can I do about it?”, “and what might the consequences of my actions be?”. Such questions are not necessarily conscious or deliberate; they may be implicit, automatic and virtually instantaneous. Cognitive processes shape coping decisions in every stressful encounter. Such processes are influenced jointly by the actual situational contexts and by personality factors.

The findings of Folkman and Lazarus (1980) study suggest how appraisal can influence coping. For each stressful encounter, subjects have to choose among statements describing how they appraised it. The statements described the situation as either one that had to be accepted because nothing could be done or as one in which action was possible. Appraisals that nothing could be done favoured the use of emotion-focused modes of coping, whereas encounters in which action was possible favoured problem-solving modes, in other words, the appraisal of options influenced how people coped with stressful encounters.

One of the difficulties inherent in a cognitive approach to coping is that appraisal and coping are often interdependent and difficult to distinguish an important class of coping consists of
cognitive or intrapsychic strategies that Lazarus and Launier (1978) call it “reappraisal”. Some reappraisals are products of changes in the environment. Reappraisals must be thought of as cognitive coping efforts clearly directed at managing the demands or the distress. There is no single way to differentiate and initial benign appraisal - for example, that there is no danger or that we have not been harmed by a cognitive coping strategy. Coping and appraisal are interdependent, because many coping strategies can have an appraisal function in that they shape the meaning of an event, and, conversely, many forms of appraisal can have a coping function in that they help regulate distress.

**Measurement of Coping**

The assessment of coping is facing several definitional and conceptual difficulties. Definitions of various coping strategies fall under the “definitional confusions”. Lists of coping strategies are common, but none is complete or accurate, and most derived from psychoanalytic formulations. Lazarus and Folkman (1984) have taken into account both emotion-focussed and problem-focussed strategies.

Current approaches to measurement are based on three common theoretical perspectives about coping. These are ego process, trait and situation. The most common approach to coping and its assessment is a personality traits or style. The content of the coping traits or styles
used in research consisted of defense polarity. The most notable example in psychological research had its origin in the Freudian defenses of repression and isolation (or intellectualization), which are assessed in three assessment measures, namely, repression-isolation, repression-sensitization, and coping-avoidance. A newer assessment approach that draws upon these and other Freudian mechanisms is that of Glesser and Hilevich (1969).

All three of these approaches are trait measures that are moulded in terms of what the person he or she, usually does in certain types of stressful encounters. Measures developed to assess coping based on the trait or style approach are never used in different stressful encounters. Measures are only defined by the scales developed in terms of coping as trait or style. Lazarus and Folkman (1984), have advocated that trait measures are poor predictors of coping processes. First, actual consistency across stressful encounters may be moderate or even low, as Folkman and Lazarus (1980) have found in their research. We don't have rules for identifying the situational contexts under which a common or variable defense process would occur. In short, we cannot specify the trait situation interaction (cf. Bowers, 1973; Ekehammer, 1974; Magnusson & Endler, 1977; Pervin & Lewis, 1978). Studies based on such interaction do not seem greatly to improve the capacity of trait measures to predict actual behaviour.
Second, existing trait measures, namely, repression-isolation scale, repression-sensitization scale and coping-avoidance scale, are unidimensional and do not reflect the multidimensional quality of actual coping. Coping is a complex amalgam of thoughts and actions, and as most observers of coping with illness recognize (Cohen & Lazarus, 1979; Hamburg & Adams, 1967; Lipowski, 1970; Moos & Tsu, 1977), many sources of stress must be managed, including pain, incapacitation, hospitalization, treatment regimens, the maintenance of working relationships with family and friends, and the preservation of satisfactory self-image. There are multiple and complex tasks that no single coping act can successfully handle.

There have also been attempts to overcome this objection by developing assessment tools for coping with specific illnesses. By designing an instrument to be specific for an illness it is possible to take account of the specific issues that patients have to cope with in that illness (e.g. Newman et al., 1990 a, b).

Third, coping is a process that changes overtime, not a well established and fixed behaviour pattern. At some times a person must rely on one form of coping - say, an emotion-focussed strategy - while at others he or she must shift to problem solving strategies. It is difficult to say how the unfolding nature of most stressful encounters, and the concomitantly changes in coping could be
adequately described by a presumably static measure of a general trait or personality disposition (Folkman & Lazarus, 1980).

Pareek (1983) has proposed two types of coping strategies which people generally use to cope with stress. They are dysfunctional and functional coping styles. There is no clear consensus as to which coping strategies or modes of coping are most effective. Coping may either take the form of avoiding the situation (dysfunctional style) or confronting and approaching the problem (functional style). Combining the two aspects of each of the three dimensions yields there are eight possible strategies to cope with stress: (1) The dysfunctional or impunitive (M); (2) Intropunitive (I); (3) Extrapunitive (E); and Defensive (D). The four functional style are: (5) Impersistive (m); (6) Introspersistive (i); (7) Extrapersistive (e); and Interpersistive (n). Thus, broadly speaking, ‘avoidance’ and ‘approach’ are only two most effective coping strategies to control stress.

Pareek (1983) has developed role Projective Instrument for Measuring Coping Styles (PICS) which involves a semi-projective technique to obtain profiles of coping style adopted by a person while dealing with role stress situations. The instrument depicts twenty-four situations, three each for eight types of role stress, he is experiencing the situation of another person. who is supposed to
respond to the former’s problem. The responses obtained on this instrument are scored in eight styles, which can be broadly grouped approach-oriented (Impersistive, Intropersistive, Intrapersistive, Interpersistive) and avoidance-oriented (Impunitive, Intropunitive, Extrapunitive, Defensiveness) modes of coping. Approach-oriented behaviours are perceived as functional styles of coping. Whereas avoidance-oriented approach is regarded as dysfunctional style of coping. The scores on approach and avoidance modes are bipolar—increase in avoidance score leads to decrease in approach score and vice versa.

Relationship between coping behaviour and coronary artery disease

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 has closer parallels to attempt to examine coping strategies and chronic illness.

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 affective-oriented coping style were generally associated with increased degrees of psychosocial and medical distress.

2. Among the specific, behaviour-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 the impact of denial upon the distanced periods of
psychosocial adaptation to the disease, medical functional indices, and survival rate generally yielded mixed findings.

The present study seeks to identify the coping behaviour associated with coronary artery disease and hypertension. A patient's coping style or strategy will be assessed by actual observation of what the person says or does in coping with cardiovascular disease.

**Need of the Study**

A large number of studies have been done to find out the quality of life of patients with chronic illness, but very little work has been done to study the impact of cardiovascular disease on various dimensions of health-related quality of life which are reflected in terms of psychological, physiological, organizational, personal and social, and physical effects. It becomes very important to study these areas as, in India (as well as in other developing countries) a large number of people are victims of cardiovascular diseases, and suffer from various behaviour disorders.

Health-related quality of life is also a relatively new concept as far as it is concerned with research on cardiovascular disease patients. There can be a lot of differences or similarities exist in the health related quality of life of patients suffering from coronary artery disease (e.g., myocardial infarction and angina pectoris) and hypertension.
Though coping behaviour has been studied in relation to coronary artery disease in the U.S. and European countries, yet not much research has been done on cardiovascular disease patients in India. The results of the studies are inconclusive.

Objectives of the Present Study

The present study is an attempt to answer the query as to what kind of impact the cardiovascular diseases have on the health-related quality of life of patients. The pattern of coping behaviour is also studied among coronary artery disease and hypertensive patients. The main objectives of the present study are as follows:

1. To examine the impact of awareness of coronary artery disease (myocardial infarction, angina pectoris) among patients on various health-related quality of life dimensions (psychological, physiological, organizational, personal and social, and physical).

2. To examine the impact of awareness of hypertension among patients on various health-related quality of life dimensions (psychological, physiological, organizational, personal and social, and physical).

3. To explore various coping styles or strategies in patients who are suffering from myocardial infarction and angina pectoris.

4. To explore various coping styles or strategies in patients who are suffering from hypertension.
The assessment of health related quality of life and coping behaviour in the patients who are suffering from cardiovascular diseases, namely, myocardial infarction, angina pectoris and hypertension have been studied here with a view that the findings of the present study may have relevance to improve quality of life and coping behavior in such patients in particular and people in general.
Chapter Two

REVIEW OF LITERATURE

The review of literature includes only those studies which have relevance and relation with the topic, and objectives of the present study, since the main thrust of the present study is on the “assessment of health-related quality of life and coping behavior in cardiovascular disease patients”, it would therefore, be proper to review studies concerning to the quality of life, measurement of health-related quality of life, and coping with cardiovascular diseases. In the following sections many of very important studies have been reviewed.

A large number of studies have found consistent relationships between different dimensions of quality of life and cardiovascular diseases. In this section some relevant studies conducted in the last ten years or during 1990s have been reviewed.

Mai et al. (1990) described the pre-operative psychosocial and quality of life adjustment of a consecutive series of twenty seven heart transplant recipient and the adjustment of the twenty four survivors at twelve months follow up. Subjects were rated using the present state examinations and the general health questionnaire and the Scl-90. There was significant relationship between pre-operative psychiatric diagnosis and rating of poor
medical compliance. Rating of physical activity and employment and questionnaire ratings of psychological adjustments also showed highly significant improvement at follow-up, and most subjects were sexually active. Heart transplantation in selected subjects with terminal heart disease may result in a substantial improvement in psychosocial adjustment and quality of life 12-months following surgery.

Mayou et al. (1991) examined the association between exercise capacity, symptoms and specific aspects of quality of life in patients. The principal symptoms were fatigue, breathlessness, and chest pain. Subjects were asked to limit the extent and speed of physical activities, restricted social, leisure, and family life; and were associated with emotional distress. Change in exercise capacity over three months was correlated with clinically worthwhile improvements in symptoms and quality of life. Findings confirm the value of change in exercise capacity as a measure of functional status and suggest that it should be supported by a limited number of specific measures of quality of life.

Chaturvedi (1991) interviewed patients, relatives and professionals to determine the issues they considered as reflecting quality of life and how important these items were in the event of serious illness. Peace of mind, spiritual satisfaction, and social satisfaction were considered to be very important by nearly two third of the subjects. Less than 25% of the subjects considered as very important their level of functioning in job, self care,
social and marital spheres. However, satisfaction in their domains were considered to be very important by 64% (self satisfaction), 56% (satisfaction in social aspects), and 42% (satisfaction in mental life).

Conn et al. (1991) conducted interviews with 47 men and 47 women (aged 65-88 years) who had a myocardial infarction 1-2 years previously. Quality of life was measured by the perceived quality of life scale. Depression scores counted for 46% of the variance in quality of life scores and predicted each of the self care behavior scores. Anxiety scores did not predict quality of life scores on any self care behavior score.

King et al. (1992) examined quality of life and perceptions of the consequences of surgery in 155 individuals (aged 33-80 years) before and after they had coronary bypass surgery. One year after surgery, 64 subjects who believed that surgery was worth it because of functional improvement had more positive scores on subjective indicators of life satisfaction and mood than did 62 from death or 22 subjects who were not sure of the value of the surgery. Findings emphasize the need for using a multidimensional approach to studying the quality of life.

Ostrowski (1992) focussed on the emotional aspects of the quality of life in people suffering from myocardial infarction (MI) without complication in comparison with people after infarction complicated with ventricular fibrillation, which has resulted in the state of clinical death for at least a brief period (CMI). Our main expectation was that such a clinical
death would have some implications for the psychological components of the quality of life, which would remain long after restoration of life. He felt that such effects could be measured as significant differences in pertinent dependent variables (including trait and state anxiety) between MI and CMI patients for at least a few years following myocardial infarction - (Subjects were adults who had suffered myocardial infarction from 1 to 8 years before the study).

Rawles et al. (1992) determined the loss of quality of life following admission to hospital with suspected myocardial infarction. The study involved a cohort of admission, with interview and follow up for 100 days. 206 patients (aged 32-93 years) were admitted with suspected acute myocardial infarction. Infarction was confirmed in 160 subjects and unconfirmed in 46 subjects. The quality of life scores before the suspected heart attack were similar for patients whose final diagnosis was Q-wave infarction, non-Q-Wave infarction, only 54 (34%) have regained their previous quality of life scores at the end of 100 days, compared with 26 of 46 subjects with unconfirmed infarction.

Duitsman and Cychosz (1993) surveyed 132 heart transplant recipients to investigate the psychosocial variables that influence their quality of life. Findings suggest that satisfaction with family relationships, self-esteem, and depression influence quality of life. The least significant construct, body satisfaction, was also the most physical of the constructs
examined. Results reinforce the need for broad-scale investigations into psychosocial factors that may influence heart transplant post-operative outcomes.

Shumaker and Czajkowski (1993) have discussed health-related quality of life (HRQL) in terms of its use in evaluating the status of women with cardiovascular disease. The limited date on HRQL and psychosocial status of women who have undergone bypass surgery suggest that such women, like men, experience some improvement in HRQL for up to 18 months following surgery. Studies involving women with hypertension have complex effects on HRQL and that behaviorally based interventions may enhance HRQL. According to the limited number of studies women tend to have worse HRQL, after myocardial infarction than do men.

