CHAPTER I

INTRODUCTION

Health is wealth – a proverb – to live as healthy as possible for as long as possible is the natural wish of every person for oneself and for his/her family (Mehta, 2002). In this regard stress plays its own role. And as stress normally is a healthy one that motivates, moves the person for usual daily routine. Stress is a pressure – force and a strain, a state of physical mental tension. Some take it as usual phenomena and some others take it rather seriously. And yet we do need some stress in our regular lives that brings positive outcomes for. Positive stress gives energy to work and results in increased productivity. On the other hand negative stress can perpetuate a down word spiral and may lead to more serious and complicated situations. Hence stress is one of the very important causes for victims of heart attack in this modern style of life. (www.psyc1/).

Heart is life giving wonderful pump, a simple machine with a sacred mission. William Harvey termed the heart as “the sovereign of the body”; today man knows the heart as a technical motor piece and a timeless metaphor. In composition heart is a muscular organ that maintains the life by pumping blood to all over the body throughout life. It is protected in a bone structured chest cavity. The heart links body to the spirit. And further heart is attached to a seat of mind with different chores of feelings and emotions.

CONCEPT OF HEART ATTACK

Medical terminology acute myocardial infarction (AMI or MI), and more commonly known as a ‘heart attack’, is a medical condition that occurs when the needed blood supply to a part of the heart is interrupted. The resulting ‘ischemia’ or
oxygen shortage causes damage and that leads to the potential death of heart tissue. At this stage it is a medical emergency, and the leading cause of unfortunate death for both men and women.

INCIDENCE

Myocardial Infarction (MI) is a common presentation of ischemic heart disease. The WHO estimated that in 2002, 12.6 percent of deaths worldwide were from ischemic heart disease, and reported that ischemic heart disease is the second leading cause of death in developed countries.

FACTORS AFFECTING CARDIAC DISEASES

The combined effect of stress, anxiety, hostility, anger, aggression, depression and Type A personality are important related factors relevant to Coronary Heart Disease (CHD) in addition to other factors. (Friedman and Booth-Kewley 2001).

When a person resorts to smoking and drinking alcohol in order to reduce the stress, that will lead to atherosclerosis. The other physical and physiological risk factors for myocardial Infarction and other cardiac conditions in addition to stress are: (i) Old age (ii) Male gender (iii) Hypercholesterolemia (more accurately hyperlipoproteinemia, especially high low-density lipoprotein and low high density lipoprotein) (iv) Diabetes (with or without insulin dependent) (v) High blood pressure (vi) Obesity. (vii) Socioeconomic factors such as inadequate education and lower income (particularly among women), and living with a partner may also contribute to the risk of MI (viii) Women who use combined oral contraceptive pills have a modestly increased risk of myocardial infarction. (ix) Inflammation in periodontal disease may be linked to coronary heart disease. (x) Possibly Genetic factor (xi) Congenital heart anomalies and (xii) Rheumatic disease of the heart.
Rahe et al (1974) interviewed relatives of sudden cardiac death victims by using survivors of myocardial infarction as controls. They found that both victims and survivors experienced substantial changes in their lives during the previous six months before the event; but those who died experienced more changes than that did those who survived such an attack. And those who died had increased problems at home and workplace and with interrelationship with family and friends.

**PATHOPHYSIOLOGY**

When a person is constantly under stress, this brings stimulation to sympathetic nervous system; this, in turn, stimulates releasing of adrenocorticotropic hormone (ACTH), cortisol, adrenaline and noradrenaline. These hormones bring about vasoconstriction and releasing excess of glucose to meet the forthcoming fight or flight. This chain reaction causes all the muscles to become stiff, filled with extra energy. All these factors stimulate general vasoconstriction leading to raise blood pressure. The same vasoconstriction also causes coronary vasoconstriction; in such a condition, cardiac muscles do not get sufficient blood supply. In order to seek blood supply coronary vessels go into spasms. This condition is called Ischemic Heart Disease or Angina Pectoris. Myocardial infarction (heart attack) is in fact the irreversible damage of the myocardial tissue caused by prolonged ischemia and hypoxia. Most commonly this occurs when a coronary artery becomes occluded, due to formation of a blood clot (coronary thrombosis). This occurrence can also trigger coronary vasospasm. If a blood vessel becomes completely occluded, then the myocardium normally supplied by that vessel will become ischemic and hypoxic. The affected tissue dies without sufficient oxygen. The hypoxic tissue within the border zone may become a site for generating arrhythmias. So collateral blood flow is an important determinant of infarct size and subsequently, whether or not the border zone
becomes irreversibly damaged. Infarcted tissue does not contribute to tension
generation during systole, and therefore can alter ventricular systolic and diastolic

**SYMPTOMS**

The onset of symptoms in myocardial infarction (MI) is usually gradual, over
several minutes, and rarely instantaneous. Chest pain is the most common symptom of
acute myocardial infarction and is often described as a sensation of tightness, pressure,
or squeezing. Chest pain due to ischemia (a lack of blood and hence lack of oxygen
supply) of the heart muscle is termed angina pectoris. Pain radiates most often to the
left arm, but may also radiate to the lower jaw, neck, right arm, back, and epigastrium,
where it may mimic heartburn. Any of the groups of symptoms compatible with a
sudden interruption of the blood flow to the heart are called as ‘acute coronary
syndrome’. Other conditions such as aortic dissection or pulmonary embolism may
present with chest pain and must be considered in the differential diagnosis. Further,
chest pain may be absent in chronic diabetes patients and old age people as well.

