Introduction
CHAPTER - I
INTRODUCTION

The heart is the life giving pump, simple machine with sacred mission. Willam Harvey deemed the heart as “the sovereign of the body” today man knows the heart as a technical motor piece and timeless metaphor. The heart ties body to spirit. The Greek philosopher Aristotle thought that, the heart is the first organ to live and last to die”.

In most part of the world non-communicable disease has become a major epidemic. This is due to a rapid transition in the life styles leading to reduced physical activity, changing diets and increased tobacco use. This trend is present in all categories of the societies, rich and poor, developed and developing countries.

Poverty, violence, rapid social and economic changes, lack of education, inadequate or total absence of health services contribute as much to increase in cases of cardiovascular diseases, diabetes or cancer as they do in AIDS and malaria.

According to Brand Land, (2002), Director General of WHO believes that this is the time for the global debate to be directed and much towards prevention as to cure. With an increased focus on prevention the entire public health community stands to gain. Among non-communicable diseases,
myocardial infarction ranks first because it is one of the leading cause of morbidity and premature mortality in birth development & developing countries.

According to Lewis et al (2000), in the United States, it was estimated that pre hospital mortality rate among patients with acute myocardial infarction was approximately 30 % to 50 % and mortality rate among patients who reach the hospital was approximately 5%. Most of these deaths occur within first three to four days.

According to William & Hopper (1999) in the United States, myocardial infarction is typically seen in men over 40 years. Arteriosclerosis and hypertension are increased risk factors for myocardial infarction.

According to WHO report (1999) as cited in the study of Smith (2001) in India, the world wide incidence of ischemic heart disease is 14,71,000 per 98 million, mortality rate of IHD is 11,69,700 per 98 million.

Approximately 1.5 million people in United States have myocardial infarction. Almost 35% that is 5, 00,000 people die each year due to heart attack. Having a myocardial infarction is a frightening and unwelcoming intrusion that disrupts and any sense of control a patient may have over his or her life. Patient experiences a biographical disruption, an unavoidable and enforced alteration of their life. Holloway and et.al, (2000) and often recall a
sense of numbers in the context of their hospital admission. Stress in human life is often equated with tension, anxiety, worry and pressure. It is an accepted fact that stress is necessary for life and it can cause either beneficial or detrimental effects, which could be in the area of physical, emotional, intellectual, spiritual and social.

Myocardial infarction is a serious illness that affects the life of individual and his or her family members. The support provided by other people has shown improvement in the ability to cope with stress and thus to promote the managing of the illness.

Coping with such a sudden and frightening event requires patients to make major psychological adjustments. At least 20% will have more persistent symptoms of clinical anxiety or depression (Jones et.al., 1995).

Reducing the incidence of depression in patients following MI is crucial, as depression increase the risk of mortality (Smith et.al., 1995). Patients complain of palpitations, breathlessness, chest pain and panic attacks that affect the patient’s psychological recovery. Assisting patients to overcome the symptoms involves helping them to understand the experience and to provide relaxation or cognitive behavioural approaches to cope with the feelings of anxiety in real life situations.
1.1 CONCEPT ON STRESS:

Stress is part of life. A death in the family, the birth of a baby, moving, taking a vacation, getting a job promotion, arguing...all of these common occurrences are stressful. Since stress can't be excised from the life experience, it is very important to learn how to deal with it. Research shows that it isn't necessarily the nature of the stressor that drives people to dizzying heights of fist-clenching, jaw-grinding, cold-sweating states of stress and panic. The key factor is one's response to a stressful situation. Different people respond differently to stressors. One person may calmly face moving day, while another person (in the exact same situation) might be totally wiped out by the stress that moving induces. So the ability to manage the stressors that bombard us daily is of the utmost importance.

THEORIES OF STRESS

Theories that focus on the specific relationship between external demands (stressors) and bodily processes (stress) can be grouped in two different categories: approaches to ‘systemic stress’ based in physiology and psychobiology (among others, Selye 1976) and approaches to ‘psychological stress’ developed within the field of cognitive psychology (Lazarus 1966,1991, Lazarus and Folkman 1984, McGrath 1982).

SYSTEMIC STRESS: SELYE'S THEORY

The popularity of the stress concept in science and mass media stems largely from the work of the endocrinologist Hans Selye. In a series of animal studies he observed that a variety of stimulus events (e.g., heat, cold, toxic
agents) applied intensely and long enough are capable of producing common effects, meaning not specific to either stimulus event. (Besides these nonspecific changes in the body, each stimulus produces, of course, its specific effect, heat, for example, produces vasodilatation, and cold vasoconstriction).

According to Selye, these non-specifically caused changes constitute the stereotypical, i.e., specific, response pattern of systemic stress. Selye (1976) defines this stress as “a state manifested by a syndrome which consists of all the non-specifically induced changes in a biologic system.”

This stereotypical response pattern, called the 'General Adaptation Syndrome' (GAS), proceeds in three stages. (a) The alarm reaction comprises an initial shock phase 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. In 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 (a) reappear, but
resistance is no longer possible. Irreversible tissue damages appear, and, if the stimulation persists, the organism dies.

**PSYCHOLOGICAL STRESS: THE LAZARUS THEORY**

Two concepts are central to any psychological stress theory: *appraisal*, i.e., individuals' evaluation of the significance of what is happening for their well-being, and *coping*, i.e., individuals' efforts in thought and action to manage specific demands (cf. Lazarus 1993).

Since its first presentation as a comprehensive theory (Lazarus 1966), the Lazarus stress theory has undergone several essential revisions (Lazarus 1991, Lazarus and Folkman 1984, Lazarus and Launier 1978). In the latest version (see Lazarus 1991), stress is regarded as a *relational* concept, i.e., stress is not defined as a specific kind of external stimulation nor a specific pattern of physiological, behavioural, or subjective reactions. Instead, stress is viewed as a relationship ('transaction') between individuals and their environment. Psychological stress refers to a relationship with the environment that the person appraises as significant for his or her well being and in which the demands tax or exceed available coping resources' (Lazarus and Folkman 1986,). This definition points to two processes as central mediators within the person–environment transaction: *cognitive appraisal* and *coping*.

In his monograph on emotion and adaptation, Lazarus (1991) developed a comprehensive emotion theory that also includes a stress theory (cf. Lazarus
This theory distinguishes two basic forms of appraisal, primary and secondary appraisal. These 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 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 the anticipation of harm that may be imminent. Challenge results from demands that a person feels confident about mastering. These different kinds of psychological stress are embedded in specific types of emotional reactions, thus illustrating the close conjunction of the fields of stress and emotions. Lazarus (1991) distinguishes 15 basic emotions.

Cognitive-relational theory defines stress as a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being (Lazarus & Folkman, 1984). Appraisals are determined simultaneously by perceiving environmental demands and personal resources. They can change over time due to coping effectiveness, altered requirements, or improvements in personal abilities.
The cognitive-relational theory of stress has also been expanded recently to a meta-theoretical concept of emotion and coping processes (Lazarus, 1991, 1993a, 1993b; Lazarus & Folkman, 1987). Within a meta-theoretical system approach Lazarus (1991) conceives the complex processes of emotion as composed of causal antecedents, mediating processes, and effects. Antecedents are person variables such as commitments or beliefs on the one hand and environmental variables, such as demands or situational constraints, on the other. Mediating processes refer to cognitive appraisals of situational demands and personal coping options as well as to coping efforts aimed at more or less problem-focused and emotion-focused. Stress experiences and coping results bring along immediate effects, such as affects or physiological changes, and long-term results concerning psychological well-being, somatic health and social functioning. There are three meta-theoretical assumptions: transaction, process, and context. It is assumed, first, that emotions occur as a specific encounter of the person with the environment and that both exert a reciprocal influence on each other; second, that emotions and cognitions are subject to continuous change; and third, that the meaning of a transaction is derived from the underlying context, i.e., various attributes of a natural setting determine the actual experience of emotions and the resulting action tendencies.

Research has mostly neglected these meta-theoretical assumptions in favour of unidirectional, cross-sectional, and rather context-free designs. Within methodologically sound empirical research it is hardly possible to study complex phenomena such as emotions and coping without constraints. Also, on
account of its complexity and transactional character leading to interdependencies between the involved variables, the meta-theoretical system approach cannot be investigated and empirically tested as a whole model. Rather, it represents a heuristic framework that may serve to formulate and test hypotheses in selected subareas of the theoretical system only. Thus, in practical research one has to compromise with the ideal research paradigm. Investigators have often focused on structure instead of on process, measuring single states or aggregates of states. However, stress has to be analyzed and investigated as an active, unfolding process. More precisely, stress appraisal processes need to be predicted by environmental and personal variables as antecedents, and coping strategies and long-term effects need to be considered.