Erdman et al. (1993) investigated 40 heart transplant recipients and their partners to determine both the partner's quality of life upon transplantation and the experiences of both patients and partner with compliance with the medical regimen. Data were obtained approximately 21 months after transplantation. Compared to related study groups, partners did not experience more problems in sleep, social isolation, emotional reactions, depression and anxiety. Patients overestimated the apprehensions of their partners significantly. With the exception of 3 items relating to eating fish and canned food and forgetfulness in medicine intake, patients and partners agreed with respect to actual compliance behavior. Lowest
compliance concerned regular physical exercise: 28%. Both patient and partner reported no emotional problems with the regimen.

O'Brien et al. (1993) examined the relationship between patients responses to the Nottingham Health Profile (NHP), a health-related quality of life (HRQOL) instrument, and physicians classification of patients by 2 functional status indicators: the New York Heart Association (NYHA) classification and the Karnofsky Performance Status Scale (KPSS). One hundred eighty five patients (aged 38-75 years) participated 6 months after myocardial infarction and were compared with normal population male controls (aged 55-59 years). Analysis of NHP scores by NYHA strata confirms that lower HRQL is associated with poorer cardiac functional status. Significant associations emerged between subjects NYHA class and NHP domain scores for energy, physical mobility, and pain, NHP scores for subjects in NYHA Class I were similar to controls. A similar relationship arose between NHP and Karnofsky. The NHP discriminated between levels of cardiac functioning as classified by NYHA and patient functioning as classified by Karnofsky.

Fitzgerald et al. (1993) evaluated the unique and additive contribution to adaptation of control appraisals and optimism, among 49(38-77 years old) white patients scheduled for coronary artery bypass surgery. They were followed for 8 months through measurement scales, ratings, and questionnaires, one month before surgery. Dispositional optimism, however,
was associated with quality of life appraisals. Although pre-surgery optimism predicted life quality 8 months after surgery, this was not the case when general and specific control appraisals and specific expectancies were included in the prediction.

Muller et al. (1994) examined during a 30-day period 45 patients (mean age 50.9 years) with primary hypertension (HT) and 45 normotensive (NT) controls documented blood pressure (BP) and intensity of 13 symptoms daily as well as mood and life satisfaction (MLS) weekly. Starting on day 3HT subjects received beta-blockers therapy (bopindolol, 1 mg/day). The BP values of the HT subjects normalized during the study while the BPs of the NT subjects did not change. At the beginning HT subjects showed higher prevalences and intensities of the symptoms and poor MLS. After normalization of BP, HT subjects attained scores similar to those of NT subjects in all measured categories. Calculating within subject correlations between symptoms intensities and systolic BPs, 70% of HT subjects but only 27% of NT subjects showed at least, significant correlation. Data reveal that untreated hypertensive are by no means symptoms free and document the close relationship between symptoms and actual BP for a percentage of hypertensives.

Mark et al. (1994) interviewed 2600 US and 400 Canadian adult patients suffering from myocardial infarction. They were interviewed 30-days, 6-months and one year after myocardial infarction to compare their
use of medical care and quality of life. Results suggest that the more aggressive pattern of care in the US patients may have been responsible for the better quality of life.

Gorkin et al. (1994) incorporated quality of life ancillary study to the same trial of captopril vs placebo among patients who survived an acute myocardial infarction with compromised ventricular functioning (MICVF) but no overt heart failure. The psychometric properties of the QOL measures in the same were evaluated at base line, and a pre randomization profiles of 184 patients was provided. Consistent with prior studies, the QOL parameters were unconnected with ventricular ejection fraction. Despite recent MICVF patients generally neither appeared depressed nor focused on symptoms. Results support inclusion of the QOL ancillary study in the overall same trial because it is likely to contribute independently to evaluation of disease, progression and treatment efficacy.

Robbins et al. (1994) examined the associations between unmeditated systolic and diastolic pressure levels and measures of quality of life among 315 white women with diagnosis of mild to moderate hypertension. Subjects were removed from antihypertensive medications and placed on placebo medication in the context of a clinical drug trial. Unmedicated BP levels were measured at a quality of life (QOL) interview, which followed a 4-8 week placebo run in period and at the preceding visit one week earlier. Indices were obtained for five quality of life dimensions: sense of general
well-being, cognitive functioning, affective status, physical health status, and level of enjoyment of social activity. Unmedicated blood pressure levels were inversely related to quality of life measures of cognitive functioning and social activity level. Duration of hypertension was inversely related to subjects sense of general well-being and positively related to measures of physical health status.

Corten et al. (1994) developed a comprehensive model integrating different sets of variables associated with the concept of quality of life. Three significant factors for the model were found: the hedonist factor, the achievement factor and the conformity factor. Items related to needs did not recover the satisfaction variables. Subjective quality of life cannot be derived from objective satisfaction of needs. The abilities and social roles cluster did not position itself along the same axis as the satisfaction cluster. Therefore, a life project aiming at self achievement differs from one aiming at the improvement of satisfaction through interdependencies.

Stiufbergen (1995) explored factors related to performance of health-promoting behaviors and examined the relationship between the practice of health-promoting behaviors and perceived quality of life for 61, 20-76 years olds with physicians diagnosed multiple sclerosis. Subjects completed self-report instruments, participated in structural interviews and were administered a neuropsychological screening battery. A general conceptual model was used as a framework for exploring the relationships among
antecedent variables (demographic / disease factors, barriers, resources, perceptual factors), health-promoting behaviors and perceived quality of life. Analyses supported a hypothesized relationship between health-promoting behaviors and quality of life.

Sears et al. (1995) investigated the prevalence of symptoms and quality of life of cardiac transplantation recipients and tested the predictive validity of a pericardia transplantation psychological assessment battery on pre-transplantation quality of life. 83 subjects (Mean age 55.9 years) were placed into 4 cluster groups based on pre-transplantation MMPI profiles. Cluster groups were not equally represented among cardiac recipients, such as that the “Distressed / confused” cluster had only 1 recipient member. Tests of significance among the 3 remaining cluster groups on the post-transplantation quality of life variables found no significant predictor of increased symptom frequency and symptoms problems and decreased mental health among subjects. Modest support was found for the case of pre-transplantation psychological variables as predictors of post-transplantation quality of life.

Visser et al. (1995) tested the feasibility of the Nottingham Health Profile (NHP), Heart Patients Psychological Questionnaire (HPPQ), Sickness Impact Profile (SIP) and the Hospital Anxiety and Depression Scale (HAD) in 16 patients (mean age 72.7 years) with a history of myocardial infarction, 20 (mean age 66 years) with a history of stroke and 17 controls
(mean age 72.8 years) subjects were tested and retested after an interval of 14 days. Mean administration times for the NHP, HPPQ, SIP and HAD were 7.9, 10.5, 21.0 and 5.5 min. respectively. On average, the test-retest reliability was good, and all 4 instruments were able to show differences between the study groups. Findings suggest that use of the 4 instruments for assessing aspects of quality of life in patients with a history of a myocardial infarction or stroke.

Kinney et al. (1996) reviewed 84 studies of quality of life (QOL) in cardiac patient populations. Selected methodologies and substantive characteristics of the studies are described. A small but significant positive effect of pharmacologic mechanical, surgical, nursing, or other treatment on QOL was found. No negative effect of treatment was found for any cardiovascular diagnostic category. Homogeneity analysis revealed 8 potential moderators of the overall effect size: quality of study, gender of sample, time dimension, sampling method, intervention, marital status of subjects, quality of life dimension measured, and sample size.

Dutts et al. (1997) reviewed studies predicting psychosocial outcomes after coronary artery bypass graft surgery. Seventeen prospective studies appearing in the MEDLINE and PSYCLIT data bases between 1986 and 1996 were reviewed regarding objectives, methodological issues, result, and clinical relevance. Results indicate that all studies reported that psychological factors had predictive value. In particular, preoperative anxiety
and depression predicted postoperative psychological maladjustment; social support, preoperative feelings of control, denial, and optimism contributed to psychological adjustment. Many specific psychological outcomes seem to be best predicted by pre-operative assessment of functions in that specific area, especially in the case of anxiety and depression. Furthermore, personality factors including denial, optimism, control, and the need for support appear to be predictors of psychological outcomes. Appropriate identification of predictive factors might improve the development of individually tailored interventions for patients at risk of postoperative psychological problems.

Stiufbergen and Rogers (1997) present results from a qualitative study which aims to clarify an emerging explanatory model of health promoting behaviors and quality of life in individuals with chronic disabling conditions. Twenty adults (aged 32-65 years) with multiple sclerosis shared their stories regarding health promotion/domains of quality of life, and factors that affected these domains. Health promoting behaviors were viewed as essential to the process of rehabilitation and maintain an acceptable quality of life. Important quality of life issues were related to domains other than function.

Konstam et al. (1997) examined health related quality of life in 29 subjects, using data from the Sickness Impact Profile (SIP) completed at 5 time interval before and after cardiac transplantation. Results revealed significant improvement of SIP physical scores between 4 months pre- and
4-months post transplantation, while no significant differences were observed with respect to psychosocial and total SIP scores.

Gulick (1997) investigated the extent to which objective (demographic) and subjective (self-reported health and role) domains predicted quality of life among 153 persons with multiple sclerosis (MS). Subjects completed the Life Situation Survey, a measure of quality of life, a demographic form (sex, education, age, MS duration, employment status, marital status), the MS-Related Symptoms Scale (motor, brain stem, sensory, mental/emotions, elimination subscales), and the 15-item Activities of Daily Living (ADL) Self-Care Scale for MS persons (fine/gross motor, communicating, recreation, socializing, intimacy subscales). Hierarchical multiple regression was used to enter three blocks of variables (demographic, symptom and ADL domains), and step-wise was used to enter variables within each block. The final model resulted in the two health domains (mental/emotions and sensory symptoms) and two role domains (intimacy and recreation/socializing) that predicted 61% of the variance in quality of life of persons with MS.

Antequera et al. (1997) evaluated the presence of postinfarction personality traits (PTS) in 30 males (aged 28-64 years) hospitalised for acute myocardial infarction and the relationship between PTS and quality of life. 16 Personality Factor Questionnaire (16 PF) and the quality of life questionnaire were administered. Subjects showed neurotic PTS, this PTS
had implications for emotional, personal, and interpersonal quality of life factors, but not for physical and health factors:

Dershields, et al. (1997) examined health-related quality of life (QOL) among 142 heart transplant patients (mean age 47.3 years) and evaluated the mediating effects of psychological distress, and social desirability on self-report of QOL. Subjects completed a battery of QOL and psychological measures in order to sample more general and more idiosyncratic aspects of quality of life in this population. 25 patients (mean age 51.9 years) were assessed 6-months posttransplantation to determine the impact of the surgery on patients perception. The QOL measures used were found to be significantly correlated with each other and with measures of psychological distress. The post-transplant data suggests that patients experience improvement in QOL after heart transplantation, in terms of positive change in QOL and increased satisfaction with current QOL.

Bennett et al. (1998) explored the impact of symptoms of heart failure (HF) and examined the relationship among symptom impact, perceived health status, perceived social support, and overall quality of life (QOL) in 30 women (aged 42-85 years) recently hospitalized for HF. Subjects reported high physical symptom impact, poor perceived physical health status, and impaired QOL. Physical symptom impact, perceived physical health status, and QOL were moderately to highly correlated with one another. Perceived social support was significantly, but weakly correlated with physical
symptom impact. Emotional symptom impact and mental health status were significantly and negatively correlated with each other but were not significantly correlated with QOL. QOL was lower in subjects who reported greater physical symptom impact and poorer perceptions of their physical health status.

Oelofsen et al. (1998) described the health-related quality of life (HRQOL) of South Africa Coronary artery bypass graft recipients. The sample consisted of 31 subjects (22 males and 9 females) with an average age of 58 years 6 months. Subjects were assessed in their homes on average of 19.25 weeks after surgery. The assessment consisted of a structured interview, a self-report questionnaire, and a psychometric test battery that measured cognitive functioning. Data were analyzed by computing descriptive statistics (percentages, means) and multivariate statistics to identify subgroups of the sample. Subjects’ HRQOL was described along the dimensions of symptoms, functional status and perceptions. Key findings included the following: All subjects experienced relief from cardiac chest pain symptoms; subgroups were identified that experienced cognitive impairment and low levels of psychological well-being; the majority of subjects (84%) believed that their health was good and 80% felt that the coronary bypass surgery had fulfilled their expectations; and overall the findings emphasized the individualized nature of reactions to cardiac surgery and the importance of psychological variables in cardiac care.
Zwinderman et al. (1998) conducted a self-controlled 6-months study to examine the effects of 50 mg and 100 mg of sustained-release isosorbide mononitrate (SRISMAN) administered once daily. The anginal symptoms and quality of life (QOL) were assessed in 351 patients (mean age 69 years) with stable angina pectoris. QOL was assessed by means of a battery of tests based on the Medical Outcomes Study Short From 36 Health Survey and The Angina Pectoris Quality of Life Questionnaire. Patients who received 100 mg daily showed greater improvement than those who received 50 mg daily; the mean difference between treatments was consistent with significantly greater improvement of mobility and angina indices. Adverse effects, as estimated by the side-effect index, including rebound angina at times of rest, and by patient compliance rating, differed slightly between the two treatment regimens and were even less problematic with the higher dosage than with the lower dosage. Psychological distress index and life Satisfaction scores also were significantly higher with 100 mg than with 50 mg daily.
Measurement of the Health-Related Quality of Life (HRQOL)

Quality of life measures have gained increasing attention as an outcome variables in studies of cardiovascular diseases. This section reviewed several studies on the assessment of health-related quality of life conducted during 1990s.