Shortness of breath (dyspnoea) occurs and when the damage to the heart limits
the output of the left ventricle, causing left ventricular failure and as such consequently
pulmonary edema occurs. Other symptoms include diaphoresis (excessive sweating),
weakness, light-headedness, nausea, vomiting, and palpitations. Same time loss of
consciousness and even sudden death may occur during myocardial infarction. In
general approximately half of all MI patients have experienced warning symptom as
DIAGNOSIS

World Health Organization (WHO) criteria have classically been used to diagnose MI; a patient is diagnosed with myocardial infarction if two (probable) or three (definite) of these criteria are satisfied; Clinical history of ischemic type chest pain lasting for more than 20 minutes changes in serial ECG tracings rise and fall of serum cardia biomarkers such as creatine phospho kinase (CPK-MB), troponin I, and lactate dehydrogenase isozymes specific for the heart.

The WHO criteria were refined in 2000 to give more prominence to cardiac biomarkers. According to the new guidelines, a cardiac troponin rise accompanied by either typical symptoms, pathological Q waves, ST elevation or depression or coronary intervention are diagnostic of MI.

PHYSICAL EXAMINATION

The general appearance of patients may vary according to the experienced symptoms; the patient may be comfortable, or restless and in severe distress with an increased respiratory rate. A cool and pale skin is common and points to vasoconstriction. Some patients have low-grade fever (38–39 °C). The blood pressure may be elevated or decreased, and the pulse could be irregular. If heart failure ensues, elevated jugular venous pressure and hepatojugular reflux, or swelling of the legs due to peripheral edema may also be found on inspection, this symptoms is more common in sub acute and chronic patients. Rarely, does a cardiac bulge with a pace different from the pulse rhythm can be felt on precordial examination. In addition various abnormalities may be found on auscultation; such as a). a third and fourth heart sound, b). systolic murmurs, c). paradoxical splitting of the second heart sound, d). a pericardial friction rub and rales over the lung.
MANAGEMENT

A heart attack is a medical emergency which demands both immediate attention and activation of the emergency medical services. The ultimate goal of the management in the acute phase of the disease is to salvage as much of myocardium as possible and thus prevent any further complications. As time passes, the risk of damage to the heart muscle increases; hence the phrase in myocardial infarction, "time is muscle," and more time wasted means more muscle is lost. Even the treatment itself may have a lot of complications. If attempts to restore the blood flow that is initiated after a critical period of only a few hours, the result is reperfusion injury instead of amelioration. The first line: Oxygen, aspirin, glyceryl trinitrate (nitroglycerin) and analgesia (usually morphine, hence the popular mnemonic MONA (morphine, oxygen, nitroglycerine, aspirin) are administered as soon as possible.

There are some preventive measures for ischemic heart diseases like; avoiding stress-full life, maintenance of proper weight by maintaining good nutritious low fat diet, regular exercises like walking, swimming etc., yoga, pranayama and dhyana, avoiding smoking and alcohol, control of diseases like diabetes mellitus, hypertension, hypercholesterolemia etc. The prognosis of Ischemic heart disease is always better in non diabetic patients rather than in diabetic patients.

HEART SURGERY

The open heart surgery is a surgery, where the chest is opened and surgery is performed on the heart muscle, valves, arteries, or other heart structures (such as the aorta). The term "open" means that the chest is "cut" open. A heart-lung machine (also called cardiopulmonary bypass) is usually used during open heart surgery. While the surgeon works on the heart, the machine helps to provide oxygen-rich blood to the brain and other vital organs.
The definition of open heart surgery has become confusing with new surgical procedures being performed on the heart through smaller incisions. However, of late some new surgical procedures are being performed with the heart still beating.

The cardiovascular surgery is a surgery on the heart and/or on great vessels performed by cardiac surgeons. Frequently, this is done to treat complications of ischemic heart disease (for like example, coronary artery bypass grafting), correct congenital heart disease, or treat valvular heart disease caused by various causes including endocarditis. It also includes heart transplantation. Heart surgery is done to correct problems with the heart. Heart surgery is used to correct heart problems in children and adults too.

**STRESS**

Stress is an expected part of life in today’s society. Therefore there is no person without some level of stress or the other. Hence how we deal with our stress is important to our overall well-being. Because stress is a pressure, force, strain, a state of physical or mental tension including it or affecting something else. Normally optimum stress is a healthy one that motivates, moves the person for day today work. Some take stress as routine phenomena and some take it very seriously. In everybody’s life many of the instances create and aggravate the person at higher level of strain and stress. (www.psyc1).

Stress is an experience, which always arises when an individual finds it difficult to cope with the changes or challenges that arise out of his/her environmental events. Environmental events, which cause or produce stress, are known as stressors. The stressors can be physical, psychological, social, political, economic, organizational, and religious etc. And stress is a challenging event requiring physiological, emotional, cognitive, and behavioral adaptations (Pestonjee 1992)).
Life is stressful enough due to rapid changes that have been happening at a faster rate. This is because of advancement of science and technology and fast changes are taking place in various other spheres of human endeavor like health, education, environment, work, family, travel, etc. Stress increases in such circumstances, where individuals perceive they have no control over the happenings around. The idea stirs up many images – rushing to work, watching the stock market drop daily, seeing hailstorm or tsunami that wipes out large number of lives and crops, working long into the night on an urgent project. All of these situations build up into an irritation, fatigue and finally builds up into stress in such situations results exert pressure, conflict, loss of self control and uncertainty and such other negative features prevails. These problems can lead to a variety of problems for a person under strain and subsequently all members of family.

When stressed our body creates extra energy to protect itself from the impending complicated situation. This additional energy cannot be destroyed and it has to find a safe outlet. If not used it creates an imbalance within our system. Somehow the energy must be channeled into responses to regain a balance (Pestonjee 1992).

Yet, stress is a natural part of our life. Without some stress we would lose even our energy for living. Excess stress in our life interferes with our interpersonal relationships at home, on the job and socially. So stress can waste our vitality and deplete our personal energy resources that could have been used for physical and mental balanced health. Medical research estimates as much as 90 percent of physical and mental illness and disease are stress-related (Pai S and Kapur 1981)

The word stress has been derived from the Latin word Strictus meaning hardship, adversity, or affliction. It later evolved during Middle English period to be known as Stresse and old French as estresse. It has been used in physical science,
medical science, psychology, and behavioral sciences. There in stress has been defined from three perspectives, namely environmental or external to body, as a mental state of tension or internal, and the body’s own physical reaction. (Stuart 1995).