In the experience of harm/loss, some damage to the person has already occurred. Damages can include the injury or loss of valued persons, important objects, self-worth or social standing. Instead of attempting to master the situation, the person surrenders, overwhelmed by feelings of helplessness. Beck's cognitive theory of anxiety and depression (Beck & Clark, 1988) is in line with these assumptions, mentioning threat as the main cognitive content in anxiety compared to loss as its counterpart in depression. Three major forms of stressors have been investigated in the literature (Thoits, 1995). The first, life events, are major situations that require immediate behavioral change to deal with the situation (i.e., birth of a child). The second form of stressor, chronic strains, are recurrent demands that require long term changes and adaptations (i.e., disability). Zautra (1996) referred to these as the "tyrannies" of everyday
life, "small, and recurrent but still uncontrollable and unwanted events" (p. 698). The final form of stress, daily hassles, are "mini-events" that require small behavioral changes during the course of the day (i.e., traffic jams). While stress in and of itself does not necessarily have negative consequences (Lazarus, 1999; Turner & Avison, 1992), all three types of 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. For example, Dumont and Provost (1999) cited a study (Plancherel, Bolognini, Bettschart, Dumont, & Halfon, 1997) that found that daily hassles may act as a mediator of the effect of life events on mental health, suggesting that daily hassles not only trigger stress but effect the perception of ability to cope with more major stressful events. No matter what the relationship between the stressors, the outcome of these stressors for the individual is dependent on a variety of factors including the number and type of stressors in one's life and the efficacy of the coping strategies engaged (Thoits, 1995; Turner & Avison).
STRESS AND MYOCARDIAL INFARCTION:

The relationship between stress and myocardial infarction is more speculative than that of any other risk factor. Some experts believe that stress has become so relentless in modern society that the body is never permitted to return to normal relaxed state. The large amounts of adrenaline and non-adrenaline that pours into the blood stream during stress cause the cells of the heart muscle to burn oxygen at a very high rate, quickly depleting the heart’s oxygen supply. The resulting oxygen deficient could lead to heart attack in a person with coronary heart disease. Stress may also be a key to sudden death of people with no known history of myocardial infarction.

In the study of 150 middle aged men, Swedish scientist found that those who experienced a high degree of psychological stress were six times more likely to develop myocardial infarction with five years than those who reported relatively little stress. Another study showed that individual over the age of 45 whose spouses die is having a very high rate of heart attack during the first 6 months along.

Jeskins has presented comprehensive review of the evidence supporting psychological and social risk factors for coronary diseases like socio-economic status, occupation, religious affiliation duration which have been widely studied. Anxiety, depression, irritability and insomnia also leads to CAD. (Brauwald Eugene, 1984).
John Hunter typifies the effect of emotional stress on heart. The effects of physical stress are well illustrated by the report of sudden death (Jullian G Desmond, Camm John et al 1989).

Depression in another characteristic believed to be related to CAD which in reported to be more severe. Sleep disturbance which is often a sign of depression has been found to be predictive of factual angina.

Lipid values are altered in people under stress. Although stress plays a major role in myocardial infarction, the effect of stress alone appears to be relatively minor. Behavioural counselling may help to reduce the stress (Bruwald Eugene, 1992).

Studies have shown a strong evidence of association between specific psychological factors and some cardiovascular diseases. Research on stress and disease of cardiovascular system falls into 3 categories, somewhat overlapping areas, atherosclerosis, arrhythmias, sudden cardiac death and hypertension. For both acute and chronic stresses play a role in angina and myocardial infarction. Most stress related studies of predisposing factors for artherosclerosis related to type A behaviour pattern. (Friedman & Roseman-1959) identified as type A those people whom they characterized as being unusually aggressive, competitive and work oriented and have a constant sense of urgency about their activities. So they have more incidence of heart attacks.
In a six month prospective study of new widows, mortality of myocardial infarction was 67% higher than expected. Affected individuals usually experienced reactions of depression and felt helpless and hopeless. Such socio-cultural changes as major changes in living the culture or origin and the correct cultural milieu also significantly increases the risks of having a heart attack. (Syme 1975).

Many of the effects of stress on the myocardial infarction have been attributed to action of the autonomic nervous system. However, recent discoveries of pathways for central control of cardiac functions suggest that other mechanism also may be involved.

Rahe etal (1974) interviewed relatives of sudden cardiac death victims using survivors of myocardial infarction as controls. Both victims and survivors experienced substantial changes in their lives during the six months before the event, but those who died experienced more changes that did those who survived. Those who die had increased problems at home and work place and with interrelationship with family and friends.

**STRESS AND SOCIAL SUPPORT:**

Social support is the physical and emotional comfort given to us by our family, friends, co-workers and others. If the support is inadequate it can be viewed as a stressor to an individual.
Lazarus and Folkman (1984) treat social support under the rubric of coping as a resource available in the social environment (social network). People they argue must cultivate and may or may not cultivate upon this social network, depending on access to alternative coping strategies. In addition, Lazarus and Folkman view social support as “a transactional proves that changes with demands of the stressful encounter” and as a multidimensional construct, encompassing emotional, tangible and informational functions.

Social learning theory posits that people’s perception of their capabilities affects their behaviour, thinking and emotional reactions in stressful situations (O’leary1985). Further it postulates that personal and situational influences alter coping behaviour and transactions with the social environment (Bandura, Reese, & Adams 1982; Mowrer, 1960). Developed by Bandura (1977), social learning theory successfully synthesis cognitive behavioural emotional and environmental explanations of learning and behavioural changes.

Role modelling a primary concept of social learning theory is an important component of helping relationships. Peers have available a range of stress coping behaviour change and mastery models. Modelling has been described in studies of self help groups for new (Karen M, 1997), for anorexia nervosa and bulimia victims and for cardiovascular patients (Levy, 1983) for child abusers for low income African American and Hispanic families, for stroke survivors and for cardiovascular patients.
There is also growing evidence about the causal pathways that involve social factors in the development of disease although much further research is needed to understand the mechanisms that render social ties beneficial for the organism. Being socially embedded or the lack of it can influence the onset of illness, its progression, or recovery from it. Several major studies, for example, have found a link between social integration and survival rates of patients who had experienced a myocardial infarction. Ruberman et al. (1984) studied 2,320 male survivors of acute MI and found that cardiac patients who were socially isolated were more than twice as likely to die over a 3-year period than those who were socially integrated. In a Swedish study of 150 cardiac patients it was found that those who were socially isolated had a three times higher 10-year mortality rate than those who were socially integrated (Orth-Gomer, Unden, & Edwards, 1988). Diagnosis of coronary artery disease and subsequent death was linked to marital status in a study based on 1,368 patients, most of them being men (Williams et al., 1992). Those who were unmarried or without a confident were over three times as likely to die within five years compared with those who had a close confident or who were married. Marital status and recurrent cardiac events were also linked in a study be Case et al. (1992) who identified a higher risk of cardiac deaths and nonfatal infarctions among those who lived alone. In another prospective study on 100 men and 94 women who were hospitalized for an MI it was found that mortality rates within a 6-month period were related to the social support reported by these patients (Berkman, Leo-Summers, & Horwitz, 1992). They identified the number of persons
representing major sources of emotional support. In analyzing these data, the researchers distinguished men and women with one, two, and more than two such sources. There was a consistent pattern of death rates, the highest of which was associated with social isolation and the lowest of which pertained to two or more sources of emotional support, independent of age, gender, comorbidity, and severity of MI.

The behavioural pathway has been suggested by studies where social networks were stimulating health behaviours that prevented the onset of illness, slowed its progression, or influenced the recovery process (Cohen, 1988). For example, abstinence after smoking cessation was facilitated by social support (Mermelstein et.al., 1986). Alcohol consumption was lower in socially embedded persons (Berkman & Breslow, 1983) although other studies have found that social reference groups can trigger more risky behaviours, including alcohol consumption (Schwarzer, Jerusalem, & Kleine, 1990). Participation in MI screenings can be promoted by social ties (Kang & Bloom, 1993; Suarez et al., 1994).

**STRESS AND QUALITY OF LIFE:**

Quality of life is an important consideration in medical care; quality of life refers to the patient's ability to enjoy normal life activities. Some factors can seriously impair quality of life without providing appreciable benefit, while others greatly enhance quality of life. And stress can be viewed as a factor which lowers the quality of life.
Quality of Life is the product of the interplay among social, health, economic and environmental conditions which affect human and social development. (Ontario Social Development Council, 1997)

Three coping behaviors which seem to be maladaptive (self-control, self-blame, and escape) are associated with lower quality of life after surgery for inflammatory bowel disease. These coping behaviors make a contribution to postsurgical quality of life independent of the negative effect on quality of life of inflammatory bowel disease symptoms. Perceived social support is a third factor that makes an independent contribution to postsurgical quality of life. The Medical Outcomes Study Social Support Scale has properties associated with an effective screening tool and merits further investigation as an instrument to screen presurgically for individuals at higher risk of poor subjective outcome of inflammatory bowel disease surgery. (Moskovitz DN, 2000).