Hamsted (1990) advocated that quality of life cannot be observed directly; other variables have to be taken into account as its indicators. In case of self assessed quality of life, the researches have to rely upon individuals own statements as to how they feel, the subjective nature of the term creates problems in the matter of reliability and validity of the date collected. Random and systematic errors of measurement influence the result of investigations. Sources of error must be examined into the researches of quality of life.

Jenkins et al. (1990) reported factor analysis of 58 six months outcome measures for a group of 469 persons (aged 25-69 years) who had undergone coronary artery bypass or cardiac value surgery. Factor analysis revealed 5 orthogonal dimensions: low morale, symptoms of illness, neuropsychological function, interpersonal relationship, and economic employment. Data suggest that health-related quality of life is a multidimensional construct and that these dimensions can be measured quantitatively with relatively simple interview and questionnaire approaches.

Mayou (1990) discussed problems with current quality of life (QOL) research in patients with cardiovascular disease and examines measurement
issues involving QOL in these patients. The problem with most QOL research is that it ignores the significance of the individual meaning of illness. The role of measures of symptoms, mental state, and functional status for patients with cardiovascular disease is discussed. While research has focussed on QOL in patients with myocardial infarction, very little interest has been expressed in QOL of patients with angina/cardiac failure pacemakers, or hypertension.

Cummins (1991) discussed objective versus subjective quality of life dimensions. They were separated into 7 broad domains (material things, physical well-being, productivity, intimacy, safety, place in society and emotional well-being.

Hadon and Hays (1991) tested a brief survey designed to concurrently assess health-related quality of life (HRQOL) and preferences for different HRQOL states. Multitrait and multimethod analysis was used to evaluate the construct validity of the survey in a sample of 116 persons. Two methods were used to assess 6 aspects of HRQOL: general health perception, meaningful activities, outlook of life, physical suffering, self care activities and social relationships. HRQOL preferences were assessed using two methods similar to those used for self-reports, as well as one additional method. The construct validity of self-reported HRQOL was supported. However, substantial methods variance and little valid trait variance were observed for HRQOL preferences.
Clearly et al. (1991) developed an instrument to assess the impact of an antiplatelet agent on health-related quality of life in patients who had undergone percutaneous translational coronary artery angioplasty (PTCA). The psychometric characteristics are discussed based on baseline telephone interviews with 496 patients (aged 36-82 years), as well as follow-up interviews one month after PTCA. The questionnaire focussed on physical well-being, perceived health, emotional well-being, home management, work, recreation, social and sexual functioning. Many subjects reported dyspnoea or angina and severe symptoms. 35% of subjects rated their overall health as fair or poor. Of 60 subjects who reported not working because of health problems before the study, only 13.3% reported working after one follow-up. 11.1% of 306 subjects who worked before PTCA reported not working because of health problems at follow-up. The instrument showed good reliability, moderate validity, and a sensitivity to change in health status.

Tsevat and others (1991) assessed the relationship among measures of quality of life, tested a new verbal rating scale and elicited utilities among survivors of myocardial infarction (MI). 80 MI survivors were interviewed (20-28 months) after their MI. Modest correlations were found among measures of functional status and patient preferences. Regardless of their functional status, subject were willing to give up only a small fraction of life expectancy in return for excellent health.

Romney et al. (1992) reanalysed data collected 6 months after surgery on 469 patients (aged 25-69 years) with cardiovascular problems. The data
were factor analysed and 5 factors were extracted: Symptoms of illness, Neurological dysfunction, Interpersonal relationships, Morale, and Socioeconomic Status (SES). Two competing models were tested against the data using LISREL. In one, symptoms lowered morale whereas in the other, low morale aggravated symptoms (i.e. a psychosomatic effect). The 1st model fit the data very well in contrast to the 2nd model which did not fit the data at all. The authors consider the implications of the 1st model for improving quality of life in cardiac patients.

Bech (1992) measured quality of life in medical perspective. Health-related quality of life (HRQOL) refers to components of health status assessments, such as physical, cognitive, affective, social, economic and ego on personality oriented aspects of medical disorders, were as medical measurements of the components of health-related quality of life profiles are attempts to identify objective indicators, the QOL measurements identify subjective indicators. It is suggested that self-rating scale, are therefore relevant for QOL assessments.

Aronson et al. (1992) conducted an international project on quality of life assessment to document and monitor the benefits of health-related quality of life (HRQOL) issues in countries around the world. The project plans to construct and validate psychometrically based index incorporating the SF-36 for use in post quality and other economic evaluations.

Ruiz and Baca (1993) described the development of the Spanish Quality of Life (QOL) Questionnaire the CCV a new 39-items measure of
health-related perceived quality of life. 245 Spaniards (aged 18-55 years) rated 96 questions according to the level of influence in their conception of QOL. Items that were rated as “quite” or “very” influential by more than 80% of the subjects constituted the final 39-item questionnaire. Two additional samples, including a total of 2810 adults (aged 18-65 years) then analysed the psychometric properties of the instrument. Four factors were found: (1) social support, (2) general satisfaction, (3) physical / psychological well-being, and (4) absence of work over-load / free time. Results indicate that the CCV is a measure of perceived QOL that presents a satisfactory validity and reliability, as well as a reasonable degree of sensitivity to change.

Gyatt (1994) discussed about the measurement of health-related quality of life in heart fellow. He discussed two basic approaches to health-related quality of life measurement, namely, a summary of health-related quality of life and specific instruments that focus on problems associated with individual disease states, patient groups, on areas of function. The approaches were not mutually exclusive; each has its strengths and weaknesses and may be suitable under different circumstances. Development and testing of the chronic heart fellow questionnaire demonstrates the use of disease specific measures in controlled clinical trails.

Kuyken et al. (1994) examined cultural aspects of the health-related quality of life (HRQOL) and discussed the current approaches to cross
culturally quality of life assessment. Four principle approaches to quality of life assessment were critically examined: (1) developing a new assessment for each setting, (2) adopting / translating an existing measure for each setting, (3) developing a single assessment through collaboration among researchers representing several diverse cultures and (4) using a subjective measure that allows respondents to define the domains relevant to them. The success of these approaches in developing equivalent versions across cultures has not yet been established.

O'Boyle (1994) suggested that a comprehensive study of patients' quality of life should include a general measure of health status in addition to measures dealing with specific areas such as physical symptoms on sexual functioning. Key issues of concern for individual quality of life research in the 1990s are outlined.

Learner et al. (1994) examined the relationship of job strain to more comprehensive health status measures, encompassing health-related quality of life. Job-strain was significantly associated with physical functioning, role functioning related to physical health, vitality, social functioning and mental health. Job-strain made a statistically significant contribution beyond the effects of chronic illness and psychosocial variables. Results provide justification for investigating job-strain as an independent risk factor for health-related quality of life.

Parmenter (1994) provides an overview of conceptual approaches to the study of quality of life (QOL) in the health and rehabilitation fields and
investigates efforts that have been made to operationalize the construct. He proposed QOL is a multidimensional concept, the measurement of which must contain objective elements of a person’s life. Instruments to measure QOL have been flawed owing to their inadequate conceptual bases and the attempts to utilize general measures to detect changes in disease specific situations. Some of the potential uses and abuses involved in the measurement of QOL are noted.

World Health Organization Quality of Life Group (1994) has taken initiative to develop an international instrument for quality of life assessment and its application in research, clinical, practice, audit, health planning, and evaluation. The four stages in the development of the instrument were discussed: concept clarification, qualitative pilot, developmental pilot, and field test. The instrument is a generic instrument for the assessment of both positive and negative aspects of quality of life that can be used in developed and developing countries to measure a person’s perception of the impact of disease and impairment.

Chwalow (1995) discusses the importance of quality of life scales for the assessment of psychological and social factors of chronic illness. The validation of quality of life scale requires both a qualitative approach with attention being paid to the methodological issues in scale development, such as selection, methodology, and cross-cultural validation. The cross-cultural adaptation of an existing scale into another language requires a
rigorous qualitative phase before the quantitative phase is begun. The end product of this approach should be an equivalent scale rather than a literal translation.

Marquis et al. (1995) described the psychometric properties of the French version of the Angina Pectoris Quality of Life Questionnaire (APQLQ) with 170 coronary patients. Subjects completed the APQLQ and Medical Outcomes Study SF-36. The factorial structure and the high level of inter-scale correlations suggest that the APQLQ measured one global concept rather than separate domains. The multitrait analysis identified one problematic item correlated strongly with all domains. The internal consistency was good. The more severe the AP, the more impaired the quality of life indicating good distribution of scores. The score significantly discriminated between symptomatic and asymptomatic patients except for the emotional distress scale.

Colla et al. (1996) described the development and validation of the Functional Assessment of Multiple Sclerosis (FAMS) with 433 MS patients (aged 30-70 years). Subjects completed the Marlowe-Crowne Social Desirability Scale, Hospital Anxiety and Depression Scale, and the Preference Status Rating. Subjects provided evidence for internal consistency of the derived subscales, test-retest reliability, content validity, concurrent validity, and construct validity. The mobility sub-scale was strongly predictive of the Kurtzke Extended Disability Status Scale and the
Scripps Neurologic Rating Scales. The other 5 subscales were not indicating major aspects of patients’ quality of life.

Andreson et al. (1998) examined the possibility of using the quality of Well-Being Self-Administered (QWB-SA) questionnaire in an older population. The QWB-SA is a measure of health-related quality of life. The questionnaire was completed by 301 subjects aged 65 years and older who were randomly selected from primary physicians’ offices. Response pattern, scaling distributions and the acceptability of the survey were examined for all respondents. The results of the QWB-SA questionnaire were compared to the Sickness Impact Profile (SIP) and Medical Outcomes Study 36-item short-Form Health Survey (SF-36). The mean QWB-SA questionnaire score was 0.7035. The scores were not skewed, and there were no floor or ceiling effects. The mean time to complete the questionnaire was 14.2 minutes, which was significantly shorter than the SIP but significantly longer than the SF-36. Subjects rated their satisfaction with the QWB-SA questionnaire somewhat lower than the SIP and similar to SF-36. Correlations between the QWB-SA questionnaire and the SIP and SF-36 were moderate and more generally stronger for measures of physical health than for other domains such as mental health. They concluded that the QWB-SA questionnaire was acceptable to older subjects and it correlated with other measures of health-related quality of life.
Williams (1998) reviewed outcome measures research pertaining to the health-related quality of life of stroke patients. It is asserted that stroke outcome is difficult to measure because of the impact of health care interventions has shifted from biological and physical patients. Although they can be more difficult to quantify, patient centered outcomes such as functional status and health-related quality of life measures are often more clinically relevant and thus are increasingly being assessed as outcomes in clinical research. Formally developing and validating an evaluative-specific health related quality of life measure will allow a more precise assessment of a variety of interventions aimed at reducing the morbidity and cost of stroke.
Coping with Cardiovascular Diseases

Review of literature reveals innumerable studies related to coping behavior of cardiovascular diseases. These studies have shed light on psychosocial and physical coping process with reference to managing cardiovascular diseases.

Ben-Sira and Eliezer (1990) presents a comprehensive multivariate framework aimed at predicting the factors that enhance or impede readjustment after a heart attack. 63 married Jewish men who had suffered a first heart attack were interviewed 3-24 months after hospital discharge. Application of multivariate techniques of data analysis revealed a structure highlighting the relative weight of various demands in impeding readjustment and the relative significant of the subjects self-control resources in coping with these demands. Results showed the crucial role of the spouse in both inducing resources and furthering readjustment. Three dimensions of readjustment (the affective, the instrumental, and the cognitive) are discussed.

Badger (1990) examined the coping methods, health perceptions, and marital adjustment of 37 men with chronic cardiovascular disease and their spouses. Most of the subjects age was between 40-60 years. Despite variation in disease types and the absence of disease among the spouses, the couples were similar in their coping responses. Both partners used more emotionally focussed strategies than problem-focussed strategies to cope with chronic
illness. Subjective perceptions were more useful than objective indices for predicting coping. Preillness and current marital adjustment were satisfactory for both partners.