Hans Selye (1976) defined Stress as “a non specific response of the body to any demand made upon it”. He found that the same arousal response could be evoked by various differing situations.

Theories of stress that focus on the specific relationship between external demands (stressors) and bodily processes (stress) can be grouped in two different categories: a). approaches to ‘systemic stress’ based on physiology and psychobiology (among others, Selye 1976) and b). approaches to ‘psychological stress’ developed within the field of cognitive psychology (Lazarus 1966, 1991, Lazarus and Folkman 1984)

Selye (1976) defines stress as “a state manifested by a syndrome which consists of all the non-specifically induced changes in a biological system.” This stereotypical response pattern, called the ‘General Adaptation Syndrome’ (GAS), proceeds in three stages. (a) The alarm reaction comprises of initial shock stage and a subsequent counter shock phase. The shock phase exhibits autonomic excitability, an increased adrenaline discharge, and gastrointestinal ulcerations. The counter shock phase marks the initial operation of defensive processes and is characterized by increased adrenocortical activity. (b) If noxious stimulation continues, the organism enters the stage of resistance. At this stage, the symptoms of the alarm reaction disappear, which seemingly indicates the organism's adaptation to the stressor. However, while resistance to the noxious stimulation increases, resistance to other kinds of stressors decreases at the same time. (c) If the aversive stimulation persists, resistance gives way to the stage of exhaustion. The organism's capability of adapting to the stressor is
exhausted, the symptoms of stage of shock reappear, but resistance is no longer possible. Irreversible tissue damages appear, and, if the stimulation persists, the organism ultimately dies.

Lazarus (1991) developed a comprehensive emotion theory that also includes a stress theory (cf. Lazarus 1993). This theory distinguishes two basic forms of appraisal, primary and secondary appraisal. These two forms rely on different sources of information. Primary appraisal concerns whether something of relevance to the individual's well being occurs, whereas secondary appraisal concerns with coping options.

Specific patterns of primary and secondary appraisal lead to different kinds of stress. Three types are distinguished: harm, threat, and challenge (Lazarus and Folkman 1984). Harm refers to the (psychological) damage or loss that has already happened. Threat is an anticipation of harm that may be imminent. Challenge results from demands that a person feels confident about mastering the situation.

The stressors have been found to have negative impacts on physical and psychological wellbeing (Lin & Ensel, 1989). In his discussion of the relationship between stress and chronic illness, Zautra (1996) suggested that chronic strains may have the greatest adverse impact on physical and mental health. It seems evident that stress in any form has the potential to present a challenge to the individual. Furthermore, the interaction between the three types of stressors is acknowledged but not well understood. Dumont and Provost (1999) Plancherel, Bolognini, Bettschart, Dumont, & Halfon, 1997) all of them found that daily hassles may act as a mediator of the effect of life events on mental health, thus suggesting that daily hassles not only trigger stress but also effect the perception of ability to cope with more major stressful events.
The Dictionary of Oxford defines the word stress as a “State of affair involving demand on physical or mental energy, a condition, or circumstance which can perturb the normal physiological and psychological functioning of an individual.

The stress is defined as a perturbation of the body’s homeostasis on the medical parlance. This demand on the body-mind energy occurs when it tries to cope with incessant changes in life.

Stress is the “wear and tear” of our bodies experience as we adjust to our continually changing environment. It has physical and emotional effects on us and can create positive or negative feelings. As a positive influence, stress can compel us to action. As a negative influence, it can result in feelings of disruption, rejection, anger, and depression, which in turn can lead to health problems such as headache, upset stomach, rashes, insomnia, ulcers, high blood pressure, heart disease, and even stroke etc. (Beck CK et al (1997).

The stress results in constant arousal and anxiety, causing the body to react with heart palpitations, continual sweating, stomach acidity, muscle spasms, and high blood pressure. The long term, stress can cause irreparable damage to our physical and mental health, disturbing well-being and cardiac function also. (R. Kapadia. 2000).

There are two types of sources of stress i.e. external and internal sources. External stressors include: Physical environment: namely noise, bright lights, heat, confined spaces; Social (interaction with people) which includes rudeness, aggressiveness on the part of someone else. Organizational: rules, regulations, “red tape,” deadlines. Major life events: death of a relative, lost job, promotion, new baby. Daily hassles: commuting, misplacing keys, mechanical breakdowns.
Internal stressors include: Lifestyle choices: caffeine not required sleep, overloaded schedule, and unhealthy diet. Negative self-talk: pessimistic thinking, self-criticism, over-analyzing. Mind traps: unrealistic expectations, taking things personally, all-or-nothing thinking, exaggerating, and rigid thinking. Stressful personality traits: The perfectionist, workaholic, have to please others etc. (Pestonjee 1992).

The authors have given some suggestions to decrease stress; these include change of life styles like a). decrease caffeine intake (coffee, tea, colas, chocolate), maintain a well-balanced diet, b). decrease consumption of junk food, c). regular exercises (at least 30 minutes,), adequate sleep, d). time-outs and leisure time and relaxation exercises.

The researchers have suggested some approaches to affect change in some stressful situations on time and money management, learn appropriate use of problem-solving through coping skills. They have also given some advice to change our thinking on some realistic expectations (because when expectations are more realistic, life seems more manageable), maintain a sense of humor. It is important to be able to see the lighter side in the things we sometimes say and do as they have a support system, reframe our negative thoughts so that we focus on the positive thinking cognitive restructuring.