Self-assessed quality of life after a myocardial infarction was significantly lower among women than among men despite similar age, treatment, and hemodynamic and laboratory data. The causal relationship is however, not known. Further studies are needed to evaluate the underlying mechanism of this observation. This may lead to the development of novel treatment strategies in female patients after a myocardial infarction. (Agewall S, Berglund M 2004).
(Kristofferzon ML, 2005) in his study Perceived coping, social support, and quality of life 1 month after myocardial infarction: a comparison between Swedish women and men found that, the first month after myocardial infarction is a susceptible period especially for women. They used more evasive and supportive coping and experienced a lower quality of life compared with men.

STRESS AND FAMILY:

Families are groups related by kinship, residence, or close emotional attachments and they display four systemic features - intimate interdependence, selective boundary maintenance, ability to adapt to change and maintain their identity over time, and performance of the family tasks (Mattessich and Hill 1987).

Family stress theory can be applied to critical work events that negatively affect the family, such as job loss, and to chronic work stressors such as job dissatisfaction, instability, shift work, inadequate child care, and role overload (Piotrkowski and Kattz 1983). Other sources of family stress are death, divorce, separation, illness, and social dysfunction.

Family stress theory sets forward acute stressors (meaning sudden onset) which when accumulated could lead to family crises, including physical, emotional, or relational crisis. Examples of such family crises resulting from family stressors are episodes of domestic violence, substance abuse (relapses),
illness from weakened immune systems, divorce, accidents, children being abused, or neglected, etc. The research on stress suggests that significant factors about the stressors to keep in mind are: the changes in daily routines, the number of changes in daily routines, and the length of time since there were changes in daily routines, (i.e. the family stressors).

However, their impact can be muted, or buffered with protective factors which help families to survive multiple contextual stressors, and to continue to competently parent despite chronic and acute stressors. These protective factors (Hill theorized that there were basically two of them) buffer the impact of the stressors, and one includes social relationships (B Factor) and the other includes perceptions (C Factor). Social relationships are further distinguished as being within family variables, e.g. attachment, positive family bonds, effective communication, as well as across family variables i.e., social isolation vs. informal and formal social support networks; Perceptions (C Factor) include the range in cognitions and attitudes between hope and personal effectiveness vs. despair, and helplessness. These two complex factors relate together with the acute stressors and ongoing social context of chronic stressors, to predict family crisis.

Hundreds of studies have documented the positive relationship between illness and stress. Individuals who experience too many stressors at one time, i.e., too many changes in their daily routines and circumstances, are at increased risk within one year for having an accident, for becoming physically
ill, for having an impaired immune system, for becoming violent, or for relapsing (Pianta, Egeland and Sroufe, 1990). Not only individuals, but families that experience too many stressors at one time are at increased risk for experiencing aggravated family crisis. However, not all families with multiple stresses have crisis.

Professor Reuben Hill's theory of family stress was formulated after the Great Depression (1947, 1959, 1983, University of Minnesota) based on extensive observations of families who survived contrasted with those whose families did not. As Hill interviewed families who had lost their jobs and were existing in extreme poverty, he looked for factors which contributed to family survival of these circumstances. From these qualitative data, Hill theorized that there are two complex variables which act to buffer the family from acute stressors and reduce the direct correlation between multiple stressors and family crisis. These were formulated into what he called his ABCX theory of family stress (see Figure 1.1).

The "B" variable refers to the complex of internal and external family resources and social support available to the family, i.e., the social connectedness within the family, as well as social connectedness outside the family. Hill theorized that social isolation would significantly increase the impact of the multiple stresses on the family functioning; in contrast, positive social supports would minimize the impact. Hill's "C" variable, the perception factor, was the second predictor of the extensiveness of the impact of stress on
the family. This second complex factor referred to the shared family cognition and perceptions held about the stressors, e.g., the extent to which the family perceived the changes as a disaster vs. an opportunity. Hill suggested that some families had positive appraisals which they could make of changes, which increased their ability to accept their circumstances. Hill's family stress theory has been significantly expanded upon by McCubbin et al. (1983).

(B) Internal Family Resources & Informal/Formal Social Supports

Family (A) > Family Crisis (X)
Stressors
  Family Perception & Parental Self-Efficacy

Figure 1.1: HILL'S ABCX MODEL OF FAMILY STRESS

Research studies have since offered support for Hill and McCubbin's theoretical constructs. The combination of high stress with social isolation (the "B" variable) for families has been highly correlated with many forms of dysfunctional family outcomes (Garbarino and Abramowitz, 1982; Belle, 1980; Cyrnic, Greenberg, Robinson and Ragozin, 1984; Egeland, Breitenbucher and Rosenberg, 1980; Ell, 1984; Lindblad-Goldberg, 1987; Marks and McLanahan, 1993; Simons, Beaman, Conger and Chao, 1993; Tracy, 1990; Wahler, 1983). Hill and McCubbin consider the lack of "B" and "C" variables as similarly potent and equally predictive of a family crisis. If a family experiences multiple stressors 1) they are socially isolated and emotionally disconnected to
one another, 2) they are depressed, hopeless, and disempowered, then they will be at increased risk for illness, accidents, child abuse and neglect, and substance abuse, delinquency and school failure. With a positive set of cognitions, an empowered attitude, and an active informal and formal support network, there would be a reduction in the likelihood that the stressful life experiences would result in a family crisis.

1.2. CONCEPT ON COPING:

Coping is the process of managing taxing circumstances, expending effort to solve personal and interpersonal problems, and seeking to master, minimize, reduce or tolerate stress or conflict.

In coping with stress, people tend to use one of the three main coping strategies: appraisal focused or problem focused, or emotion focused coping. Appraisal-focused strategies occur when the person modifies the way they think. People using problem focused strategies try to deal with the cause of their problem. Emotion focused strategies involve releasing 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 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.
COPING THEORIES:

Lazarus and Folkman (1984), leaders in the field of coping research, have defined coping as "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person". There are several parts of this definition that are important to reflect upon. First, the notion that coping efforts are constantly changing suggests that it would be necessary for people to learn a variety of possible coping strategies and they need to learn to assess the situation in order to determine which strategies might work best in different situations. Second is the notion that the issues that give rise to the need for coping may originate outside of the person or from within the person; thus, facilitating improved coping may include examining the appraisal process (the assessment of the demands of the situation), as well as the teaching of coping strategies. Finally, coping is seen to be context specific and thus, the process of coping is a function of the connection between the person and his/her environment.

DIMENSIONS OF COPING

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 examined the effects of various coping modes on several measures of adjustment to illness. The authors 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, 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 oneself, and the latter aiming at an alteration of oneself to the environment (Brandtstädter, 1992). 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 in a certain time order when, for example, individuals first try to alter the demands that are at stake, and, after failing, turn inward to reinterpret their plight and find subjective meaning in it.

Coping has also a temporal aspect. One can cope before a stressful event takes place, while it is happening (e.g., during the progress of a disease), or afterwards. 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; for example, a smoker might quit well in time to avoid the risk of lung cancer; (b) Anticipatory coping: when the event is anticipated soon; for example, someone might take a tranquillizer while waiting for surgery; (c) Dynamic coping: while it is ongoing; for example, diverting attention to reduce chronic pain; (d) Reactive coping: after it has happened; for example, changing one's life after losing a limb; and (e) Residual coping: long afterward, by contending with long-run effects; for example, controlling one's intrusive thoughts years after a traumatic accident has happened.

Five coping strategies were identified by Klauer and Filipp (1993) that turned up as dimensions in a factor analysis: (a) Seeking social integration, (b) rumination, (c) threat minimization, (d) turning to religion, and (e) seeking information.

THE PROCESS OF COPING

Lazarus and Folkman (1984) and others have suggested that the coping process consists of four steps. The first step is appraisal, which involves determining the meaning of an event or situation and it implications for one's well-being. 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. The third step involves carrying out the selected coping strategy. Finally, the fourth step involves evaluating one's coping efforts.
with regard to their effectiveness in eliminating or reducing the stressor or managing one's response to the stressful event (Smith & Carlson, 1997).

A fundamental component of the coping process is appraisal. Appraisal is defined as an assessment of the situation by the person facing it and includes an evaluation of both the demands of the situation and the resources the person brings to bear on that situation (Lazarus & Folkman, 1984). 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 the desired action.

CLASSIFICATION OF APPROACHES – COPING

The Lazarus model outlined above represents a specific type of coping theory. These theories may be classified according to two independent parameters: (a) trait-oriented versus state oriented, and (b) microanalytic versus macroanalytic approaches. Trait oriented and state-oriented research strategies have different objectives: The trait-oriented (or dispositional) strategy aims at early identification of individuals whose coping resources and tendencies are inadequate for the demands of a specific stressful encounter. An early identification of these persons will offer the opportunity for establishing a selection (or placement) procedure or a successful primary prevention program. Research that is state oriented, i.e., which centres around actual coping, has a
more general objective. This research investigates the relationships between coping strategies employed by an individual and outcome variables such as self-reported or objectively registered coping efficiency, emotional reactions accompanying and following certain coping efforts, or variables of adaptation outcome (e.g., health status or test performance). This research strategy intends to lay the foundation for a general modificatory program to improve coping efficacy. *Microanalytic* approaches focus on a large number of specific coping strategies, whereas *macroanalytic* analysis operates at a higher level of abstraction, thus concentrating on more fundamental constructs.