Faller (1990) surveyed 51 myocardial infarction (MI) rehabilitation inpatients to investigate patients' expectations of rehabilitation. Subjects were asked to describe the incident of their MI and to answer several questions focussing on cognitive and emotional coping, subjective etiological models, and expectations for treatment and rehabilitation. Data indicate that both anxiety and denial can coexist influenced by contextual factors. One of these seems to be the temporal course of the argumentation during the interview. Emotional coping and cognition are intertwined. It seems that it is not so much denial, but rather the wish to undo the MI that characterizes patients' coping. In the patients' view the rehabilitation program is designed to fulfill this wish. Psychological treatment is therefore, rejected because it would confront the patients with their own contribution to the illness. This would trigger shame and challenge self-esteem.

Nolon and Wielgosz (1991) assessed symptom management behaviors among 45 patients with acute myocardial infarction (AMI). Cluster analysis is conducted on data from a structured interview to group subjects according to adaptive and maladaptive coping responses to daily stresses. Maladaptive copers had higher scores on anger-in and hostility and lower scorers on behavioral compensation for stress, compared with adaptive copers. 51
groups were next compared on AMI symptom management behaviors. Maladaptive subjects reported greater distraction from AMI symptoms, more relief-seeking behavior, and greater perceived vulnerability to reinfarction. AMI coping behaviors correlated meaningfully with delay in seeking medical assistance.

Fiske et al. (1991) employed an uncomplicated myocardial infarction to examine the traditional construct of overprotectiveness. Analyses showed that overprotectiveness and a hostile critical attitude were not significantly related and that only hostility was associated with lower patient self-efficacy and higher patient psychological distress. Whereas overprotectiveness was related to the couples becoming closer after myocardial infarction, hostility was associated with the couple's becoming more distant and having fewer useful discussions about coping. Results suggest that the traditional concept of overprotection may not be a unified construct and that negative patient outcomes may relate only to the hostile components.

Mayou et al. (1991) examined the associations between exercise capacity symptoms, and specific aspects of quality of life in 123 patients (aged 37-79 years) participating in a trial of the treatment of heart failure. Subjects were assessed on entry and after 3 months. The principal symptoms were fatigue, breathlessness, and chest pain. These limited the extent and speed of physical activities, restricted social leisure, and family life; and were associated with emotional distress. Change in exercise capacity over
3 months was correlated with clinically worthwhile improvements in symptoms and quality of life. Findings confirm the value of change in exercise capacity as a measure of functional status and suggest that it should be supported by a limited or specific measure of quality of life.

Engblom et al. (1992) evaluated the effects of 3-phase comprehensive rehabilitation programme (CRP) vs a hospital based program (HP) on the quality of life (QOL) during the first post-operative year in 205 male coronary bypass patients (aged 35-65 years). The following variables were investigated: expectations and perceptions of surgery, factors enhancing recovery, post-operative problems, hospital admissions, present life situation and outlook, sexual satisfaction, depression, and leisure time activities. Beck Depression Index scores decreased significantly in CRP subject. Hobby activities decreased in HP subjects during follow-up. Significantly more CRP subjects considered rehabilitation an important factor influencing recovery.

Redeker (1992) described the nature and dynamics of coping of 129 patients (aged 38-79 years) following coronary artery bypass surgery (CABS). The coping strategies (CSGS) were assessed at one and six weeks using the Revised Ways of Coping Checklist by Vitaliano (1987). The most frequently used CSGS were: seeking social support, problem focussed coping (PFC), blaming self, wishful thinking, and avoidance coping (AC). Changes in the use of CSGS at 6 weeks post surgery were also investigated.
The study provided insight into the process of coping following CABS and supported the need for development of nursing strategies to promote coping among subjects.

Redeker (1992) examined 129 adults (aged 38-78 years) completed the Mischel Uncertainty in Illness Scale and the Revised Ways of Coping checklist at one and six weeks following non-emergency coronary artery bypass surgery (CABS). Emotions-focussed coping appeared to be used in relation to uncertainty. Subjects used predominantly wishful thinking and avoidance coping in relation to ambiguity at 1 week and in relation to ambiguity and complexity at 6 weeks following CABS. Attempts to escape using fantasy and distancing oneself from the situation were related to the inability to structure meaning in uncertain situations. The low level of blames self coping suggests that escapist forms of coping were preferred to accepting culpability in uncertain situations. At 6 weeks, uncertainty about health status appeared to continue, while the need to interpret cues about treatment and the system of care increased in relevance.

Glass and Maddox (1992) examined the role of psychosocial factors in recovery from stroke, 44 patients were followed for 6 months following first stroke. Growth cure analysis was utilized to examine the impact of three types of social support: emotional, instrumental, and informational. While all were shown to be significantly related to recovery of functional capacity, substantial differences were found in the matter of these effects. The impact of social support did not appear during the first month of
rehabilitation, indicating the importance of longitudinal designs. Patients reporting high levels of emotional support showed dramatic improvement, even those with the lowest baseline functional status. Instrumental support was most closely related to positive outcomes.

Smith and Christensen (1992) have described the role of psychosocial epidemiological research in cardiovascular disease (CVD) and the possible mechanisms linking stress and disease. Topics discussed include psychosocial risk factors, hostility, type A behavior patterns, and animal models of CVD. Also discussed are cardiovascular reactivity as a pathogenic mechanism, interpersonal control as active coping, and hostility and cardiovascular responses to social stressors.

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 substyles 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.
Mitsiboumas et al. (1992) examined whether a psychosocial intervention approach aimed at resolving psychological conflicts could reduce the severity of risk factors for post-acute myocardial infarction (MI) patients. Twenty three patients (mean age 50 years) with a recent MI participated in a group psychosocial intervention programme that lasted one year. Twenty other patients (mean age 56 years) with recent MI served as controls. Mean values for 7 risk factors of coronary heart disease (smoking, body weight, serum cholesterol, triglycerides, systolic and diastolic blood pressure, and serum uric acid) were compared between the 2 groups. Results suggest that group psychosocial intervention with post-acute MI patients considerably reduces some coronary disease risk factors.

Starker (1992) interviewed 95 male patients (aged 26-76 years) undergoing behavioral screening for hypertension and asked them to complete a troubles index and a coping behaviors questionnaire. Subjects had many kinds of troubles, including medical and money troubles, pain, tension, and depression. Some had ineffective coping patterns. More than one-third required referral for some type of behavioral intervention; other benefited form brief behavioral consultation. Behavioral screening may be a fruitful additional to the hypertension clinic setting.

Smith and Yarandi (1992) tested a conceptual model of the effects of age, weight, type, cholesterol, systolic blood pressure (BP), and coping on the stress response of 280 Southern Black women (aged 20-65 years).
Audio-type analyses of the structured interview resulted in 136 Type A's and 144 B's. Each individual was screened for hypercholesteremia using a portable reflectance photometer BP measurements were taken every minute before, during, and after a stress-producing Type A/B interview. Type A's had higher resting systolic BPs, higher cholesterol levels, higher levels of stress during the interview, and lower coping scores than Type B's. The relationship between age, weight, and resting systolic BPs all were in the anticipated direction.

Malan et al. (1992) determined the effect of urbanization on the cardiovascular reactivity (CVR) of Blacks by comparing 15 rural Black men and 15 urban Black men with 15 white men. Urban Black subjects showed a higher CVR than while subjects during a passive coping stressor and a lower CVR than white subjects during an active coping stressor. However, rural Black subjects consistently showed much higher CVR than either white subjects or urban Black subjects during both active and passive stressors. CVR is not only a function of the type of stressor applied but can be altered significantly by environmental factors like those experienced during urbanization.

Bennet (1993) tested Lazarus model of stress in convenience sample of 81 postmyocardial infarction clients (aged 34-80 years). Two hypothesized causal models were analysed. Results from regression analyses indicated 63% of the variance in coping effectiveness was explained by
marital status, length of time since hospitalization, perceived availability of social support, uncertainty, degree of threat, coping strategies, and emotions. A revised model that fit the data was proposed. Findings indicated that emotions were an outcome of threat, not coping; threat did not directly affect coping strategies; and coping strategies did not directly influence coping effectiveness.

Crumlish (1994) examined coping and emotion in patients prior to and after cardiac surgery. The revised ways of Coping Checklist (WCCL) and the Profile of Mood States (POMS) were completed by 120 patients (aged 35-75 years) before surgery and on the 5th postoperative day. Participants had significant differences in coping prior to and following surgery. There were significant postoperative decreases in the use of several coping strategies (seeking social support, blaming oneself, and wishful thinking); however, the use of other coping strategies (problem-focused coping and avoidance) remained unchanged. Emotion did not change. There were positive, significant relationship between several coping strategies and preoperative emotion. Preoperative emotion was the best independent predictor of the postoperative emotion.

Trzcioniecka-Green and Steptoe (1994) assessed the effects of a relaxation-based stress management programme for myocardial infarction (MI) and cardiac surgery (CDS) patients on the quality of life. Subjects were 69 men and 9 women aged under 70 years, previously hospitalised for MI or
CDS. The study had 3 aims: (1) assessing QOL with respect to self-confidence and self-control, (2) comparing MI subjects and CDS subjects and (3) investigating predictors of outcome to identify subjects who responded positively to stress management. Emotional state, function level, social activity, personality, spouse/relative ratings, chest pain, and demographic and clinical measures were assessed. Reductions in anxiety were associated with treatment adherence and personality factors, as well as age, work status, and time since surgery/event. The three outcome variables were relatively independent of one another, which reinforces the importance of considering QOL in a multidimensional fashion rather than a single continuum.

Jackson and Adams-campbell (1994) examined the influence of John Henryism (a coping mechanism linked to hypertension in Blacks) on cardiovascular disease risk factors among a relatively healthy sample of 421 urban, black college students (162 males and 259 females). The role of social support as a mediating influence on those with limited coping resources and high John Henryism scores was also assessed. Approximately 30% of the men and 9% of women had systolic blood pressure ≥140 mm Hg or diastolic blood pressure ≥90. Women had higher John Henryism scores than men. John Henryism was also correlated with social support in women. Gender-specific regression models revealed that John Henryism was not an independent predictor of blood pressure. Results are discussed in terms of
apparent gender differences with regard to overall coping mechanism in Black students and possible explanation for the lack of John Henryism - blood pressure relationship.

Coyne and Smith (1994) examined perceived self-efficacy in men six months after a myocardial infarction. Efficacy was positively correlated with their degree of dependence on their wives. Regression analyses were used to develop separate models of patients self-efficacy in terms of patient and wife characteristics, and a third composite model was then derived from these analyses. Patient efficacy was related to the men’s actively engaging their wives but their doing less protective buffering, but their being less overprotective. The asymmetry in patient and wife contributions to patient efficacy is noteworthy, given previous findings that wives’ protective buffering is associated with greater distress in them.

Siegrist (1995) discusses issues in coping with the social an emotional stress of chronic hypertension. Four theoretical approaches are considered and illustrated by studies: Lack of support, relative deprivation, job strain, and effort-reward imbalance.

Weitkunat et al. (1995) discussed aversive effects such as, reduced quality of life, associated with antihypertensive treatment, resulting in non-compliance with treatment. A neuropsychological model of hypertension derived from both animal and human studies suggests that cortico-inhibitory effects of phasic BP elevation reduces the aversive qualities of many
stressors. Counteractions such as taking antihypertensive medication not only lead to reduced quality of life due to their cancellation of analgesic effect of conditional BP increase, but also lead to some form of reluctance to comply with treatment. The model provides an innovative etiological path to the emergence of neurogenic essential hypertension and yields a specific concept of quality of life.

Chacko et al. (1996) investigated the relation between pretransplant assessment of psychiatric diagnosis, coping skills, and social support and outcome measures of survival and health care utilization. Ninety four heart transplant patients underwent structural interviews and completed a battery of self-report psychometric tests assessing coping style, health status, and psychosocial support. A 9-36 months follow-up after transplant produced a group of 63 survivors and 31 nonsurvivors who were found to be comparable in terms of pretransplant cardiac status and severity of illness. Survival analysis showed that dimensional psychometric measures of coping and social support based on patient self-assessment were the best significant predictors of survival. Considered separately, interview determined ratings of social support and pretransplant compliance with treatment regimens were also potential predictors.

Holahan et al. (1997) tested an integrative cross-sectional model of psychosocial adjustment in a sample of 362 (55-65 year olds) reporting a diagnosis of cardiac illness. 390 healthy respondents composed a control
group. Results indicate that subjects reporting cardiac illness experienced significantly more depressive symptoms than did healthy subjects. However, the cardiac illness sample varied markedly in depressive symptoms; psychosocial factors were central to this individual variability. An integrative structural equation model demonstrated that both social support and adaptive coping strategies were related to fewer depressive symptoms.