MayoClinic.comMedical (2005), they have opined on “Stress: Win control over the stress in your life - Your body's stress reaction was meant to protect you”. But when it's constantly on alert, your health has to pay the price. The researchers advised to take steps to keep your stress under control your stress. Stress is a normal psychological and physical reaction to the demands of life. But when an individual is unable to cope well with the stress in life, the mind and body may get adversary affected. If the mind and the body are constantly on edge because of excessive stress in
life, one may face serious health problems. Any long-term activation of the stress-response system and the subsequent overexposure to cortisol and other stress hormones disturb almost all the body’s normal processes. This puts the body at an increased risk of numerous health problems, namely: heart disease, sleep problems, digestive problem, depression, obesity, memory impairment, worsening of skin conditions, such as eczema and so on. That's why it's so important to learn healthy ways to cope with the stressors in one’s life. People who were exposed to extremely stressful events when they were children, such as neglect or abuse, tend to be particularly vulnerable to stress affected diseases when they become adults. Therefore Stress management strategies are very essentials, right from one’s childhood days.

At the best stress provides the strength and energy to either fight or run away from danger as the situation demands. The changes that occur when this system of stress is activated include an increase in heart rate and blood pressure, faster breathing, tensing of muscles, increased mental alertness and sensitivity of sense organs, increased blood flow to the brain, heart and muscles and less blood to the skin, digestive tract, kidneys and liver. At the same time in addition, there would be an increase in blood sugar, fats and cholesterol for extra energy and a rise in platelets and blood clotting factors. All these outcomes would have harmful effects on the body because they decrease the immune function of the body.

Empirical studies point to an inverse relation between socio-economic class and occurrence of ischemic heart disease (IHD). One promising explanation concerns itself with the prevalence of stressful working life, especially of distinct ‘job strain’ occupations. Work-related socio-emotional distress, considered a mismatch between high workload and low control, over occupational status as crucial and distress-provoking conditions. Moreover, the effect of this condition on IHD risk is
substantially increased by the presence of a distinct individual pattern of coping with the work demand. A study on blue collar job men revealed that work-related socio-emotional distress substantially contributes to the occurrence of high IHD incidence among blue-collar job men. (Johannes S., Richard P., Astrid. J., Peter C., Dieter S. (2002)

Researchers have studied the impact of job stress on coronary heart disease (CHD). They found that there does exist an imbalance between personal efforts – competitiveness; work related over commitment and hostility and rewards – poor promotion prospectus and blocked career bring risk for new diseases especially CHD. (Bosna. H., Peter. R., Siegrist J, and Marmot M. (1998).

An expert group of National Heart Foundation of Australia systemically reviewed the reviews of the evidence relating to the major psychosocial factors – depression, social isolation, lack of quality social support and causes and prognosis of CHD. Job control, demands on strain, type A behavior pattern, hostility, anxiety disorder and panic disorders and CHD. Therefore the identified psychosocial risk factors should be taken into account during an individual CHD risk assessment and its management. (Bunker, SJ. et al. 2003).

ANXIETY:

This arousal or stimulation can be defined as a general physiological and psychological activation of the person, bodily that functioning and varies from deep sleep to intense excitement. Anxiety on the other hand is the negative emotional state with intensified feelings of nervousness, worry and apprehension associated with activation or arousal of the body. (Spielberger., CD. and Reheiser, EC. 2009).
Anxiety has two components, the cognitive anxiety or state anxiety; and the other form the somatic anxiety or trait anxiety. The state anxiety is temporary and is always in a changing state of subjective phenomenon consciously perceived feelings of apprehension and tension, which in its final stage, is associated with activation of autonomic nervous system. The distinction between Trait anxiety and State anxiety was introduced by Spielberger (1966, 1975). He further justified that State anxiety may be a complex response, varying in intensity and keeps on fluctuating over time.

The trait anxiety however is behavioral disposition to perceive objectively non-dangerous circumstances as threatening and respond accordingly. Trait anxiety directly related to the personality of the individual. According to Spielberger (1975), trait anxiety or chronic anxiety is relatively stable –personality- characteristic, where state or acute anxiety is assumed to be transitory and situationally dependent.

Eysneck (1992) suggested that trait anxiety may represent a permanent tendency to react to any input from the affective decision mechanism by directing attention towards or away from the location of threat or any critical situation. The presence of evaluative stress, such as in a test situation or during a job interview, leads the subject’s elevation levels of anxiety (Joost Meeijer, 2001). Here the implication is that the presence of evaluative stress would lead to an elevated state of anxiety and thus lowers the quality of performance.

Anxiety includes 1). cognitive anxiety, 2). somatic anxiety and 3). behavioral anxiety. Cognitive anxiety includes worry, and uncertainty, whereas somatic anxiety includes movement changes in the perceived physiological arousal. Behavioral anxiety refers to one’s attention, when its field is narrow that person will have high level of arousal and if it is too broad then that person will have low level of arousal.
Kathryn M King *et al* (2009), conducted a study on “cardiac care differs across socio-demographic strata; one potential contributing factor to such differences is the personality traits of individuals within these strata”. They examined the association between risk-taking attitudes and cardiac patients’ clinical and demographic characteristics.

Anxiety, anger, depression, and curiosity are the major indicators of psychological distress and well-being. (Charles. D. Spielberger and Eric C. Reheiser, 2009).

Scientists have hypothesized a relationship between emotions and the heart for centuries together, and most of the researches support that contention. In particular, a growing body of evidence indicates that negative emotions, including anxiety, are independent risk factors for cardiovascular disease, and that the presence of anxiety in patients with cardiovascular disease increases morbidity and possibly even mortality. Clinicians treating patients with known or suspected cardiac disease are likely to encounter various forms of anxiety, ranging from normal reactions to acute illness to an anxiety disorder masquerading as cardiovascular disease.(Mccan Una D, Fauerbrach James A, Thombs Brett D, 2005).