S. Freud's (1926) 'classic' defence mechanisms conception is an example of a *state-oriented, macroanalytic* approach. Although Freud distinguished a multitude of defence mechanisms, in the end, he related these mechanisms to two basic forms: repression and intellectualization. The *trait-oriented* correspondence of these basic defences is the personality dimension repression–sensitization (Byrne 1964, Eriksen 1966). The distinction of the two basic functions of emotion-focused and problem-focused coping proposed by Lazarus and Folkman (1984) represents another macroanalytic state approach. In its actual research strategy, however, the Lazarus group extended this macroanalytic approach to a *microanalytic* strategy. In their 'Ways of Coping Questionnaire' (WOCQ; Folkman and Lazarus 1988, Lazarus 1991), Lazarus and co-workers distinguish eight groups of coping strategies: confrontative coping, distancing, self-controlling, seeking social support, accepting
responsibility, escape-avoidance, playful problem-solving, and positive reappraisal. The problem with this conception and, as a consequence, the measurement of coping is that these categories are only loosely related to the two basic coping functions.

Approaches corresponding to these conceptions are repression–sensitization (Byrne 1964), monitoring-blunting (Miller 1980, 1987), or attention-rejection (Mullen and Suls 1982). With regard to the relationship between these two constructs, Byrne's approach specifies a unidimensional, bipolar structure, while Miller as well as Mullen and Suls leave this question open. Krohne, however, explicitly postulates an independent functioning of the dimensions vigilance and cognitive avoidance.

**REPRESSION–SENSITIZATION.**

The repression–sensitization construct (Byrne 1964, Eriksen 1966) relates different forms of dispositional coping to one bipolar dimension. When confronted with a stressful encounter, persons located at one pole of this dimension (repressers) tend to deny or minimize the existence of stress, fail to verbalize feelings of distress, and avoid thinking about possible negative consequences of this encounter. Persons at the opposite pole (sensitizers) react to stress-related cues by way of enhanced information search, rumination, and obsessive worrying. The concept of repression–sensitization is theoretically founded in research on perceptual defence (Bruner and Postman 1947), an
approach that combined psychodynamic ideas with the functionalistic
behaviour analysis of Brunswik (1947).

MONITORING AND BLUNTING.

The conception of monitoring and blunting (Miller 1980, 1987)
originated from the same basic assumptions formulated earlier by
Eriksen (1966) for the repression–sensitization construct. Miller conceived both
constructs as cognitive informational styles and proposed that individuals who
encounter a stressful situation react with arousal according to the amount of
attention they direct to the stressor. Conversely, the arousal level can be
lowered, if the person succeeds in reducing the impact of aversive cues by
employing avoidant cognitive strategies such as distraction, denial, or
reinterpretation. However, these coping strategies, called blunting, should only
be adaptive if the aversive event is uncontrollable. Examples of uncontrollable
events are impending surgery or an aversive medical examination (Miller and
Mangan 1983). If control is available, strategies called monitoring, i.e., seeking
information about the stressor, are the more adaptive forms of coping.
Although initially these strategies are associated with increased stress reactions,
they enable the individual to gain control over the stressor in the long run, thus
reducing the impact of the stressful situation. An example of a more
controllable stressor is preparing for an academic exam.

It assumes that most stressful, especially anxiety evoking, situations are
categorized by two central features: the presence of *aversive stimulation* and
a high degree of *ambiguity*. The experiential counterparts of these situational features are *emotional arousal* (as being primarily related to aversive stimulation) and *uncertainty* (related to ambiguity). Arousal, in turn, should stimulate the tendency to cognitively avoid (or inhibit) the further processing of cues related to the aversive encounter, whereas uncertainty activates vigilant tendencies.

**COPING WITH MYOCARDIAL INFARCTION:**

**General Coping Styles with myocardial infarction:**

A growing body of research has accumulated on the relationship between global coping styles and measures of psychosocial adaptation to myocardial infarction, (a) repression versus sensitization, (b) problem-focused versus emotion-focused coping, (c) adaptive versus maladaptive coping, (d) dispositional optimism, (e) hardiness and sense of coherence, and (f) active versus passive coping.

Repression versus sensitization; In two early studies, Brown and Rawlinson (1976, 1977) sought to investigate the relationship among a variety of medical, psychosocial (including coping style), and demographic variables on the morale (measured by an index of self-satisfaction) and long-term work adjustment of persons following open heart surgery. Repressing (rather than sensitizing) coping style was found to predict long-term morale in both sexes.
On the other hand, these coping styles failed to predict work resumption among either males or females.

Denollet and colleagues (Denollet, 1991; Denollet & De Potter, 1992) identified several coping subtypes among a sample of Belgian coronary patients (i.e., negative affectivity, inhibition, and repression). Negative affectivity was viewed in a similar fashion to sensitization (high likelihood of experiencing generalized distress), while repression was seen as manifesting a tendency to avoid distress or threatening information. Results of their studies conveyed that: (a) patients who scored high on negative affectivity (i.e., sensitizers) reported more depression, psychological distress, and health complaints than repressors; (b) those with high degree of negative affectivity also reported more somatic distress (e.g., increased chest pain) than those labeled repressors; (c) repressors had lower scores on a measure of hostility and Type A personality style (e.g., a tendency characterized by open hostility, time urgency and perfectionism) than sensitizers; (d) patients with high negative affectivity were less likely to return to work than their repressive counterparts; and (e) no association was found between coping style and cardiovascular fitness.

Problem-focused versus emotion-focused coping; In a study of patients who survived MI, those who used a more general problem-solving coping style reported better social and psychological adjustment following hospital discharge than those using a more global emotional-focused coping style
(Keckeisen & Nyamathi, 1990). In a somewhat related manner, Webster and Christman (1988), and Christman, McConnell, Pheiffer, Webster, Schmitt, and Ries (1988), measured the perceived uncertainty and coping (affective-oriented and problem-oriented) on emotional distress among individuals recovering from MI. Results showed that increased levels of uncertainty or ambiguity were associated with greater use of affective-oriented coping, while decreased uncertainty was linked to greater use of problem-oriented coping. Their results also showed that those who reported using affective-oriented coping more frequently also reported higher levels of emotional distress, notably anxiety and depression. Moreover, those who reported greater use of problem-solving coping experienced lower levels of emotional distress. Finally, a study by Terry (1992) further demonstrated the relationship between emotion-focused coping and increased levels of psychological symptomatology (e.g., state anxiety), disruption of social and recreational activities, and poor personal ratings of global coping effectiveness among individuals who survived MI.

Adaptive versus maladaptive coping; In a study of post-MI patients, participants were cluster analyzed into two groups based on their responses to a structured interview. These two groups were adaptive copers (i.e., those who scored high on a measure of behavioral compensation for stress) and maladaptive copers (i.e., those who scored high on measures of internal anger and hostility). The maladaptive group reported a greater degree of distraction from cardiac symptoms, more relief-seeking behaviors, and increased perceived vulnerability to future heart attacks (Nolan & Wielgosz, 1991).
Holahan, Holahan, Moos, and Brennan (1995, 1997) also reported that the use of adaptive coping strategies (i.e., active, approach-oriented coping) predicted a lower level of depressive symptoms, as compared to the use of maladaptive (i.e., avoidant) coping, among older individuals with cardiac illness.

Active versus passive coping: Active coping was found to be associated with an extraversion disposition among survivors of MI (Martin, 1989). More important, however, active coping was successfully indicated by measures of self-reflection, achievement-oriented behaviors, and the ability to revise one's expectations. Passive coping, on the other hand, was suggested by higher levels of denial, evasive reaction, and depression. Contrary to the researcher's expectations, passive coping was not associated with level of anxiety. In a subsequent study (Martin & Lee, 1992), the researchers reported that active coping (as an outcome variable) was best predicted by the survivors' experience with prior stressful life events, while lower socioeconomic status best predicted passive coping. No attempt was made to investigate the relationship between passive coping (viewed as composed of self-devaluation, denial, blame, and evasion) or active coping (perceived as comprised of problem-solving and self-reflection) and psychosocial adaptation to the onset of MI.

Dispositional optimism: In a longitudinal study of persons who underwent coronary bypass surgery, Scheier et al. (1989) reported that optimism was found to be an important predictor of both the use of specific coping strategies and surgical outcomes. Optimism was positively correlated
with problem-focused coping and negatively correlated with denial. Optimism was also linked to a faster physical recovery during hospitalization and, subsequently, to a faster return to normal life activities. Finally, optimism was also associated with post-discharge perceived quality-of-life in this group. Other studies also documented the salutary effect of optimism on the lives of persons with cardiac illness (e.g., Chiou, Potempa, & Buschmann, 1997). In a similar manner, lack of optimism or having a pessimistic attitude, as often reflected in negative affectivity, was found to be linked to life dissatisfaction and to feelings of fear and anxiety (Wiklund, Sanne, Vedin, & Wilhelmsson, 1984).