Pashos (1997) summarized that quality of life satisfaction and economic outcomes are explored relative to the treatment of elderly cardiac patients. This is not meant to diminish the importance of the clinical measure that can and must be readily appreciated by physicians managing their cardiac patients. Instead, the measures discussed here augment the armamentarium that physicians can use to implement their patient care responsibilities.

Waldstein et al. (1997) examined impedance-derived hemodynamic parameters underlying blood pressure response to 2 laboratory tasks requiring active coping performed either with or without an appetitive (i.e. monetary) incentive. Forty eight healthy, young man completed the Strop Color-word Test and Mirror Tracing. Half received no incentive, whereas half were provided with a monetary incentive as an active coping manipulation. Task-related changes in blood pressure, heart rate, systolic time intervals, and hemodynamic parameters were monitored. Psychological response to the tasks was also obtained. On average, incentive virtually doubled blood pressure response to both Stroop and Mirror Tracing. The
change in blood pressure was explained predominantly by a concomitant increase in total peripheral resistance. Heart rate response was also enhanced substantially with inventive subjects in the incentive condition reported greater interest in the task, but less perceived control, than persons in the no-incentive condition.

Peter and Siegrist (1997) tested the hypothesis that active coping with the experience of chronic work stress is more likely to be associated with physical health consequences of sustained autonomic arousal such as hypertension, whereas passive coping may predispose individuals to withdraw behavior such as Sickness Absence (SA) from work. Based on data from 179 (40-55 years old) male managers in a car producing company in Germany, this hypothesis was tested in the framework of the theoretical model of effort-reward imbalance at work. Results indicated that 3 measures of low reward were associated with long-term SA, that 1 measure of low reward is associated with long-term SA and that 2 measures of low reward were associated with a number of SA episodes. No indicator of high effort of work was significantly associated with SA. Middle managers who suffer from high efforts and low reward simultaneously were at an elevated risk for hypertension. Thus, support was found for a sociological model of work stress which allows for differential prediction of health outcomes according to the criterion of active vs passive coping with work demands.

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 weeks 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.

Bongard and Hodapp (1997) examined effort hypothesis of cardiovascular effects of active coping on the bases of performance data in 2 experiments. In experiment 1, 84 female students worked on mental arithmetic tasks for 20 minutes. Subjects had to solve the problems mentally and type the results into computer. Heart Rate, systolic and diastolic blood pressure were then measured. In experiment 2, 36 male students worked simultaneously on the same mental arithmetic task, although under difficult task conditions and with a secondary choice reaction time task. Heart rate (HR), R-wave to pulse intervals, systolic and diastolic blood pressure were measured. Data suggested that active coping situations also raise the task demands. Differences and similarities between the ways in which control is operationalised in laboratory settings are discussed, and it is suggested that
a lack of control over work place and the ability to avoid aversive consequences increases task demands and consequently lead to exaggerated cardiovascular responses. It is suggested that these increased demands are coped with by enhanced effort as shown by task performance and magnified cardiovascular responses.

Dath et al. (1997) studied the efficacy of biofeedback induced relaxation and behavioral counselling 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 1, 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 social support.

Harper et al. (1998) explored the value of patients self-report assessment in heart transplant candidacy evaluation, utilizing the Millon Behavioral Health Inventory (MBHI). Ninety heart patients (mean age 33 years) with end stage cardiac disease completed the MBHI during pretransplant candidacy evaluations, and also were interviewed concerning their coping effectiveness, stress vulnerability, support resources, and compliance history. Post-transplant follow-up of 61 living and 29 deceased
patients induced measure of survival time, post-surgical medical care, rejection and infection episodes, and nurse ratings of medication compliance and problematic interpersonal health behaviours. The MBHI coping scales were found to be significantly discriminate good and poor pre-transplant compliance, and interview judgements of good and poor coping and support resources, with modest accuracy. The MBHI also was superior to these interview judgements in predicting Post-transplant survival time and medical care used. Certain scales were also positively associated with physical parameters of pretransplant and post-transplant status.

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 tasks 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 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 25-45) 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.

George et al. (1998) assessed the effectiveness of a cognitive-behavioral intervention programme in (a) modifying Type A Behaviour 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-behavioural intervention programme consisted of coronary counselling, education about TABP, behavioural counselling of significant others, and stress inoculation training. Clinically significant assessment scores indicate the effectiveness of the intervention programme in the modification of TABP and associated problems.
Van Eldern et al. (1998) studied the effect of gender and social support on quality of life one month after myocardial infarction and/or coronary bypass surgery. Human Ss: 111 male Dutch adults (aged 23-74 years) 61 female Dutch adults (aged 29-75 years). The impact of sex, perceived social support, and perceived satisfaction on well-being, social inhibition, feelings of invalidity, and displeasure was assessed. Tests used: The General Questionnaire for Heart Patients, Medical Psychological Questionnaire for Heart Patients and the Dutch Version of the Social Support Questionnaire - 6. Results show that women scored lower on well-being and higher on social inhibition and tended to score higher on feelings on invalidity compared to men. Perceived social support and satisfaction with social support had a significant negative relation with displeasure and social inhibition, while there was a tendency for satisfaction with social support to have a positive relationship with well-being. Women with relatively low perceived social support scored higher on well-being and lower on displeasure compared to men, while women with relatively high perceived social support scored lower on well-being and higher on displeasure than men.

Salori et al. (1999) assessed the efficacy of an inpatient physical rehabilitative program on impairment, disability, and quality of life of 50 multiple sclerosis (MS) patients (aged 18-65 years) participating in a randomized, single blind, controlled trial. Subjects were assigned to 3 weeks of inpatient physical rehabilitation (study treatment) or exercise performed
at baseline and 3, 9 and 15 weeks. No changes in impairment occurred in either group, as measured by the expanded Disability Status Scale. At the end of the intervention the study group improved significantly in disability, as assessed by the functional independence. Measure motor domain, compared with controls, with the improvement persisting at 9 weeks. The study group also improved in overall health-related quality of life profile compared with controls; however, the difference was significant only for the mental composite scores at 3 and 9 weeks.
Chapter Three

METHOD

The present investigation is an attempt to study the health related quality of life and coping behavior in cardiovascular disease patients.

Sample: The sample consisted of 200 male patients who were categorised into two main groups-Group I comprised 140 coronary artery disease (CAD) patients selected from the OPD of the Department of Cardiology, Institute of Medical Sciences, B.H.U., Varanasi. Of these, 140 CAD patients, 105 were Myocardial Infraction (MI) and 35 were Angina Pectoris (AP). The criteria for the selection of patients for the present investigation included (a) confirmed diagnosis of disease by physicians (b) proof of Electrocardiograph (ECG) documentation of MI and angina (c) manifestations of coronary insufficiency and certain electrocardiographic 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. Hypertension or any other CVD patients were not included in this group. The age range of M1 and AP patients were from 40 to 80 years (mean age 66.79 years and 52.40 years respectively).

Group II consisted of 60 Essential Hypertensive patients. These patients (subjects) were drawn from the Outpatient Departments (OPD) of the medicine department, Institute of Medical Sciences, B.H.U., Varanasi. Subjects were defined as hypertensive if systolic blood pressure was >140 mm Hg. or if diastolic BP was > 90 mm Hg, or if the subject was on antihypertensive medication. The age range of this group was also from 40 to 80 years with a mean of 55.70 years.

Tools: The following tools were developed and used for the present investigation.

Personal Data Sheet (PDS): The PDS included the information under the following major heads: Name of the patient, Age, Marital status, Occupation, Weight, Diagnosis, Family history of CVD, and Clinical features and investigations. (cf. Appendix I).

Health-Related Quality of Life (HRQOL) Scale: The format of the HRQOL scale includes five sections. The first section asks about eighteen psychological effects associated with certain cardiovascular
disease. Examples are 'Aggressive', 'Anxious', 'Apathetic', and so on. Section second asks about eight physiological effects associated with certain cardiovascular disease. Example are 'Blood glucose is high', 'Blood pressure is high', and so on. Third section includes information concerning to the eleven organizational effects associated with certain cardiovascular disease. Example are 'Difficulty in time management and work', 'Dissatisfied with job', 'Job stress', and so on. Fourth section uses a list of some personal and social effects associated with certain cardiovascular disease. Examples are 'Attending few marriage and social parties', 'Drug dependency', 'Poor decision making', and so on. The last section asks about twelve physical effects associated with certain cardiovascular disease. Example are 'Awakening often at nigh', 'Chest pain', 'Dizziness', and so on. Respondents were asked to indicate in a Observed or Not observed format, whether the change in respect of each of the listed behaviour has been observed or not observed by you.

In developing the HRQOL scale the investigator reviewed earlier studies and rewrote it to approximate what appears in studies and interviewed five physicians and cardiologists; and 20 patients suffering from coronary artery disease (10 patients of Myocardial Infarction, and 10 patients of Angina Pectoris) and 10 patients suffering from hypertension. The format is easier to respondents to answer each
item. “Every item is prefaced by I feel / have...”. The HRQOL scale has 58 effects / problems associated with coronary artery disease and hypertension (cf. Appendix II).

**Coping Behaviour Scale (CBS)**: The coping Behaviour is 20-item scale that yields pharmacological, behavioural, psychosocial, physical, religious, recreational dimensions, and so on. (cf. Appendix III). All scores range from 1 to 20 usually expressed as a percentage, with higher scores indicating more ways of coping the disease. The respondents were asked to put a check mark ( /) against those coping mechanism which they consider as the important ways of coping the disease. Every item is prefaced by “I am maintaining / doing / taking the following useful steps.

For the development of the Coping Behaviour Scale, the investigator employed the same steps which were used in the development of the HRQOL scale. In addition, patients were asked “How would you rate your satisfaction with the coping styles or strategies?” (very satisfied, satisfied, somewhat satisfied, not satisfied). This step was taken in an effort to identify coping mechanisms in which the cardiovascular disease patients feel satisfaction or dissatisfaction and the effects of changes in health-related quality of life.
Procedure: All the patients were contacted individually for the testing session in 1998. These respondents (patients) were then given the questionnaires and were requested to respond candidly according to the given instructions printed on the tests. The questionnaire included Health-Related Quality of Life Scale, Coping Behaviour Scale and the Personal Data Sheet. Each respondent took one hour time in completing all the questionnaires. They were assured that their responses would be kept strictly confidential and used for research purpose only. After data collection scoring for both the tests was done by the investigator himself.

Data Analysis: The data were analyzed by means of various statistical techniques such as simple percentages, and rank-difference correlation coefficients.
Chapter Four

RESULTS AND DISCUSSION

The present study was designed to assess the health-related quality of life and coping behaviour in cardiovascular disease patients, namely, myocardial infarction, angina pectoris, and hypertension. In order to give an answer of the objectives set in the first chapter, data were analyzed by means of simple percentages and rank-difference Correlation Coefficients. The obtained results have been presented and discussed in the following pages.

Table - 1: Percentages and Ranks indicating the change in respect of each of the listed behaviour, (traits representing psychological, physiological, organizational, personal and social, and physical effects) which has been observed by Myocardial Infarction, Angina Pectoris, and Hypertensive patients.