Several studies have suggested an increased risk of fatal coronary heart disease (CHD) among patients with panic disorder, phobic anxiety, and other anxiety disorders. We prospectively examined this association in the normative ageing study. An anxiety-symptoms scale was constructed and applied and their study revealed that the data suggests strongly an association between anxiety and fatal coronary heart disease, in particular, including some sudden cardiac death. (I. Kawachi, D. Sparrow., PS Vokonas and ST Weiss 1994).
There is strong epidemiologic evidence, that psychological factors, notably anxiety and depression, have definitive effects on the development of coronary artery disease (CAD) and the precipitation of sudden cardiac death (SCD). These psychosocial risk factors exert a profoundly negative effect on quality of life and adversely influence the outcomes of ischemic heart disease from many standpoints, including recurrent hospitalization, an increased incidence of ischemic events, and higher level of mortality. Anxiety is prevalent among such patients with acute cardiac illness and triples the risk for all-cause mortality following MI, almost doubles the risk for reinfarction over 5 years, and thus increases the risk for SCD. Investigators and theorists have pursued the underlying role of psychosocial risk factors in the development and exacerbation of coronary artery disease and sudden cardiac death; most clinicians have generally considered such psychosocial characteristics to be a consequence of cardiac disease. (James LJ., Jr. Theodore A. Stern RC., Pasternak, Roman W., De Sanctis, 2000).

Researchers have undertaken a study to determine the impact of symptoms of depression and anxiety on mortality and the quality of life in patients, hospitalized for acute myocardial infarction (MI). Severity of infarction and evidence of heart failure predicted both cardiac and all causes of mortality. Their conclusions were Symptoms of depression and anxiety did not predict either cardiac or all-cause mortality after MI, but they did predict quality of life among those who lived to 12 months. (Deirdre L, Douglas C., FBPsS, CPsychol, Christopher R., AFBPsS, CPsychol, D. Gareth B. and Gregory Y. H. Lip, 2001).

Anxiety is often present with depression and may be one of its several manifestations. The adverse effects of depression in patients with chronic heart failure (CHF) have been well studied; they have examined the relations among anxiety,
depression, and prognosis too. Although anxiety and depression are highly correlated in CHF patients, depression alone predicts a significantly worse prognosis for these patients. (Wei Jiang, Maragatha Kuchibhatla, Michael S. Cuffe, Eric J. Christopher, Jude Alexander, Greg L. Clary, Michael A. Blazing, Laura H. Gaulden, Robert M. Califf, Ranga R. Krishnan, Christopher M. O’Connor, 2004)

Researchers sought to compare symptoms of depression and anxiety as predictors of incomplete recovery after a first myocardial infarction (MI). They have examined the effect of emotional distress on health care consumption and whether depressive symptomatology is a better predictor of prognosis than anxiety. After an average follow-up of 3 to 4 years, Symptoms of both depression and anxiety were certainly associated with cardiac events. They concluded that symptoms of depression and anxiety were undeniably associated with cardiac events. Anxiety was an independent predictor of both cardiac events and increased health-care consumption and accounted for a definitive relationship between depressive symptoms and prognosis. Symptoms of anxiety need to be considered with regard to the risk stratification and treatment of post-MI patients. (Jacqueline J.M.H Strik, Johan. D., Richel L., Adriaan Honig, 2003).

COPING:

Coping is the process of managing circumstances, expending effort to solve personal and interpersonal problems, and seeking to master, at least to minimize, reduce or tolerate the impending stress or conflict. While coping with stress, people tend to use one of the three main coping strategies: 1). appraisal focused, 2). problem focused, and 3). emotion focused coping. Appraisal-focused strategies occur when the person modifies the way he thinks. People using problem focused strategies try to deal with the cause of their problem. Emotion focused strategies help in releasing of pent-up
emotions, distracting one-self, managing hostile feelings, meditating, using systematic relaxation procedures, etc. Men often prefer problem focused coping, whereas women can often tend towards an emotion focused coping. Problem focused coping mechanisms may allow an individual greater perceived control over their anxiety problem, while emotion focused coping may more often, lead to a reduction in perceived control. Certain individuals therefore feel that problem focused mechanisms represent a more effective means of coping with the perceived anxiety or stress problems. (Pestonjee 1992).

Coping in behavioral and cognitive efforts is invested by an individual to deal with stressful encounters. Coping is also described as having two main components: (1) problem-focused coping, aimed at changing, managing or tolerating the stressful encounter, and (2) emotion-focused coping, aimed at changing or managing the affective and physiological outcomes of the stressful situation, without actually changing the encounter itself. (Lazarus and Folkman (1984), Problem-focused strategies usually are found to be adaptive or effective when the stressful situation is manageable (Carver, Scheier, 1989). The use of emotion-focused strategies seems to be appropriate in the context of uncontrollable situations. However, emotion-focused strategies differ in their presumed effectiveness, and some, such as ventilation or avoidance, are found to be ineffective even when the stressful occurrence is not under the individual's control (Ben-Zur, 1999).

Coping behavior is a person's cognitive and behavioral effort to manage the internal and external demands appraised as taxing or overwhelming. Coping has two functions: dealing with the problem that causes the distress, which is referred to as problem – focused coping and of regulating emotions and distressful conditions which is called as emotion based coping (Lazarus & Folkman, 1984).
The different ways of coping have been found to be more or less adaptive. In a meta-analysis, Suls and Fletcher (1985) have compiled studies that have examined the effects of various coping modes on several measures of adjustment to this kind of illness. The authors have concluded that avoidant coping strategies seem to be more adaptive in the short run whereas attentive-confrontative coping is more adaptive in the long run. It remains unclear, however, as to how the specific coping responses of a patient struggling with a disease can be classified into broader categories.