Hardiness and sense of coherence; Three studies have reported the relationship between Kobasa's hardiness construct (as measured by three interrelated sets of beliefs on commitment, control, and challenge), Antonovsky's sense of coherence construct (as measured by the ability to create cognitive and emotional meaningfulness in one's life as well as to problem-solve internal and external demands), and mental health status among Israeli post-MI patients. The authors (Drory & Florian, 1991, 1997, 1998) concluded that: (a) personality hardiness was the most salient predictor of psychosocial adjustment as reflected in higher scores on the health care, vocational, familial, social, and psychological adjustment domains of the Psychosocial Adjustment to Illness Scale (PALS) and (b) a sense of coherence successfully predicted patients' psychological well-being at the end of their convalescence period as well as lower levels of psychological distress (depression and anxiety). A
similar psychological construct, self-efficacy, was also found to be associated with decreased level of psychological distress among survivors of MI (Terry, 1992).

**SPECIFIC COPING STRATEGIES WITH MYOCARDIAL INFARCTION:**

Within the more global categorization of coping strategies into engagement and disengagement approaches, a number of strategies have been identified that relate directly to coping with myocardial infarction. The following discussion focuses on these strategies.

Engagement strategies normally refer to strategies that are labeled: (a) problem-focused, (b) information-seeking, (c) confrontation, (d) positive reappraisal, and (e) seeking social support. The relationship between these coping strategies and psychosocial adaptation to cardiac disease is explored in the following paragraphs.

Problem-focused coping: Although the use of problem-focused coping has been found to be negatively related to emotional distress and depressive symptomatology in several studies (e.g., Garcia, Valdes, Jodar, Riesco, & De Flores, 1994; Holahan, et al., 1995, 1997), other studies (e.g., Terry, 1992) failed to demonstrate its facilitative impact on psychosocial adaptation among people who sustained MI.
Information-seeking coping; In a longitudinal study, information-seeking was found to be the most frequently used coping strategy among patients who underwent coronary bypass surgery. It was rated by these patients as the most helpful strategy during the pre-operative period. Investigators of a direct relationship between information-seeking and psychosocial adaptation to cardiac disease have not been found in the research literature.

Confrontive coping; In studies by Christman et al. (1988) and Scherck (1992), confrontive coping was rated by patients as the most or second most frequently used coping mode with the stress engendered by acute MI. It was, however, found to be unrelated to levels of emotional distress, before or after hospital discharge in these patients (Christman et al., 1988).

Positive reappraisal; Cognitive efforts to restructure a problem in a positive manner were found to be associated with decreased depressive symptoms among older individuals with myocardial infarction (Holahan et al., 1995, 1997). In her previously mentioned research, King (1985), however, reported that the study's sample used positive thinking less frequently than five other coping strategies (e.g., information-seeking, direct action). Moreover, positive-thinking, was the only coping strategy to remain stable over time (from presurgery to follow-up of patients who underwent coronary bypass surgery). This finding is in sharp contrast to the results of Stewart, Hirth, Klassen, Makrides, and Wolf (1997) who found positive reappraisal to be one
of the two most frequently used strategies among hospital readmitted patients with myocardial infarction.

Seeking social support; King (1985) found that, among persons who underwent coronary bypass surgery, turning to others for social and emotional support changed appreciably from the pre-operative period to the discharge from hospital and, finally, at the follow-up. The use of seeking social support increased steadily during the 3 weeks of the study. Stewart et al. (1997) reported that seeking social support was the most frequently used strategy in their sample of people with heart disease. No studies measuring the effect of seeking social support on psychosocial adaptation to cardiac disease were located. The findings of Holahan et al. (1995, 1997), however, documented the salutatory contribution of social (i.e., work, family, social network) support as an available resource to alleviating patients' level of depression.

COPING AND SOCIAL SUPPORT:

Social support is the physical and emotional comfort given to us by our family, friends, co-workers and others. It knows that we are part of a community of people who love and care for us, and value & think well of us. Social support is a way of categorizing the rewards of communication in a particular circumstance. An important aspect of support is that a message or communicative experience does not constitute support unless the receiver views it as such.
Many studies have demonstrated that social support acts as a moderating factor in the development of psychological and/or physical disease (such as clinical depression or hypertension) as a result of stressful life events. There is growing evidence to suggest that social support affects humans differently throughout life, suggesting that the need to receive and provide social support shifts across development.

**FORMS OF SOCIAL SUPPORT:**

Support can come in many different forms; experts who study human relationships have identified several functions of social support:

- **Emotional Support** - This is what people most often think of when they talk about social support. People are emotionally supportive when they tell us that they care about us and think well of us. For example, if you separated from your partner or lost your job, a close friend might call every day for the first few weeks afterwards just to see how you are doing and to let you know that he or she cares.

- **Informational Support** - This happens when individuals in a person's social network supply needed information. For example, if you were at work and needed to know how to accomplish a particular task, the co-worker who provided the needed information would be giving informational support.

- **Sharing Points of View** - Another way for people to help is to offer their opinion about how they view a particular situation, or how they would
choose to handle it. In sharing points of view, we can develop a better understanding of our situation and the best way to handle it. For example, if you tell a friend about difficulties you are having with your teenage son, she may offer a point of view you hadn't considered, and this may help you to better address the situation with your child. When the points of view are comments about the other person, the comments may serve as personal feedback.

- **Personal Feedback** - Some authors include this function as part of the informational function or as part of points of view. Personal feedback is information about the individual receiving the support. Some individuals request such information directly, but others will tell a story about themselves as a way of eliciting personal feedback. What is supportive about personal feedback is that the recipient regards the information as honest and believes the sender of the feedback is intending to help.

- **Practical Help or Instrumental Support** - People who care about us give us practical help such as gifts of money or food, assistance with cooking, child care, or help moving house. This kind of support helps us complete the basic tasks of day-to-day life.

Social networks influence how their members seek help from professionals and use professional services by buffering experiences of stress there by eliminating the need for help by providing support and services by acting as screening and referral; agents and by transmitting values attitudes and norms
about help seeking lay networks also enhance complement or serve as alternatives to professional services (Whittaker & Garbarino, 1983)

**SOCIAL SUPPORT THEORIES:**

The social network may influence health status outcomes directly through information or motivation for health behaviour or indirectly through encouragements to comply with regimens or maintain health promoting behaviour such as exercise. Network members provide advice and models of behaviour and extend support provisions that augment immunity (Bloom, 1990, Cohen & Wills, 1985). Abood and Miltons (1988) path analytic model revealed that health practices behaviour and social support networks had statistically significant direct negative effects on illness dimensions of support may influence health behaviour. Both perceived and received support contributed to pregnant women adherence to health behaviour, although these factors act differently in buffering stress and promoting positive health behaviour (Aaronson, 1989).

It is conceivable that negative interactions with others might balance supportive functions yielding negligible benefit (gottlieb & sellby, 1989). Support intended to be positive can have negative outcomes such as reinforcement of poor health behaviour or demanding debilitating assistance. For example, friends who drink may not be supportive of another’s efforts to stop drinking.
Lazarus and Folkman (1984) define coping as “constantly changing cognitive and behavioural efforts to manage specific external and or internal demands that are appraised as taxing or exceeding the resources of the person,” coping is determined by the relationship between the person and the environment it is a transactional process with problem focused and emotion focused functions (Folkman & Lazaryus, 1980; Lazarus & Folkman, 1984).

Thoits (1986) reconceptualised social support as coping assistance. Support should be defined in terms of categories of coping. Briefly from a coping theorists perspective the perception of social support is one element in an individual appraisal of the significance of a stressor for personal well being (Procidano & Heiler, 1983), moreover social support is one of a variety of potential coping resources, social support like other coping resources regulates negative effects of stressful conditions, at times it may be the only available coping method at other times it may not be either the most preferred or the most cost Effective method.

Social support should be considered within the context of the stress and coping process as socially mediated coping social networks and social support are more than resources to be called upon at will, in fact social networks influence help seeking from formal and informal sources and attributions regarding causes and solutions for stressors thereby influencing their coping process, Dunkel Schetter, Folkman and Lazarus (1987) purport that recipients positive reappraisal lessens that threat of offering assistance. Moreover social
support and other cognitive and behavioural means of coping have reciprocal or bidirectional effects the ways an individual copes provide important clues to potential supporters about whether support is needed and if it is about the types of support needed similarly the receipt of support can later change the trajectory of coping.

Social support like other coping resources can modify the impact of chronically stressful conditions and acute stressors on health status of situational specific models of social support effects will be more profitable than attempts to develop a grand theory that accounts for its impact on coping and health “Barbee, Gulley, and Cunningham (1990) propose a general model of interactive coping in which affect cognition and relationship and personal variables influence whether the coping strategies chosen pertain to dismissing or solving (problem focused) or to escape or support (emotion focused).