<table>
<thead>
<tr>
<th>Psychological Effects</th>
<th>Myocardial Infarction</th>
<th>Angina Pectoris</th>
<th>Hypertensive</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% age</td>
<td>Rank</td>
<td>% age</td>
</tr>
<tr>
<td>1. Aggressive</td>
<td>86.66</td>
<td>15.0</td>
<td>74.28</td>
</tr>
<tr>
<td>2. Anxious</td>
<td>87.61</td>
<td>17.0</td>
<td>77.14</td>
</tr>
<tr>
<td>3. Apathetic</td>
<td>22.85</td>
<td>2.0</td>
<td>17.14</td>
</tr>
<tr>
<td>4. Depressed</td>
<td>75.23</td>
<td>9.0</td>
<td>65.71</td>
</tr>
<tr>
<td></td>
<td>Difficulty in controlling anger /emotions</td>
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<td></td>
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<tr>
<td></td>
<td>61.90</td>
<td>7.0</td>
<td>54.28</td>
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<tr>
<td></td>
<td>6. Fear of getting a heart attack</td>
<td></td>
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<tr>
<td></td>
<td>91.42</td>
<td>18.0</td>
<td>80.00</td>
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<tr>
<td></td>
<td>7. Feeling that my motivation level is low</td>
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<tr>
<td></td>
<td>80.00</td>
<td>11.5</td>
<td>80.00</td>
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<tr>
<td></td>
<td>8. Frustrated</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>71.42</td>
<td>8.0</td>
<td>71.42</td>
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<tr>
<td></td>
<td>9. Hostile</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>13.33</td>
<td>1.0</td>
<td>14.28</td>
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<tr>
<td></td>
<td>10. Hypersensitivity to criticism</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>79.04</td>
<td>10.0</td>
<td>68.57</td>
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<tr>
<td></td>
<td>11. Impatient</td>
<td></td>
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<tr>
<td></td>
<td>80.95</td>
<td>13.0</td>
<td>77.14</td>
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<tr>
<td></td>
<td>12. Irritable</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>86.66</td>
<td>15.0</td>
<td>71.42</td>
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<tr>
<td></td>
<td>13. Loneliness</td>
<td></td>
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<td></td>
<td>47.61</td>
<td>4.0</td>
<td>40.00</td>
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<tr>
<td></td>
<td>14. Loss of memory</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>60.00</td>
<td>6.0</td>
<td>71.42</td>
</tr>
<tr>
<td></td>
<td>15. Low self-esteem</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>53.33</td>
<td>5.0</td>
<td>45.71</td>
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<tr>
<td></td>
<td>16. Nervous</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>80.00</td>
<td>11.5</td>
<td>71.42</td>
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<tr>
<td></td>
<td>17. Overwhelmed by circumstances</td>
<td></td>
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<tr>
<td></td>
<td>86.66</td>
<td>15.0</td>
<td>85.71</td>
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<tr>
<td></td>
<td>18. Reacts poorly</td>
<td></td>
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<tr>
<td></td>
<td>35.23</td>
<td>3.0</td>
<td>20.00</td>
</tr>
<tr>
<td>Physiological Effects</td>
<td>Myocardial Infarction %</td>
<td>Angina Pectoris %</td>
<td>Hypertensive %</td>
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<td>----------------------</td>
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<tr>
<td></td>
<td>Rank</td>
<td>Rank</td>
<td>Rank</td>
</tr>
<tr>
<td>1. Blood glucose level is high</td>
<td>60.00 2.0</td>
<td>45.71 2.0</td>
<td>41.66 2.0</td>
</tr>
<tr>
<td>2. Blood pressure is high</td>
<td>67.61 4.0</td>
<td>80.00 7.0</td>
<td>93.33 7.0</td>
</tr>
<tr>
<td>3. Difficulty in breathing</td>
<td>74.28 6.0</td>
<td>71.42 6.0</td>
<td>73.33 4.0</td>
</tr>
<tr>
<td>4. Distribution of the blood in the body is not proper</td>
<td>65.71 3.0</td>
<td>54.28 3.0</td>
<td>63.33 3.0</td>
</tr>
<tr>
<td>5. Dryness of the mouth</td>
<td>78.09 7.0</td>
<td>57.14 4.0</td>
<td>90.00 6.0</td>
</tr>
<tr>
<td>6. Heart rate / beat increases</td>
<td>81.90 8.0</td>
<td>82.85 8.0</td>
<td>95.00 8.0</td>
</tr>
<tr>
<td>7. Hot and cold flashes</td>
<td>73.33 5.0</td>
<td>60.00 5.0</td>
<td>75.00 5.0</td>
</tr>
<tr>
<td>8. Lipid level is high</td>
<td>58.09 1.0</td>
<td>31.42 1.0</td>
<td>33.33 1.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Organizational Effects</th>
<th>Myocardial Infarction %</th>
<th>Angina Pectoris %</th>
<th>Hypertensive %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rank</td>
<td>Rank</td>
<td>Rank</td>
</tr>
<tr>
<td>1. Difficulty in time management and work</td>
<td>83.80 8.5</td>
<td>74.20 7.5</td>
<td>78.33 9.5</td>
</tr>
<tr>
<td>2. Difficulty in planning of vacations</td>
<td>74.28 6.0</td>
<td>68.57 6.0</td>
<td>68.33 6.0</td>
</tr>
<tr>
<td></td>
<td>Percentage</td>
<td>Rank</td>
<td>Percentage</td>
</tr>
<tr>
<td>----------------------</td>
<td>------------</td>
<td>------</td>
<td>------------</td>
</tr>
<tr>
<td>3. Difficulty over the planning of work</td>
<td>83.80</td>
<td>8.5</td>
<td>77.14</td>
</tr>
<tr>
<td>4. Dissatisfied with job</td>
<td>49.52</td>
<td>4.0</td>
<td>45.71</td>
</tr>
<tr>
<td>5. Frequent absence</td>
<td>29.52</td>
<td>1.0</td>
<td>25.71</td>
</tr>
<tr>
<td>6. Isolated from co-workers</td>
<td>41.90</td>
<td>2.0</td>
<td>34.28</td>
</tr>
<tr>
<td>7. Job-stress</td>
<td>79.04</td>
<td>7.0</td>
<td>82.85</td>
</tr>
<tr>
<td>8. Lack of participation</td>
<td>55.23</td>
<td>5.0</td>
<td>51.42</td>
</tr>
<tr>
<td>9. Lack of responsibility at work</td>
<td>43.80</td>
<td>3.0</td>
<td>37.14</td>
</tr>
<tr>
<td>10. Productivity / performance decreases</td>
<td>85.71</td>
<td>10.5</td>
<td>80.00</td>
</tr>
<tr>
<td>11. Reduced interest in job</td>
<td>85.71</td>
<td>10.5</td>
<td>74.20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Personal and Social Effects</th>
<th>Myocardial Infarction</th>
<th>Angina Pectoris</th>
<th>Hypertensive</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% age</td>
<td>Rank</td>
<td>% age</td>
</tr>
<tr>
<td>1. Attending few marriage and social parties</td>
<td>82.85</td>
<td>5.0</td>
<td>80.00</td>
</tr>
<tr>
<td>2. Change in living condition and personal habits</td>
<td>89.52</td>
<td>8.0</td>
<td>68.57</td>
</tr>
<tr>
<td>3. Decrement in creativity</td>
<td>79.04</td>
<td>3.0</td>
<td>65.71</td>
</tr>
<tr>
<td>4. Drug dependency</td>
<td>85.71</td>
<td>6.5</td>
<td>62.85</td>
</tr>
<tr>
<td>--------------------</td>
<td>-------</td>
<td>-----</td>
<td>-------</td>
</tr>
<tr>
<td>5. Lack of participation</td>
<td>90.47</td>
<td>9.0</td>
<td>80.00</td>
</tr>
<tr>
<td>in recreational activities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Low frequency of</td>
<td>80.95</td>
<td>4.0</td>
<td>80.00</td>
</tr>
<tr>
<td>visiting, phoning or</td>
<td>writing someone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Poor decision making</td>
<td>67.61</td>
<td>1.0</td>
<td>31.42</td>
</tr>
<tr>
<td>8. Problem solving</td>
<td>85.71</td>
<td>6.5</td>
<td>77.14</td>
</tr>
<tr>
<td>capabilities are being reduced</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Underutilization of</td>
<td>77.14</td>
<td>2.0</td>
<td>82.85</td>
</tr>
<tr>
<td>skills and abilities</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Physical Effects</th>
<th>Myocardial Infarction</th>
<th>Angina Pectoris</th>
<th>Hypertensive</th>
</tr>
</thead>
<tbody>
<tr>
<td>% age</td>
<td>% age Rank</td>
<td>% age Rank</td>
<td>% age Rank</td>
</tr>
<tr>
<td>1. Awakening often at night</td>
<td>66.66</td>
<td>3.0</td>
<td>71.42</td>
</tr>
<tr>
<td>2. Change in diet and eating habits</td>
<td>91.42</td>
<td>9.5</td>
<td>80.00</td>
</tr>
<tr>
<td>3. Chest pain</td>
<td>86.66</td>
<td>7.0</td>
<td>80.00</td>
</tr>
<tr>
<td>4. Dizziness</td>
<td>80.95</td>
<td>4.0</td>
<td>77.14</td>
</tr>
<tr>
<td>5. Fainting</td>
<td>16.19</td>
<td>1.0</td>
<td>11.42</td>
</tr>
<tr>
<td>6. Fatigue</td>
<td>93.33</td>
<td>11.0</td>
<td>88.57</td>
</tr>
<tr>
<td>7. Headaches</td>
<td>89.52</td>
<td>8.0</td>
<td>62.85</td>
</tr>
<tr>
<td></td>
<td>Inactivity</td>
<td>8.47</td>
<td>5.0</td>
</tr>
<tr>
<td>---</td>
<td>------------</td>
<td>-------</td>
<td>-----</td>
</tr>
<tr>
<td>9</td>
<td>Insomnia</td>
<td>28.57</td>
<td>2.0</td>
</tr>
<tr>
<td>10</td>
<td>Loss of energy</td>
<td>94.28</td>
<td>12.0</td>
</tr>
<tr>
<td>11</td>
<td>Poor physical health</td>
<td>85.71</td>
<td>6.0</td>
</tr>
<tr>
<td>12</td>
<td>Restlessness</td>
<td>91.42</td>
<td>9.5</td>
</tr>
</tbody>
</table>
Table 2: Showing the percentages and ranks given by the Myocardial Infarction, Angina Pectoris, and Hypertensive patients on the items of Coping Behaviour Scale.

<table>
<thead>
<tr>
<th>Copying Behaviour</th>
<th>Myocardial Infarction</th>
<th>Angina Pectoris</th>
<th>Hypertensive</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% age</td>
<td>Rank</td>
<td>% age</td>
</tr>
<tr>
<td>1.</td>
<td>94.28</td>
<td>15.0</td>
<td>91.42</td>
</tr>
<tr>
<td>2.</td>
<td>57.14</td>
<td>2.0</td>
<td>20.00</td>
</tr>
<tr>
<td>3.</td>
<td>84.76</td>
<td>10.5</td>
<td>74.08</td>
</tr>
<tr>
<td>4.</td>
<td>61.90</td>
<td>3.0</td>
<td>51.42</td>
</tr>
<tr>
<td>5.</td>
<td>88.57</td>
<td>13.0</td>
<td>91.42</td>
</tr>
<tr>
<td>6.</td>
<td>95.23</td>
<td>16.0</td>
<td>100.00</td>
</tr>
<tr>
<td>7.</td>
<td>100.00</td>
<td>19.5</td>
<td>94.28</td>
</tr>
<tr>
<td>8.</td>
<td>94.44</td>
<td>17.5</td>
<td>100.00</td>
</tr>
<tr>
<td>9.</td>
<td>100.00</td>
<td>19.5</td>
<td>100.00</td>
</tr>
<tr>
<td>10.</td>
<td>85.71</td>
<td>12.0</td>
<td>80.00</td>
</tr>
<tr>
<td>11.</td>
<td>70.47</td>
<td>4.0</td>
<td>82.85</td>
</tr>
<tr>
<td>12.</td>
<td>80.95</td>
<td>6.0</td>
<td>74.28</td>
</tr>
<tr>
<td>13.</td>
<td>83.80</td>
<td>8.5</td>
<td>71.42</td>
</tr>
<tr>
<td>14.</td>
<td>83.80</td>
<td>8.5</td>
<td>80.00</td>
</tr>
<tr>
<td>15.</td>
<td>0.08</td>
<td>1.0</td>
<td>0.0</td>
</tr>
<tr>
<td>16.</td>
<td>81.90</td>
<td>7.0</td>
<td>80.00</td>
</tr>
<tr>
<td>17.</td>
<td>94.44</td>
<td>17.5</td>
<td>100.00</td>
</tr>
<tr>
<td>18.</td>
<td>78.09</td>
<td>5.0</td>
<td>74.28</td>
</tr>
<tr>
<td>19.</td>
<td>92.38</td>
<td>14.0</td>
<td>91.42</td>
</tr>
<tr>
<td>20.</td>
<td>84.06</td>
<td>10.5</td>
<td>85.71</td>
</tr>
</tbody>
</table>
Table - 3: Correlation coefficients (P) indicating rank differences between: Myocardial Infarction (MI) and Angina Pectoris (AP), Myocardial Infarction and Hypertension (H) and Angina Pectoris and Hypertensive patients on the psychological, physiological, organizational, personal and social, and physical effects of the Health-Related Quality of Life Scale.

<table>
<thead>
<tr>
<th>Effects</th>
<th>MI / AP P</th>
<th>MI / HT p</th>
<th>AP / HT p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological</td>
<td>0.891</td>
<td>0.923</td>
<td>0.910</td>
</tr>
<tr>
<td>Physiological</td>
<td>0.785</td>
<td>0.833</td>
<td>0.904</td>
</tr>
<tr>
<td>Organizational</td>
<td>0.879</td>
<td>0.834</td>
<td>0.961</td>
</tr>
<tr>
<td>Personal and Social</td>
<td>0.129</td>
<td>0.460</td>
<td>0.210</td>
</tr>
<tr>
<td>Physical</td>
<td>0.840</td>
<td>0.854</td>
<td>0.730</td>
</tr>
</tbody>
</table>

Table - 4: Correlation Coefficients indicating rank differences between: Myocardial Infarction (MI) and Angina Pectoris (AP), Myocardial Infarction and Hypertension (H) and Angina Pectoris and Hypertensive patients on Coping Behaviour Scale.