There are many attempts to reduce the total of possible coping responses to a parsimonious set of coping dimensions. Some researchers have come up with two basic dimensions—such as instrumental, attentive, vigilant, or confrontative coping on the one hand, in contrast to avoidant, palliative, and emotional coping on the other (Parker & Endler, 1996; Schwarzer & Schwarzer, 1996; Suls & Fletcher, 1985).

A well-known approach has been put forward by Lazarus and Folkman (1984), who discriminate between problem-focused and emotion-focused coping. Another conceptual distinction has been suggested between assimilative and accommodative coping, the former aiming at an alteration of the environment to suit oneself, and the latter aiming at an alteration of oneself to the environment (Brandtstädter, 1992). In this regard this pair has also been coined "mastery versus meaning" (Taylor, 1983, 1989) or "primary control versus secondary control" (Rothbaum, Weisz, & Snyder, 1982). These coping preferences may occur during a certain time order when an individual first tries to alter the demands that are at stake, and then, after failing, turn inward to reinterpret and introspect his plight and find at least some subjective meaning in it.

Coping has also a temporary aspect too. One can cope before a stressful event takes place, while it is still happening, or thereafter. Beehr and McGrath (1996) distinguish five situations that create a particular temporal context: (a) Preventive
coping: Long before the stressful event occurs, or might occur in the future. (b) Anticipatory coping: when the event is anticipated soon. (c) Dynamic coping: while it is ongoing. (d) Reactive coping: after it has happened. and (e) Residual coping: long afterwards, by contending with long-run effects. (Hanoch Livneh (1999)

Klauer and Filipp (1993) have identified five coping strategies normally: (a) Seeking social integration, (b) rumination, (c) threat or fear minimization, (d) turning to religion, and (e) seeking information.: all such factors that lead to relaxation to cope with the stressful event.

Lazarus and Folkman (1984) and others have suggested that the coping process consists of four steps: 1). The first step is appraisal. 2). The second step involves assessing one's coping resources and the likelihood that various coping strategies will be effective, culminating in the selection of a coping strategy. 3). The third step involves carrying out the selected coping strategy. 4). Finally, the fourth step involves evaluating one's coping efforts. The fundamental component of the coping process is of course appraisal. It includes an evaluation of both the demands of the situation and the resources the person brings to bear on that tense situation. Once a situation has been appraised as being threatening or stressful, the appraisal process continues. At this point, the person evaluates what might be done about the situation, including an assessment of the available coping alternatives, the likelihood that a particular action may have the desired result, and the degree to which the individual can actually carry out or implement the desired action.

People also learn coping mechanisms as they progress through life. Some people tend toward coping mechanisms that are helpful, while others choose defense mechanisms that can and may actually increase stress. A person may use stress as a reason to exercise in learning and expressing a healthy coping mechanism. Another
person who turns to alcohol or drugs, eating disorders, or workaholic behavior may resort to coping mechanisms that are both dangerous and unhealthy. (Pestonjee 1992)

Coping mechanisms in the therapeutic sense involve: 1). meditation, 2). cognitive behavior therapy, and 3). recognition of the body’s inappropriate response to stress. These are only a few of the coping mechanisms that can be learned through therapy. Therefore they can result in fewer incidences of panic, inappropriate anger, or turning to unhelpful and positively harmful behaviors like using alcohol to reduce stress. (R. Kapadia 2000).

A coping skill is a behavioral tool, which may be used by individuals to offset or overcome adversity, advantage, or disability without correcting or eliminating the underlying condition of stress. Virtually all living beings routinely utilize coping skills in daily life. When helping humans deal with specific problems and professional counselors have found that a focus of attention on coping skills (with or without remedial action) often helps individuals. The range of successful coping skills varies widely with the problems to be overcome and with the willing or unwilling victim. However, the learning and practice of coping skills are generally regarded as very helpful in case of most individuals. Even the sharing of learned coping skills with others is often beneficial. (Hanoch L. 1999)

Hanoch Livneh (1999), has written in his research paper - psychosocial adaptation to heart diseases: The role of coping strategies, in which he has referred to and analyzed different coping strategies whereas clinicians and researchers have shown increasing interest in the study of the relationship between coping strategies and psychosocial adaptation to stressful life events like loss, trauma, disease and disability.

Hasida Ben-Zur (2000) wrote in her study about, patients, who are undergoing coronary artery bypass graft surgery (CABG). The patients had several different types
of coping strategies. The post-CABG period was characterized by a fewer working hours, a higher level of physical exercise, a reduction in smoking, and more appropriate nutritional habits, compared with the preoperation period. Thus confirming that stress and anxiety are caused by tension and man caused event.

Researchers have explored the role of resource factors and coping strategies about recovery from surgery from among 174 patients who had undergone undergoing coronary artery bypass graft surgery. Patients had completed answering questionnaires and they were interviewed before and 1 week after surgery on measures of self-efficacy, social support, social resources, coping, emotions and worry. Results show that coping and coping resources were found to be meaningful and important. Recovery was facilitated or inhibited by the use of specific and particular coping strategies. Coping is seen as a more proximal predictor of post surgery behavior, and thus as a mediator also. The support factor was linked to Rumination, whereas the self-beliefs factor exerted a strong influence on the other mediator that is Social Coping. Evidence was also in favor of the view that social coping might be an active and effective problem-directed behavior. Schröder, Kerstin E. E.; Schwarzer, Ralf; Konertz, Wolfgang. 1998).

Researchers have examined the relationship of social support and religion to the patient’s mortality factor after elective open heart surgery in older patients in the case of 232 patients with history of previous cardiac surgery; greater impairment in presurgery basic activities of daily living; and older age. Among the social support and religion variables, two were consistent predictors of mortality in the multivariate analyses. Lack of participation in social or community groups and absence of strength and comfort from religion, these results suggest that in older people’s lack of participation in groups and absence of strength and comfort in religion are
independently related to risk for death during the 6-month period after cardiac surgery. (TE Oxman, DH Freeman Jr and ED Manheimer 1995).