People will make upward comparisons with those coping better than they are and downward comparisons to enhance self esteem and protection (Traylor, 1983). Social comparisons can be defined as peoples tendency to evaluate themselves and to elicit information about their characteristics, behaviour, opinions, and abilities through comparison with similar others. The basic tenet of Festiingers (1964) theory is that individuals evaluate themselves through social comparison with others to validate and define reality. Clearly this evaluation process influences self concept (Fisher & Nadler, 1982; Sanders, 1982; Suls, 1977; Wills, 1985).
Social comparison is a logical theoretical basis for determining whether people are similar to terms of health status illness severity stressors mastery or coping stage (Gottlieb, 1988). Health professionals wishing to explain and evaluate positive and debilitating effects of peer helpers & mutual and groups on clients should recall that upward comparison facilitates coping through modeling and downward comparison facilitates emotional adjustment in support dyads and groups. Certainly social comparison theory is relevant to the social support associated with target groups of health professionals namely the bereaved the ill new parents and the elderly. It is safe to assume that these people like the cancer victims studied by Taylor (1983) would like upward comparisons with those coping better than they are for modeling purposes and downward comparisons to enhance self esteem. The relevance of both social comparison and social exchange to social support is intuitively appealing because comparison but partners and exchange of resources occur in supportive relationships. Both theories can be used to interpret positive and negative reactions to help received from a peer.

Social support can assist coping and exert beneficial effects on various health outcomes (see reviews in Rodin & Salovey, 1989; Sarason, Sarason, & Pierce, 1990; Schwarzer & Leppin, 1989, 1991; Veiel & Baumann, 1992).

Social support has been defined in various ways, for example as "resources provided by others" (Cohen & Syme, 1985), as "coping assistance"
(Thoits, 1986), or as an exchange of resources "perceived by the provider or the recipient to be intended to enhance the well-being of the recipient" (Shumaker & Brownell, 1984, p. 13). Several types of social support have been investigated, such as instrumental support (e.g., assist with a problem), tangible support (e.g., donate goods), informational support (e.g., give advice), emotional support (e.g., give reassurance), among others. The definition and measurement problems involved in studying the social support construct, however, have remained an issue for debate (Dunkel-Schetter & Bennett, 1990; Kessler, 1992; Schwarzer, Dunkel-Schetter, & Kemeny, 1994; Turner, 1992; Vaux, 1992).

Social support has been found advantageous in the recovery from surgery in heart patients. Kulik and Mahler (1989) have studied men who had undergone coronary artery bypass surgery. Those who received many visits by their spouses were, on average, released somewhat earlier from hospital than those who received only few visits. In a longitudinal study, the same authors also found positive effects of emotional support after surgery (Kulik & Mahler, 1993). Similar results were obtained by other researchers (Fontana et al., 1989; King et al., 1993).

These five studies have focussed on the survival time after a critical event. Obviously, the recovery process can be modified by the presence of a supportive social network. A sense of belonging and intimacy can facilitate the coping process one way or the other. As potential pathways for this facilitation,
physiological or behavioural mechanisms have been mentioned. Among the multiple physiological pathways, an immunological and a neuroendocrine link has been investigated (Ader, Felton, & Cohen, 1991). It is known that losses and bereavement are followed by immune depression; in particular it compromises natural killer cell activity and cellular immunity. This, in-turn, reduces overall host resistance, so that the individual becomes more susceptible to a variety of diseases, including infections and cancer. The quality of social relationships, for example marital quality, has been found a predictor of immune functioning (Kiecolt-Glaser et al., 1987, 1992). Social stress, in general, tends to suppress immune functioning (Cohen et al., 1995; Cohen & Williamson, 1991; Herbert et al., 1994).

The neuroendocrine system is closely related to high cardiovascular reactivity and physiological arousal that are seen as antecedents of cardiac events. In a study by Seeman et al. (1994), emotional support was associated with neuroendocrine parameters such as urinary levels of epinephrine, norepinephrine, and cortisol in a sample of elderly people. The link with emotional support was stronger than the one with instrumental support or mere social integration.

Among the health behaviours that have a close link to social integration and social support is physical exercise (McAuley, 1993). Perceived support by family and friends can help develop the intention to conduct exercise and the initiation of the behaviour (Sallis, Hovell, & Hofstetter, 1992; Wankel,
Long-term participation in exercise programs or maintenance of self-directed exercise is probably more strongly determined by actual, instrumental support than by perceived and informational support (Fuchs, 1996). Duncan and McAuley (1993) have found that social support does influence exercise behaviours indirectly by improving one's self-efficacy. The latter might be an important mediator in this process. The reason could be that not only a sense of belonging and intimacy is perceived as supportive but also the verbal persuasion to be competent or the social modelling of competent behaviours.

**COPING AND QUALITY OF LIFE:**

The well-being or quality of life of a population is an important concern in economics and political science. It is measured by many social and economic factors. A large part is standard of living, the amount of money and access to goods and services that a person has; these numbers are fairly easily measured. Others like freedom, happiness, art, environmental health, and innovation are far harder to measure. This has created an inevitable imbalance as programs and policies are created to fit the easily available economic numbers while ignoring the other measures that are very difficult to plan for or assess. Debate on quality of life is millennia-old, with Aristotle giving it much thought in his *Nicomachean Ethics* and eventually settling on the notion of eudaimonia, a Greek term often translated as happiness, as central. The neologism liveability (or livability), from the adjective *liv(e)able*, is an abstract
noun now often applied to the built environment or a town or city, meaning its contribution to the quality of life of inhabitants.

THEORIES OF QUALITY OF LIFE:

The best way of approaching quality of life measurement is to measure the extent to which people's 'happiness requirements' are met i.e., those requirements which are a necessary (although not sufficient) condition of anyone's happiness - those 'without which no member of the human race can be happy' (McCall.S, 1975).

Quality of Life may be defined as subjective well-being. Recognizing the subjectivity of QOL is a key to understanding this construct. QOL reflects the difference, the gap, between the hopes and expectations of a person and their present experience. Human adaptation is such that life expectations are usually adjusted so as to lie within the realm of what the individual perceives to be possible. This enables people who have difficult life circumstances to maintain a reasonable QOL (Janssen 1970).

Quality of Life is tied to perception of 'meaning'. The quest for meaning is central to the human condition, and we are brought in touch with a sense of meaning when we reflect on that which we have created, loved, believed in or left as a legacy (Frankl VE, 1963).
Kulcu DG, Kurtais Y (2007) stated the effect of cardiac rehabilitation on quality of life, anxiety and depression in patients with congestive heart failure and said Patients with CHF tolerated aerobic exercise programs well. This resulted with improvement in both physical and psychologic wellbeing, but not in quality of life in the short term.

Optimistic, self-reliant and confrontational coping were the most frequently used by both women and men over the first year after myocardial infarction, and that confrontational coping has been shown to have positive outcomes in the longer term. Nurses should tell women about the importance of seeking prompt treatment and discuss health problems with caregivers and significant others. Care planning should include family members and significant others so that they can support and encourage patients to cope with problems in daily life. (Kristofferzon ML, 2005)

In public health and in medicine, the concept of health-related quality of life refers to a person or group's perceived physical and mental health over time. Physicians have often used health-related quality of life (HRQOL) to measure the effects of chronic illness in their patients to better understand how an illness interferes with a person's day-to-day life. Similarly, public health professionals use health-related quality of life to measure the effects of numerous disorders, short-term and long-term disabilities, and diseases in different populations. Tracking health-related quality of life in different
populations can identify subgroups with poor physical or mental health and can help guide policies or interventions to improve their health.

The incorporation of patient reported health-related quality of life (HRQOL) measures to better assess clinical outcomes has been an important goal of evidence-based medicine (Guyatt et al. 1997). The Medical Outcomes Study Short-Form 36-Item Health Survey, or SF-36, is the most widely used HRQOL instrument in the world (Brazier, Harper, and Jones 1992). Designed as a generic instrument capable of measuring the HRQL of individuals with different diseases or health conditions, the SF-36 yields scale scores for eight domains: Physical Functioning, Role Physical, Bodily Pain, General Health, Vitality, Social Functioning, Role Emotional, and Mental Health. Recently, this instrument was revised to reflect improved wording and response options, and Version 2 is now available for patient reported measurement of HRQOL outcomes (Ware, Kosinski, and Dewey 2000).

Other HRQOL measures, primarily disease-specific instruments designed to measure particular health conditions, have established standards for determining clinically important differences (CIDs) using various approaches for interpreting important changes over time (Guyatt et al. 2002). Many consumers seek such standards or thresholds for interpreting and evaluating change on these important outcomes (Symonds et al. 2002). These consumers include not only patients, clinicians, and clinical researchers but also pharmaceutical and medical device manufacturers who must demonstrate the
usefulness of their products, and government regulators who, along with insurance payers, must evaluate the usefulness and consequences of each product seeking endorsement or coverage. Without established standards for interpreting the change in HRQOL measures attributed to treatments or interventions, these consumers must often resort to statistical evaluations that rely on the variation in a sample(s) and the number of enrollees or power to detect a statistically significant difference ($p < .05$) between two groups, such as treatment versus placebo. Statistically significant differences, however, do not imply that a meaningful or relevant difference has been demonstrated for the individuals enrolled in such trials (Sloan et al. 2002).