<table>
<thead>
<tr>
<th>Patients</th>
<th>P</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>MI/AP</td>
<td>0.902</td>
<td>0.01</td>
</tr>
<tr>
<td>MI/HT</td>
<td>0.701</td>
<td>0.01</td>
</tr>
<tr>
<td>AP/HT</td>
<td>0.831</td>
<td>0.01</td>
</tr>
</tbody>
</table>
As it is evident from table 1 which shows the ranking of patients of cardiovascular disease (e.g. myocardial infarction (MI), angina pectoris (AP) and hypertension) on traits representing the psychological, physiological, organizational, personal and social, and physical effects of health-related quality of life scale, the ‘hostile’ behaviour was ranked least by the myocardial infarction, angina pectoris, and hypertensive patients. There was complete agreement in ranking by the MI, AP, and hypertensive patients on other traits - ‘apathetic’, ‘difficulty in controlling anger’, ‘loneliness’, ‘low self-esteem’ and ‘reacts poorly’, representing the psychological effects. The traits most ranked by the MI, AP and hypertensive patients were: ‘fear of getting a heart attack, ‘overwhelmed by circumstances’ and ‘anxious’ respectively. There are some traits such as ‘feeling that my motivation is low’, ‘irritable’, ‘loss of memory’ where there was much disagreement in ranking between the MI and AP patients. On ‘fear of getting a heart attack’, and ‘feeling that my motivation is low’, the difference existed in terms of ranking between the MI and hypertensive patients. Angina pectoris and hypertensive subjects showed differences in ranking on ‘anxious’, ‘depressed’ and overwhelmed by circumstances’ traits. The rank-differences on traits are highlighted where there is disagreement in ranking among for more than three in order of preference.

Of the eight traits representing the physiological effects observed by the cardiovascular disease patients, 5 traits indicating that there was complete
agreement in ranking by the MI, AP and hypertensive patients. The traits and ranking were in order of preference - 'lipid level is high', 'blood glucose level is high', 'distribution of blood is not proper', 'hot and cold flashes', and 'heart rate/beat increases'. 'Blood pressure is high', difficulty in breathing', and 'dryness of mouth' are the characteristics where there was no complete agreement among the rankings of the MI, AP and hypertensive patients.

Myocardial infarction, angina pectoris, and hypertensive patients assigned the same rank on 'frequent absence', 'isolated from co-workers', 'lack of responsibility at work', 'dissatisfied with job', 'lack of participation', and 'difficulty in planning of vacations' traits representing the organizational effects they observed after they came to know that they are suffering from a particular cardiovascular disease. Myocardial infarction patients ranked highest on the 'productivity /performance becomes low' and 'reduced interest in job' traits. Whereas the angina pectoris and hypertensive patients ranked highest on 'job stress' trait or observed change in respect of this dimension. There are two traits, namely, 'difficulty in time management and work', and 'difficulty over the planning of work' where there was little disagreement in ranking by the cardiovascular disease patients.

'Poor decision making' and 'decrement in creativity' are only the traits representing the personal and social effects, where the agreement existed in ranking among the cardiovascular disease patients. Whereas on
the remaining seven traits - ‘attending few marriage and social parties’, ‘change in living conditions and personal habits’, ‘drug dependency’, ‘lack of participation in recreational activities’, ‘low frequency of visiting, phoning or writing someone’, ‘problem solving capabilities are being reduced’, and ‘underutilization of skills and abilities’ - agreement did not exist in ranking among subjects. For example, ‘lack of participation in recreational activities’ was the most observed effects among myocardial infarction patients because they ranked highest this trait. ‘Underutilization of skills and abilities’ was highest ranked by the angina pectoris patients. Hypertensive patients ranked equally on the ‘change in living conditions and personal habits’, and ‘low frequency of visiting, phoning or writing someone’ traits. For them these personal and social effects were most important.

Of the twelve traits representing the physical effects observed due to cardiovascular disease, only on two traits, viz., ‘fainting’ and ‘insomnia’ where there was unanimity in ranking among myocardial infarction, angina pectoris, and hypertensive patients. There are some traits such as ‘change in diet and eating habits’, ‘fatigue’, ‘loss of energy’ and ‘poor physical health’ which were ranked almost equally by the myocardial infarction, angina pectoris, and hypertensive patients. ‘Loss of energy’ was observed as the most important physical effect and ‘fainting’ was observed as the least important physical effect by both groups of cardiovascular disease patients.

The principal evidence emerged from Table 1 is that the cardiovascular diseases do not affect the health-related quality of life of patients in terms
of “psychological”, “physiological”, “organizational” and “physical” effects. This implies that changes are not observed in these behaviours in all the three groups of patients. Interestingly, changes observed in terms of “personal and social effects” in the myocardial infarction, angina pectoris, and hypertensive patients.

It is clear from Table 3 that the values of p are significant at the 0.01 level for the psychological, physiological, organizational, and physical effects observed by the cardiovascular disease patients. Correlation coefficients indicating the rank differences between myocardial infarction and angina pectoris patients, myocardial infarction and hypertensive patients and angina pectoris and hypertensive patients, were not found to be significant for ‘personal and social’ effects.

The findings of the present study clearly indicate that health-related quality of life (HRQOL) is a multidimensional construct. The areas included in the scale are dealing disabilities or symptoms associated with cardiovascular diseases. There is a serious lack of research data of the cardiovascular disease impacts on the health-related quality of life of patients because it is often estimated rather than measured. In this respect the findings of the present study can be considered suggestive rather than conclusive. The scale assessing perceived quality of life of patients representing psychological, physiological, organizational, personal and social, and physical effects. In the case of cardiovascular diseases, by helping the
patients to overcome these symptoms the patient may make less demands on the health sector, and indeed feel a healthier individual.

On item nos. 2, 4, 12 and 15 of the coping behavior scale, the myocardial infarction, angina pectoris, and hypertensive patients showed agreement in ranking but they differ in percentages. Whereas on the remaining sixteen items differences exist in rankings and percentages of the cardiovascular disease patients (cf. Table 2). Item nos. 2 and 15 representing the diversive or negative coping were ranked 2 and 1 by both the groups of cardiovascular disease patients. ‘Medication’, and ‘meditation and devotion to God’ were the coping strategies which were highly ranked or found to be associated with myocardial infarction patients. Every Angina patient has been using ‘rest/relaxation, adequate sleep’. ‘meditation and devotion to God’, and ‘adhering advice of doctors / consultants’ as the strategies to cope with illness. Hypertensive patients have reported that they are using ‘meditation and devotion to God’, ‘hobbies or leisure activities’, and ‘adhering advice of doctors and consultants’ as the strategies to cope with illness.

Rank-difference correlation coefficients were found to exist between the ranking of (a) myocardial infarction and angina pectoris patients (p=0.902, p < 0.01), (b) myocardial infarction and hypertensive patients (p=0.701, p<0.01), and angina pectoris and hypertensive patients (p=0.831, p<0.01) on coping behaviour scale.
The percentages and ranks presented in table 2 indicate that the different cardiovascular diseases necessitate differential use of coping strategies to combat the stress associated with each patient's condition, functional limitations, and long term impact. Furthermore, cardiovascular disease patients employ different coping strategies due to meet the conditions imposed by doctors or consultants, specific health problems, treatment modalities, psychosocial effects, and also prognostic indicators.

Despite these varying efforts at employing coping strategies by the cardiovascular disease patients, the findings of the present study revealed that irrespective of the disease, more than ninety percent patients are using "Balanced nutrition and diet", "seeking social support and practical support from family members / spouse", "medication", "rest /relaxation and adequate sleep", "meditation and devotion to God", "hobbies and leisure activities", "adhering to advice of doctors", and "optimistic attitude towards life" as the coping strategies to cope with their illness or towards improving their health-related quality of life. It is commonly noted that the doctors also prescribed these strategies to cope with cardiac disease except "meditation and devotion to God", and "optimistic attitude towards life". These two coping strategies may be classified under the theoretically-based approach viz., "cognitive approach" because these are concerned with mental-orientation and planning. The literature on coping with heart disease and myocardial infarction suggests that dispositional-like coping approach i.e.
"optimistic outlook" increases psychosocial adaptation to cardiac disease (Livneh, 1999).

In addition to these coping strategies, more than ninety percent hypertensives keep engaging themselves in "regular physical check up", "prayer, visiting holy places, or attending religious congregations", "pleasure and humour talk", and "hobbies and leisure activities". These coping strategies may be classified under different classificatory approaches like 'problem-focussed', 'religious coping', 'behavioural' and 'engagement strategies'.

Of the available evidence on coping with cardiac disease, the findings of the present study can be corroborated by the findings of Stewart et al.,'s (1997) study which clearly indicates that seeking social support was the most frequently used strategy in their sample of people with heart disease.

The findings of the present study have also focussed on the efforts of 'disengagement' or 'avoidance/escapism' strategies of patients in coping with cardiac disease. For example, in the present study, "diverting attention from discussion on the topic of illness" as the avoidance coping strategy which has been mainly utilized by almost 75 percent or more than that by the cardiovascular disease patients. In addition to this 57.14 percent myocardial infarction patients are taking abusive drugs to avoid or escape the problem. The findings of the present study can be corroborated by the findings of some earlier studies conducted on the samples of Taiwanese and
Spanish survivors of myocardial infarction (Chiou et al., 1997; Garcia et al., 1994). Moreover, Krohne (1996), reports that avoidance or evasive coping has been conceptualized as a global dimension of coping. Most attention should perhaps be given to discouraging these strategies of coping with disease and symptoms, expecting that improved health-related quality of life will follow with minimal effort or attention. Such an attitude of patients does not fit with the most recent trends which even veer towards seeking health behaviour as a demand.
Chapter Five

SUMMARY

The present study is concerned with the assessment of health-related quality of life and coping behaviour in cardiovascular disease patients. Cardiovascular diseases include myocardial infarction, angina pectoris and hypertension.

Diseases of the heart and blood vessels constitute a major health problem today. Cardiovascular diseases which include heart disease and stroke, are now the leading cause of death and disability in our country. Today, about 40 million Indians are suffering from coronary artery disease. In fact cardiovascular diseases are soon expected to be responsible for one out of four deaths in developing countries.

Sedentary life style and psycho-physical-social stress associated with rapid urbanization, globalization and technological innovations have led to a high incidence of cardiovascular diseases. Smoking, high cholesterol, high blood pressure, diabetes, and lack of exercise are the main risk factors associated with coronary artery disease. These factors have a cumulative effect as the chances of developing the heart ailment multiplies with additional psychosocial factors such as Type A behaviour pattern anger, hostility, stress, depression, irrational thinking, and pessimism, and rapid
urbanization. Health has been deeply affected by these psychosocial factors or variables.

Hypertensive cardiovascular disease, involving high blood pressure, is also a major health hazard. High blood pressure is not the cause of cardiac diseases but their marker, who had for the first time identified the syndrome of right ventricular infarction. Salt intake, alcohol consumption, diabetes, obesity, lead, emotional and personal stress, and lack of exercise are the main risk factors for hypertension. High blood pressure is a major contributor to the India's population's morbidity mortality, and related cardiovascular diseases-stroke and renal insufficiency-. With the globalization and life-style changes that are now taking place in the region, around 10-15% of the adult population is already affected by hypertension in India.

In 1988, Kaplan has started work on the conceptualization and measurement of health-related quality of life. This soon led to a project (Orley J., 1994; WHOQOL Groups, 1995). On the assessment of quality of life in health care settings. “Quality of life was defined as individuals’ perceptions of their position in life in the context of the culture and value systems where that lived and in relation to their goals, expectations, standards, and concerns. It is, of course, coloured by physical health, psychological state, level of independence, social relationships, environmental factors and personal beliefs” (The WHOQOL Group, 1995).
This definition is not concerned with the objective measurement of people’s condition of the cardiovascular diseases what they possess or suffer from.

A variety of methods has been proposed for the measurement of quality of life. However, the present investigator viewed that there is a need to develop an instrument for measuring health-related quality of life which should be based on a broad range of variables, not on a single issue such as disease. Health-related quality of life scale is developed to explore what impact cardiovascular diseases have on the patients’ psychological, physiological, organizational, personal and social, and physical effects of life, rather by focusing exclusively on the disease itself.

The term “coping” is used to denote the way of dealing with stress, or the effort to master conditions of harm threat, or challenges when a routine or automatic response is not readily available. Psychologists have identified two different ways/strategies in which people cope with stress. They are: active/effective/functional, passive/ineffective/dysfunctional. These approaches are explained in greater detail in chapter one.

The present study has set the following objectives:

1. To examine the impact of awareness of coronary artery disease (Myocardial Infarction, angina pectoris) in patients on various health-related quality of life dimensions (Psychological, physiological, organizational, personal and social, physical).
2. To examine the impact of awareness of hypertension in patients on various health-related quality of life dimensions.

3. To explore various coping styles or strategies in patients who are suffering from myocardial infarction and angina pectoris.