ANGER

A recent study at the Johns Hopkins School of Medicine suggests that Mr. Joel (2010) was close to the truth about heart, wrote on “Angry Young Man”. The study, which tracked 1,337 male medical students, found that students who became angry quickly under stress were three times more likely to develop premature heart disease and five times more likely to have an early heart attack. Angry young men, turn into angry old men with marked heart problems. This happens, because there is a correlation between anger and heart disease.

The role of anger in a variety of physical symptoms and disease processes, including heart disease, has been confirmed by Jerry Kiffer, M.A(2010), a psychologist in Cleveland Clinic in Ohio. Patients are referred to Kiffer (2010) and his colleagues, when their anger levels are observed by other people. Kiffer (2010) says that men are more likely to act out their anger when they are stressed. This may be due to cultural factors and their tendency wants to fix or change circumstances. Unfortunately, many men don’t recognize this connection between their own stress and anger until they have a wakeup call: such as the deadly a heart attack!

When a person gets angry, his/her body releases cholesterol and an array of chemicals called catecholamines into the blood stream. People who are hostile or angry have advanced levels of catecholamines in their systems, and research has shown repeatedly that these chemicals actually speed up the development of fatty deposits in the heart and carotid arteries. In fact, some researchers have shown that anger can be just as much of a risk factor for heart disease as smoking, obesity and lack of exercise (Kiffer 2010).
The best remedy is not to get angry in the first place; try to develop a longer relaxing fuse acknowledge the anger and take constructive action to try and change the situation and avoid yielding to any level of anger.

Elizabeth Landau CNN (2009) has done a research on “Problems – Heart Disease”, in which she quotes, when a person gets angry, the stress is not restricted to head alone. New research shows that anger actually triggers electrical changes in the heart, which can predict future arrhythmias in some patients. Her study published a link between mental stress and sudden cardiac arrest, which causes more than 4, 00,000 deaths every year. Arrhythmias happen because of a malfunction in the electrical impulses in the heart that coordinate heart beats. The result is that the heart beats too fast, too slow or irregularly. Some arrhythmias may increase a person's risk of stroke or congestive heart problems.

People who have heart disease already, perhaps they are treated with something like stress management or anger management, they will have decreased the likelihood of arrhythmias. The studies have also shown that, if patients are asked about what happened before a heart attack, they will most frequently say they were angry. It is just indisputable that negative emotionality – especially anger and misery, depression are related to heart disease. (Ben-Zur 1999).

Charlene Laino (2011) has studied on anger, where she concludes that stress may provoke heart attacks Heart attack survivors, who get angry easily and often, get stress. Her new study suggests that, over a 10-year period, more than half of heart attack survivors, who had high scores on psychological tests designed to identify people with anger problems had a fatal or at least non-fatal heart attack. People with a high score on the anger-scale were two and half times more likely to have another heart attack in comparison with those with a low score on the same scale.
Similarly, heart attack survivors who scored high on the stress scale were 1.90 times more likely to have another heart attack, when compared with those who had low scores. The analysis took into account, known risk factors for heart disease: such as age, gender, high blood pressure, and high cholesterol. The study involved 228 people who had had a heart attack earlier: 200 of them were men, 28 of whom died. Anger is a primitive emotion that cannot be switched off at will and it can have a constructive function when it comes to overcoming obstacles and reach certain objectives. (Bonaguidi 2000)

People who are already vulnerable to heart disease, for them anger can trigger unfavorable physiological changes and can contribute to self-destructive behaviors and alcoholic addiction. When a heart attack patient comes in and exhibits anger or turns beet red or is stressed out, he can almost predict that they are not going to do well if they do not change their behavior,“ he tells, relaxation may help improve their health. (Bonaguidi. 2000)

David Leonhardt (2011), has written about how to control anger in his article,-“Eight simple anger management tips to build anger management skills to reduce stress” One of the biggest obstacles to personal and career success is anger. When we fail to control our anger, we suffer several blows. Anger impedes our ability to be happy, because anger and happiness are incompatible. Anger leads to increased stress and in turn often increases anger. A large number of people need to develop anger management skills. (www.thehappyguy.com)

Llan Schwartz, and Peter Yellowlees, Cardiologist (2009) have done a study on cardiac heart disease (CHD) and anger on the meta-analysis of 25 studies and investigating their role. The authors found that anger and hostility were associated with increased CHD events in the healthy population studies, and that this association was
stronger among men than among women. The authors concluded that anger and hostility are associated with worse CHD outcomes among both the healthy and CHD populations. Here it is important to clarify an important concept. It is normal to get angry and to express anger from time to time. It is unrealistic to think that anyone can live and function without ever getting angry. Rather, it is the way in which each person handles their anger that is the key to good health or damaging illness. The team of researchers has suggested that meditation and relaxation are some very useful methods in controlling anger.

**QUALITY OF LIFE:**

All of us want good health. But many of us do not know how to be as healthy as possible. Health experts describe life style as one of the most important factors affecting health. In fact it is estimated that as many as 7 out of the 10 leading causes of death could be reduced through healthy life style.

World Health Organization defines Quality of life as an individual’s perception of their position in life in the context of culture and value systems, in which they live, and in relation to their goals, expectations, standards and such other concerns. It is a broad spectrum affecting in a complex way by a person’s, physical health, psychological state, personal beliefs, social relationships and their relationship to the salient features of their environment.