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imply that a meaningful or relevant difference has been demonstrated for the
individuals enrolled in such trials (Sloan et al. 2002).

**COPING AND FAMILY:**

Family stress theory emphasizes the roles of stressor pileup and coping
strategies in adaptation to stress. Research has indicated that demographic
variables may also be related to adaptation to myocardial infarction.

McCubbin and McCubbin (1989) define health as: "family resiliency or
the ability of the family to respond to and eventually adapt to the situations and
危机 encountered over the family life cycle". Resilience is seen as a
characteristic families use to achieve that balance and harmony.

The role of nursing within the Family Stress Theory is defined by
McCubbin and McCubbin as to not only promote family members' health,
recovery from illness, or maximum functioning within specific health
limitations, but also to support and enhance family strengths, to assist families
in maintaining linkages with community supports, and to aid families in
arriving at a realistic appraisal of what is the best "fit" for them in their
particular situation. Through these efforts nurses can assist families in the
process of adaptation.
Resiliency Model of Family Stress, Adjustment, and Adaptation:

Family adaptation is described in the Resiliency Model for Family Stress, Adjustment, and Adaptation as the "outcome of the family's efforts over time to bring a fit at two levels: the individual to family, and the family to community. This process ranges on a continuum from optimal bonadaptation to maladaptation "(McCubbin, 1993). The model is comprised of two distinct parts, the Adjustment Phase and the Adaptation Phase. Each phase describes the family's ability to cope with illness, or stressors looking at family strengths, resources, and coping/problem-solving abilities.

There were four assumptions within the original family stress model developed by Rueben Hill in 1949. These were:

1. Unexpected or unplanned events are usually perceived as stressful.
2. Events within the families, such as serious illness, and defined as stressful, are more disruptive than stressors that occur outside the family, such as war, flood.
3. Lack of previous experience with stressor events leads to increased perceptions of stress.
4. Ambiguous stressor events are more stressful than non-ambiguous events (Friedman, 1998).

McCubbin and McCubbin expanded on this original family stress model and created the Resiliency Model of Stress, Adjustment, and Adaptation in 1989 (Freidman, 1998; McCubbin & McCubbin, 1993). The expanded model
included five propositions that described relationships within the model itself. These propositions describe that in family crisis:

1. The pileup of family demands (stressors, strains, transitions) is related to family adaptation, and this is a negative relationship.

2. Family typologies based on specific strengths of the family system (cohesion, adaptability, family hardiness, family time and routines) are related to family adaptation, and this is a positive relationship.

3. The family resources are related to family adaptation, and this is a positive relationship.

4. The family's positive appraisal of the situation is related to family adaptation, and this is a positive relationship.

The range and depth of the family's repertoire of coping and problem-solving strategies when employed to manage a crisis situation are related to the level of family adaptation, and this is a positive relationship (McCubbin, 1993).

Patterns of resilience can be demonstrated at the individual and/or family level. In identifying resilience outcomes, it is necessary to determine the level of the patterns. While resilience of a child is assessed through responses and behaviours of the child, resilience can be examined through family process, i.e., patterns of successful coping and adapting, intra-family relationships, and
family support systems. Nine aspects of resilient families dealing with a chronic illness situation have been identified. These include:

1. balancing the illness with other family needs,
2. maintaining clear family boundaries,
3. developing communication competence,
4. attributing positive meanings to the situation,
5. maintaining family flexibility,
6. maintaining a commitment to the family as a unit,
7. engaging in active coping efforts,
8. maintaining social integration, and
9. developing collaborative relationships with professionals (Patterson, 1991).

Fine (1991) states that," personal perceptions and responses to stressful life events are crucial elements of survival, recovery, and rehabilitation, often transcending the reality of the situation or the interventions of others". Enhanced quality of life, self-confidence, self-transcendence, self-esteem, and an achievement of an expanded growth potential are characteristics of resilience.

Figure 1.2 shows a contextual model of family stress. The sequence A-B-CX at the centre has been termed the ABC-X model, where A is the crisis event, B the resources available, C the perception of the event, and X the degree of manifested stress. On the basis of all the influences represented in the
model, the family mobilizes its resources either into constructive coping or negatively into crisis. Thus, coping is a process involving the cognitive, emotional, and behavioural responses of the family as a collective. Summarizing research in this field, Boss (1987) concludes that the main determinant of why some families cope while others fall into crisis is the meaning that the event holds for the family and the individuals within it. The extent to which constructive interpretations result in adequate coping depend on the degree of support provided by the internal and external contexts.

Figure 1.2: The contextual model of family stress (source: Boss 1987)
1.3. CONCEPT ON MYOCARDIAL INFARCTION:

Acute myocardial infarction (AMI or MI), more commonly known as a heart attack, is a medical condition that occurs when the blood supply to a part of the heart is interrupted. The resulting ischemia or oxygen shortage causes damage and potential death of heart tissue. It is a medical emergency, and the leading cause of death for both men and women all over the world.

INCIDENCE:

Myocardial infarction 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. Ischemic heart disease is the leading cause of death in developed countries, but third to AIDS and lower respiratory infections in developing countries.

In the United States, diseases of the heart are the leading cause of death, causing a higher mortality than cancer (malignant neoplasms). Coronary heart disease is responsible for 1 in 5 deaths in the U.S. Some 7,200,000 men and 6,000,000 women are living with some form of coronary heart disease. 1,200,000 people suffer a (new or recurrent) coronary attack every year, and about 40% of them die as a result of the attack. This means that roughly every 65 seconds, an American dies of a coronary event.
RISK FACTORS

Risk factors for atherosclerosis are generally risk factors for myocardial infarction:

- Older age
- Male gender
- Cigarette smoking
- Hypercholesterolemia (more accurately hyperlipoproteinemia, especially high low density lipoprotein and low high density lipoprotein)
- Diabetes (with or without insulin resistance)
- High blood pressure
- Obesity (defined by a body mass index of more than 30 kg/m², or alternatively by waist circumference or waist-hip ratio).

STRESS IS ALSO A MAJOR RISK FACTOR FOR MYOCARDIAL INFARCTION.

- Socioeconomic factors such as a shorter education and lower income (particularly in women), and living with a partner may also contribute to the risk of MI
- Women who use combined oral contraceptive pills have a modestly increased risk of myocardial infarction.
- Inflammation in periodontal disease may be linked coronary heart disease.
- Possibly Genetic
CLASSIFICATION:

**Killip Classification (Acute Myocardial Infarction)**

The Killip classification system is used in individuals with an acute myocardial infarction (heart attack), in order to risk stratify them. Individuals with a low Killip class are less likely to die within the first 30 days after their myocardial infarction than individuals with a high Killip class.

**Table 1.1: Killip Classification of Acute Myocardial Infarction**

<table>
<thead>
<tr>
<th>Class</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Includes individuals with no clinical signs of heart failure</td>
</tr>
<tr>
<td>II</td>
<td>Includes individuals with rales in the lungs, an S₃ gallop, and elevated jugular venous pressure</td>
</tr>
<tr>
<td>III</td>
<td>Describes individuals with frank pulmonary oedema</td>
</tr>
<tr>
<td>IV</td>
<td>Describes individuals in cardiogenic shock</td>
</tr>
</tbody>
</table>

**Table 1.2: ICD Classification of Myocardial Infarction**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I21.0</td>
<td>Acute transmural myocardial infarction of anterior wall</td>
</tr>
<tr>
<td>I21.1</td>
<td>Acute transmural myocardial infarction of inferior wall</td>
</tr>
<tr>
<td>I21.2</td>
<td>Acute transmural myocardial infarction of other sites</td>
</tr>
<tr>
<td>I21.3</td>
<td>Acute transmural myocardial infarction of unspecified site</td>
</tr>
<tr>
<td>I21.4</td>
<td>Acute subendocardial myocardial infarction</td>
</tr>
<tr>
<td>I21.9</td>
<td>Acute myocardial infarction, unspecified</td>
</tr>
<tr>
<td>I22</td>
<td>Subsequent myocardial infarction</td>
</tr>
<tr>
<td>I22.0</td>
<td>Subsequent myocardial infarction of anterior wall</td>
</tr>
<tr>
<td>I22.1</td>
<td>Subsequent myocardial infarction of inferior wall</td>
</tr>
<tr>
<td>I22.8</td>
<td>Subsequent myocardial infarction of other sites</td>
</tr>
<tr>
<td>I22.9</td>
<td>Subsequent myocardial infarction of unspecified site</td>
</tr>
</tbody>
</table>
PATHOPHYSIOLOGY:

Myocardial infarction (heart attack) is the irreversible damage of myocardial tissue caused by prolonged ischemia and hypoxia. This most commonly occurs when a coronary artery becomes occluded following the rupture of an atherosclerotic plaque, which then leads to the formation of a blood clot (coronary thrombosis). This event can also trigger coronary vasospasm. If a vessel becomes completely occluded, the myocardium normally supplied by that vessel will become ischemic and hypoxic. Without sufficient oxygen, the tissue dies. The damaged tissue is initially comprised of a necrotic core surrounded by a marginal (or border) zone that can either recover normal function or become irreversibly damaged. The hypoxic tissue within the border zone may become a site for generating arrhythmias. Collateral blood flow is an important determinant of infarct size and 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 function and disrupt electrical activity within the heart. After several weeks, the infarcted tissue forms a fibrotic scar. Long-term consequences include ventricular remodelling of the remaining myocardium (e.g., development of compensatory hypertrophy or dilation), ventricular failure, arrhythmias and sudden death.