4. To explore various coping styles or strategies in patients who are suffering from hypertension.

During the last decade of the century that has passed, numerous studies have been carried out on the topics of health-related quality of life and coping behaviour in cardiovascular disease patients, which are reported in chapter two under three major heads, i.e., quality of life, measurement of health-related quality of life, and coping with cardiovascular disease. A major breakthrough occurred in 1995 when The WHOQOL group defined the term quality of life. An effort is underway to give the precise definition of the term quality of life in order to determine the nature of the cardiovascular diseases and their impact on psychological, physiological, organizational, personal and social, and physical changes observed by the patients. Most attempts to evaluate quality of life in cardiovascular disease patients have focussed on psychological outcomes. Few studies have attempted to characterize the health status and impacts of cardiovascular disease on the health-related quality of life.

For the purpose of the present investigation, 105 myocardial infarction, 35 angina pectoris, and 60 hypertensive patients or subjects were
drawn from the OPD of the department of Cardiology and the department of Medicine, Institute of Medical Sciences, B.H.U. Varanasi.

Patients were contacted individually and were administered Health-Related Quality of Life (HRQOL) scale, Coping Behaviour Scale (CBS), and Personal Data Sheet (PDS) on one day. They were assured that their response would be kept strictly confidential and will be used for research only.

Simple percentages and rank-difference correlation coefficients were calculated. Rank-difference correlation coefficients revealed the following results:

- Rank difference correlation coefficients were found to be significant at 0.01 level in the ranking between myocardial infarction and angina pectoris, myocardial infarction and hypertensive, and angina pectoris and hypertensive patients on the psychological, physiological, organizational, and physical effects of HRQOL scale.

- On the 'personal and social effects' dimension of HRQOL scale rank-difference correlation coefficient was not found to be significant in the ranking between myocardial infarction and angina pectoris, myocardial infarction and hypertension and angina pectoris and hypertensive patients.

- Rank difference correlation coefficients were found to be significant at 0.01 level in the rankings between myocardial infarction and angina pectoris, myocardial infarction and hypertension, and angina pectoris and hypertensive patients on coping behaviour scale.
To sum up, the findings of the present investigation clearly indicate that the similarity exists in ranking among myocardial infarction, angina pectoris and hypertensive patients on psychological, physiological, organizational, and physical effects observed due to cardiovascular diseases. Results of this study also provide evidence that the patients are using multiple coping strategies to cope with illness. None of these strategies is inherently good or bad. How well the strategy work depends on the patient’s condition or severity of illness, age, how frequently they are used, and the period to which they are used.
Chapter Six

CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS FOR FUTURE RESEARCH

Conclusions

The findings of the present study have led to certain conclusions.

- The present research has contributed significantly to the understanding of disease awareness and its effects on the health related quality of life. It is hoped that the use of health-related quality of life indicators or factors can encourage a more holistic approach to assessment.

- In general, the assessment of health-related quality of life can contribute towards the improvement in the quality of health care and well-being.

- Assessment of the coping behaviour can be used as an outcome measure in research on the relative benefits of different treatment methods. For example, yoga or exercise may have equal efficacy against the myocardial infarction or angina pectoris, but if the health-related quality of life of patients is significantly better with one method, it should be preferred.

- These coping styles or engagement strategies can potentially reduce cardiovascular risk, ameliorate the burdens of illness, and promote recovery and rehabilitation.
Implications

A regimen of psychosocial and physical interventions concerning to coping behaviour and life-style modifications, exercise, walking, relaxation, positive thinking, healthful dietary and activity patterns can be the best approach for disease prevention and healthy living. The most important application, however, is perhaps in sensitizing health care professionals to look beyond diseases, disabilities and symptoms. The instruments of health-related quality of life and coping behaviour can help to identify the ways in which disease affects people and to find suitable interventions. It can also encourage health care professionals to focus attention on the positive aspects of CVD patients’ lives and how they can be strengthened.

The findings of the present study have clinical utility and implications for rehabilitation professionals. It could be argued that if the physicians or cardiologists referred their patients of cardiovascular diseases, to the clinical or health psychologists, who adopt a more skill training approach, for the rehabilitation of persons who survive cardiac disease should consider focussing on instilling in the patients more active, problem focussed, and approach oriented coping skills. Since coping effectiveness is often enhanced through the use of cognitive behavioural skill training (Devins & Binik, 1996; Meichenbaum, 1977), Cardiologists may get benefit from psychologists’ expertise in using skill training for the rehabilitation of the patients. Types of cognitive-behavioural skill training are problem solving,
decision making, goal attaining, cognitive restructuring, and reframing, self-monitoring, progressive relaxation, and stress inoculation. Psychologists may employ these programmes to help the clients, referred by the cardiologists or physicians, to improve their skills of managing stress emotional distress, and enhancing well-being.

The results of the present study have special implications for the management. The results of the present study reveal that the cardiovascular disease has organizational effects on the patients. Therefore, every effort should be made to provide a healthy climate in the organization and thereby enhancing the level of commitment with job and reducing absenteeism among employees suffering from cardiovascular disease.

**Recommendations for Future Research**

The research agenda for studying health-related quality of life and coping behaviour of coronary artery disease and hypertensive patients is challenging. Despite the spurt of research work in the field of cardiovascular disorder there are some areas that need to be explored further in order to gain better understanding of the phenomena.

- The awareness of risk factors associated with cardiovascular disease.
- To what extent disease per se affect the health-related quality of life of the patients suffering from various stress-related disorders.
- Role of behavioural, familial, environmental and psychosocial factors on individuals in the development of cardiovascular disease.
- There is a need to extend this study to female patients and to compare the results of analyses from the male patients.

- Research on the role of psychological and behavioural factors in the management of cardiovascular disease must be expanded. For example, the role of 'hardiness', 'social support', 'ego-strength', 'learned optimism', and so on.

- The role of individual techniques, or engagement strategies such as exercise, walking, yoga or relaxation techniques positive reappraisal, seeking social support, recreational activities should be adopted for the rehabilitation of cardiovascular disease patients.

- Further research should also explore certain other dimensions of health-related quality of life and coping behaviour among diverse samples.

- An important research area concerns the way patients' kith and kin view their health. We know little about the children's benefits concerning the health of their parents.

- The community health intervention programmes should demonstrate clearly about future benefits of interventions on health. For example, prevention of cigarette smoking, physical exercise and reducing cholesterol, proper dietary habits may result in the prevention of lung and heart diseases later in life.

- The influence of social and environmental variables such as socioeconomic status, caste, lack of social support, unemployment,
occupational stress, geographical region, and so on in increasing the risk for cardiovascular diseases.

- Finally, there is a need to integrate behavioural or psychological and pharmacological approaches in achieving better quality of care for cardiovascular disease patients and in improving patients' quality of life. It is likely that no one approach to improving health-related quality of life will be successful and that a range of techniques including education of doctors and patients, use of guidelines, clinical audit, and so on will be needed.
REFERENCES
REFERENCES


Sushutha Samhita of Sushruta with commentary of Dalhanacharya (1915). Edited by Jadavji Trikumji Acharya, Nrnaya Sagar Press, 60.


APPENDICES
Appendix I

PERSONAL DATA SHEET (PDS)

Name: ....................................................  C.C.No.: ..............................................
Age: .......................................................... Marital Status: ................................
Occupation: ................................................ Weight: ............................................
Address: ..........................................................................................................................
.............................................................................................................................................
.............................................................................................................................................
Diagnosis: ..........................................................................................................................
Family History of CVD: ........................................................................................................

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 Attack or M.I.: .............................................................................................
**Appendix II**

**HEALTH-RELATED QUALITY OF LIFE (HRQOL) SCALE**

We are interested in finding the changes that you might have observed in your behaviour after you come to know that you are suffering from certain cardiovascular disease. Consider each of the listed behaviour and indicate whether the change in respect of each of the listed behaviour has been observed or not observed to you.

Every item is prefaced by I feel/have ....

<table>
<thead>
<tr>
<th>Psychological Effects</th>
<th>Observed</th>
<th>Not observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Aggressive</td>
<td>---------</td>
<td>--------------</td>
</tr>
<tr>
<td>2. Anxious</td>
<td>---------</td>
<td>--------------</td>
</tr>
<tr>
<td>3. Apathetic</td>
<td>---------</td>
<td>--------------</td>
</tr>
<tr>
<td>4. Depressed</td>
<td>---------</td>
<td>--------------</td>
</tr>
<tr>
<td>5. Difficulty in controlling anger/emotions</td>
<td>---------</td>
<td>--------------</td>
</tr>
<tr>
<td>6. Fear of getting a heart attack</td>
<td>---------</td>
<td>--------------</td>
</tr>
<tr>
<td>7. Feeling that my motivation level is low</td>
<td>---------</td>
<td>--------------</td>
</tr>
<tr>
<td>8. Frustrated</td>
<td>---------</td>
<td>--------------</td>
</tr>
<tr>
<td>9. Hostile</td>
<td>---------</td>
<td>--------------</td>
</tr>
<tr>
<td>10. Hypersensitivity to criticism</td>
<td>---------</td>
<td>--------------</td>
</tr>
</tbody>
</table>
11. Impatient
12. Irritable
13. Loneliness
14. Loss of memory
15. Low self-esteem
16. Nervous
17. Overwhelmed by circumstances
18. Reacts poorly

**Physiological Effects**

1. Blood glucose level is high
2. Blood pressure is high
3. Difficulty in breathing
4. Distribution of blood in the body is not proper
5. Dryness of the mouth
6. Heart rate / beat increases
7. Hot and cold flashes
8. Lipid level is high

**Organizational Effects**

1. Difficulty in time management and work
2. Difficulty in planning of vacations
3. Difficulty over the planning of work
4. Dissatisfied with job
<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>5.</td>
<td>Frequent absence</td>
</tr>
<tr>
<td>6.</td>
<td>Isolated from co-workers</td>
</tr>
<tr>
<td>7.</td>
<td>Job-stress</td>
</tr>
<tr>
<td>8.</td>
<td>Lack of participation</td>
</tr>
<tr>
<td>9.</td>
<td>Lack of responsibility at work</td>
</tr>
<tr>
<td>10.</td>
<td>Productivity performance becomes low</td>
</tr>
<tr>
<td>11.</td>
<td>Reduced interest in job</td>
</tr>
</tbody>
</table>

**Personal and Social Effects**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Attending few marriage and social parties</td>
</tr>
<tr>
<td>2.</td>
<td>Change in living condition and personal habits</td>
</tr>
<tr>
<td>3.</td>
<td>Decrement in creativity</td>
</tr>
<tr>
<td>4.</td>
<td>Drug dependency</td>
</tr>
<tr>
<td>5.</td>
<td>Lack of participation in recreational activities</td>
</tr>
<tr>
<td>6.</td>
<td>Low frequency of visiting, phoning or writing someone</td>
</tr>
<tr>
<td>7.</td>
<td>Poor decision making</td>
</tr>
<tr>
<td>8.</td>
<td>Problem solving capabilities are being reduced</td>
</tr>
<tr>
<td>9.</td>
<td>Underutilization of skills and abilities</td>
</tr>
</tbody>
</table>

**Physical Effects**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Awakening often at night</td>
</tr>
<tr>
<td>2.</td>
<td>Change in diet and eating habits</td>
</tr>
</tbody>
</table>
3. Chest pain
4. Dizziness
5. Fainting
6. Fatigue
7. Headaches
8. Inactivity
9. Insomnia
10. Loss of energy
11. Poor physical health
12. Restlessness
Appendix III

COPING BEHAVIOUR SCALE (CBS)

Every individual adopts different ways of coping with disease. You are required to put a check mark (✓) against those coping mechanisms which you consider as the important ways of coping the disease. Every item is prefaced by I am maintaining / doing / taking the following useful steps.

1. Balanced nutrition and diet (i.e. Intake of calories, reduced salt content, Prevention of unhealthy dietary habits - fast food).
2. As usual continuing to take abusive drugs (Smoking, Alcohol, etc.).
3. Control of body weight.
4. Exercise, Yoga, etc.
5. Regular physical checkup.
6. Seeking social support and practical support from family members/spouse.
7. Medication (Tranquilizers, and/or prescribed drugs).
8. Rest / Relaxation, Adequate sleep.
9. Meditation and Devotion to God.
10. Recreational activities (watching T.V., reading, shopping with family and friends, visiting).
11. Prayer, visiting to holy places or attending religious congregations.
12. Distribution of proper time at work and home life.
13. Fitness activities (stair climbing, cycling, walking, running).
14. Pleasure and humour talk.
15. Behaviour disengagement (Giving up the trying / attempt to cope).
16. Hobbies and leisure activities (Gardening, Gossiping).
17. Adhering to advice of doctors / consultants.
18. Diverting attention from discussion on the topic of illness
19. Optimistic attitude towards life.
20. Readjustment of style of living, habits and daily routine.