The constitution of the World Health Organization (WHO) defines health as “A state of complete physical, mental, social and spiritual well-being, not merely the absence of disease…..” It follows that the measurement of health and the effects of health-care must include not only an indication of changes in the frequency and severity of diseases but also an estimation of well-being; and this can be assessed by measuring the improvement in the quality of life related to health-care.
Stoll C, Schelling G, et al. (2000), wrote in their study that “Health-related quality of life and patient satisfaction” have become important end-points in cardiac surgery. Post-traumatic stress disorder has been described in patients with life-threatening heart disease. In this study, they have investigated into the occurrence of post-traumatic stress disorder in a sample of patients after cardiac surgery; and compared it to health-related quality of life. In their study they studied 80 patients serially, who were admitted to the intensive care unit after cardiac surgery (bypass grafting, n = 51; aortic valve replacement, n = 29). And patients who have had cardiac surgery demonstrate a high life satisfaction with an acceptable degree of physical and mental health-related quality of life.

The health-related quality of life and patient satisfaction have become important points in cardiac surgery. Post-traumatic stress disorder has been described in patients with life threatening heart disease. Researchers have investigated into the occurrence of post-traumatic stress disorder in a sample of patients after cardiac surgery and compared it to health-related quality of life and patients’ satisfaction, between patients with and without evidence of post-traumatic stress disorder on as many as 80 patients. Health-related quality of life was assessed and Post-traumatic stress disorder was measured. The study revealed that, patients who have had cardiac surgery demonstrate a high life satisfaction with an acceptable degree of physical and mental health-related quality of life. Impairments in psychosocial function and life satisfaction were also found in a subgroup of patients with evidence of post-traumatic stress disorder. (Christian, et al. 2000).

A case-control study has been conducted to evaluate the quality of life after, prolonged multiple system with intensive care treatment in cardiac surgical patients on 47 patients. The quality of life measures were collected 1 yr after discharge from the
ICU. The study results revealed that seventy-five percent of the patients in the ICU group suffered from multiple organ failure. And the quality of life was considerably reduced in the ICU group of all dimensions of quality of life when compared with the control group. Lastly they concluded that patients treated with prolonged multiple system intensive care, after heart surgery, have a poor outcome with respect to quality of life measured at least 1 yr after discharge from the ICU. (Nielsen, Dorthe, Sellgren, Johan, Ricksten, Sven-Erik. 1997)

The improved quality of life (QoL) is a desirable outcome of cardiac surgery. The aim of the study was to measure the association between quality of recovery (QoR) in 3 days after surgery and QoL measured 3 months later, on 120 cardiac surgical patients. The quality of recovery score and QoL score was measured at 1 and 3 months after surgery. A significant change in QoL had improved at 3 months and poor-quality recovery in hospital predicted a poor QoL at 3 months. The study concluded that the QoR is a valid measure of quality of recovery after surgery and anesthesia, when compared with the measure of early postoperative recovery. A poor-quality recovery on the days after surgery can predict a poor QoL at 3 months after surgery. Myles, Paul S.; Hunt, Jennifer O., Fletcher, Helen R., Solly, Robert., Woodward, David., Kelly, Susan. 2001)

The researchers examined the impact of the severity and the course of depressive symptoms on change in quality of life (QOL) 6 months after cardiac surgery on 90 heart surgery patients. The same patients were interviewed before heart surgery; and further 2 and 6 months after surgery. Depressive symptoms were assessed as also QOL was assessed. Higher levels of presurgical depressive symptoms predicted poorer physical functioning after cardiac surgery. It implies that both preoperative and postoperative depressive symptoms definitely are associated with poorer QOL. These

**PERSONALITY:**

Friedman and Roseman (1950) both are California based cardiologists and they observed that there are two types of basic personalities: Type A and Type B. Type A personality pattern is with a person characteristics of “excessive competitiveness, hard drive, sense of time urgency and easily angered when he does not get his or her way, impatience, hostility and yet sensitive. Although Type A personality are very successful, they have significantly higher rate of cardiovascular diseases than the Type B personality people. Type A people are hard driving, aggressive counter parts. And the type B typifies a personality pattern that is characterized by calmness, patience, little competitiveness and no hostility. Type ‘B’ s do not suffer from chronic time urgency. They can play and relax without guilt and are not hostile or excessively competitive. The type ‘B’ s can also be just as ambitious as Type ‘A’ s and often are more successful.

Kiffer (2010) notes that it is okay to be busy and always on the go, but anger, hostility and a cynical attitude are not good for heart health. He also points out that “Type A” people are "hot reactors."

Cardiovascular critical care practice has greatly changed over the last three decades. (Headley JM, 1998) Critically ill patients with cardiovascular disorders require constant monitoring, so that, unpredictable changes in their condition can be rapidly assessed and early interventions instigated into in order to restore them to as normal physiological functioning as possible. (Lalji S, Hooda K, Merchant SN and Gillani MI, 2007) In 2000, the number of Open Heart related procedures performed were about 7, 00,000. (National Centre for Health Statistics, 2003)
“Personality type and Heart Diseases Risk:” The researchers on this topic have often linked heart disease risk to either type A or type B personality. But now two new types of personality have been emerging; normally Personality type C and D. Among them, Type A and type C are at greater risk for heart attack. Now modern psychologists have added two more new types of personalities: Type C and Type D. Among these type C individuals are perfectionists and take everything very seriously. They are consistent and dependable, but emotionally repressed. As such Type C individuals tend to suffer from stress and depression more than any other type of personality. They also suffer more with health related problems like rheumatoid arthritis, lupus erythematus and amyotrophic lateral sclerosis.

Whereas Type D introduced during 1990s, (D stand for distressed). This type of personality has been described as a person with negative emotions such as pessimism, anxiety, irritation, and depressed mood. But C type are socially inhibited. The latest research found that these individuals are at higher risk for heart diseases than type A personalities. Another researcher Viola Spek (2011) at Tilburg University Netherlands found that Type D personalities had three times higher risk of heart diseases and psychological problems such as clinical depression, anxiety and poor mental health as compared to the other types of personalities. Researchers also observed that Type D personality people are at great risk, because they may be less likely to get regular checkups or they lack to communicate well with their doctors and therefore they are also less likely follow to treatment programmes and follow ups. (Denise, Reynolds RD, 2010)