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 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 group 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.

Shortness of breath (dyspnoea) occurs when the damage to the heart limits the output of the left ventricle, causing left ventricular failure and consequent pulmonary oedema. Other symptoms include diaphoresis (an excessive form of sweating), weakness, light-headedness, nausea, vomiting, and palpitations. Loss of consciousness and even sudden death can occur in myocardial infarction.

Approximately half of all MI patients have experienced warning symptom as chest pain prior to the infarction.

**DIAGNOSIS:**

WHO criteria have classically been used to diagnose MI; a patient is diagnosed with myocardial infarction if two (probable) or three (definite) of the following 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 cardiac biomarkers such as creatine kinase, 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). Blood pressure may be elevated or decreased, and the pulse can be irregular.

If heart failure ensues, elevated jugular venous pressure and hepatojugular reflux, or swelling of the legs due to peripheral oedema may be found on inspection. Rarely, a cardiac bulge with a pace different from the pulse rhythm can be felt on precordial examination. Various abnormalities can be found on auscultation, such as a third and fourth heart sound, systolic
murmurs, paradoxical splitting of the second heart sound, a pericardial friction rub and rales over the lung.

**Blood Tests** – to look for certain enzymes found in the blood within hours or days after a heart attack. Blood tests will be repeated every 6-8 hours to track the enzymes progressive elevation that indicates heart muscle damage.

**Urine Tests** – to look for certain substances found in the urine within hours or days after a heart attack

**Electrocardiogram (ECG)** – records the heart's activity by measuring electrical currents through the heart muscle. Certain abnormalities in the ECG occur when there is significant blockage of the coronary arteries and/or damage to the heart muscle. The ECG will be repeated to track the progression of these changes.

Echocardiogram – uses high-frequency sound waves (ultrasound) to examine the size, shape, function, and motion of the heart

**Stress Test** – records the heart's electrical activity under increased physical demand. A stress test can also be combined with an echocardiography. Patients who cannot exercise may be given a medication intravenously that simulates the effects of physical exertion. A stress test is done usually days or weeks after the heart attack.
**Nuclear Scanning** – Radioactive material (such as thalium) is injected into a vein and observed as it is absorbed by the heart muscle. Areas with diminished flow uptakes radioactive material and shows up as dark spots on the scan.

**Electron-beam CT scan (coronary calcium scan, heart scan, CT angiography)** – a type of x-ray that uses a computer to make detailed pictures of the heart, coronary arteries, and surrounding structures. This type of CT scan measures the amount of calcium deposits in the coronary arteries, and based on that and other health information, attempts to determine the risk of heart disease, including heart attacks. The American Heart Association (AHA) published guidelines in 2006 indicating that heart scans are not for everyone and those most likely to benefit from the procedure are patients at intermediate risk of coronary artery disease.

**Coronary Angiography** – X-rays are taken after a dye is injected into the arteries to look for abnormalities (narrowing, blockage) in the coronary arteries.

**Histopathology**- Microscopy image (magn. ca 100x, H&E stain) from autopsy specimen of myocardial infarct (7 days post-infarction). Histopathological examination of the heart may reveal infarction at autopsy. Under the microscope, myocardial infarction presents as a circumscribed area of ischemic, coagulative necrosis (cell death). On gross examination, the infarct is not identifiable within the first 12 hours.
MANAGEMENT:

Treatment

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 myocardium as possible and prevent further complications. As time passes, the risk of damage to the heart muscle increases; hence the phrase that in myocardial infarction, "time is muscle," and time wasted is muscle lost.

The treatment itself may have complications. If attempts to restore the blood flow initiated after a critical period of only a few hours, the result is reperfusion injury instead of amelioration. Other treatment modalities may also cause complications; the use of antithrombotics carries an increased risk of bleeding.

First line:

Oxygen, aspirin, glyceryl trinitrate (nitroglycerin) and analgesia (usually morphine, hence the popular mnemonic MONA, morphine, oxygen, nitro, aspirin) are administered as soon as possible. In many areas, first responders can be trained to administer these prior to arrival at the hospital. Morphine is the preferred pain relief drug due to its ability to dilate blood vessels, which aids in blood flow to the heart as well as its pain relief properties.
Of the first line agents, only aspirin has been proven to decrease mortality.

Once the diagnosis of myocardial infarction is confirmed, other pharmacologic agents are often given. These include beta blockers, anticoagulation (typically with heparin), and possibly additional antiplatelet agents such as clopidogrel. These agents are typically not started until the patient is evaluated by an emergency room physician or under the direction of a cardiologist. These agents can be used regardless of the reperfusion strategy that is to be employed. While these agents can decrease mortality in the setting of an acute myocardial infarction, they can lead to complications and potentially death if used in the wrong setting.

**Reperfusion**

The concept of reperfusion has become so central to the modern treatment of acute myocardial infarction, that we are said to be in the reperfusion era. Patients who present with suspected acute myocardial infarction and ST segment elevation (STEMI) or new bundle branch block on the 12 lead ECG are presumed to have an occlusive thrombosis in an epicardial coronary artery. They are therefore candidates for immediate reperfusion, either with thrombolytic therapy, percutaneous coronary intervention (PCI) or when these therapies are unsuccessful, bypass surgery is performed.
Individuals without ST segment elevation are presumed to be experiencing either unstable angina (UA) or non-ST segment elevation myocardial infarction (NSTEMI). They receive many of the same initial therapies and are often stabilized with antiplatelet drugs and anticoagulants. If their condition remains (hemodynamically) stable, they can be offered either late coronary angiography with subsequent restoration of blood flow (revascularization), or non-invasive stress testing to determine if there is significant ischemia that would benefit from revascularization. If hemodynamic instability develops in individuals with NSTEMIs, they may undergo urgent coronary angiography and subsequent revascularization. The use of thrombolytic agents is contraindicated in this patient subset.

The basis for this distinction in treatment regimens is that ST segment elevations on an ECG are typically due to complete occlusion of a coronary artery. On the other hand, in NSTEMIs there is typically a sudden narrowing of a coronary artery with preserved (but diminished) flow to the distal myocardium. Anticoagulation and antiplatelet agents are given to prevent the narrowed artery from occluding.

At least 10% of patients with STEMI don't develop myocardial necrosis (as evidenced by a rise in cardiac markers) and subsequent Q waves on ECG after reperfusion therapy. Such a successful restoration of flow to the infarct-related artery during an acute myocardial infarction is known as
"aborting" the myocardial infarction. If treated within an hour, about 25% of STEMI can be aborted.

**Thrombolytic therapy**

Thrombolytic therapy is indicated for the treatment of STEMI if the drug can be administered within 12 hours of the onset of symptoms, the patient is eligible based on exclusion criteria, and primary PCI is not immediately available. The effectiveness of thrombolytic therapy is highest in the first 2 hours. After 12 hours, the risk associated with thrombolytic therapy outweighs any benefit. Because irreversible injury occurs within 2–4 hours of the infarction, there is a limited window of time available for reperfusion to work.

Thrombolytic drugs are contraindicated for the treatment of unstable angina and NSTEMI and for the treatment of individuals with evidence of cardiogenic shock.

Although no perfect thrombolytic agent exists, an ideal thrombolytic drug would lead to rapid reperfusion, have a high sustained patency rate, be specific for recent thrombi, be easily and rapidly administered, create a low risk for intra-cerebral and systemic bleeding, have no antigenicity, adverse hemodynamic effects, or clinically significant drug interactions, and be cost effective. Currently available thrombolytic agents include streptokinase, urokinase, and alteplase (recombinant tissue plasminogen activator, rtPA).
More recently, thrombolytic agents similar in structure to rtPA such as reteplase and tenecteplase have been used. These newer agents boast efficacy at least as good as rtPA with significantly easier administration. The thrombolytic agent used in a particular individual is based on institution preference and the age of the patient.

Depending on the thrombolytic agent being used, adjuvant anticoagulation with heparin or low molecular weight heparin may be of benefit. With tPA and related agents (reteplase and tenecteplase), heparin is needed to maintain coronary artery patency. Because of the anticoagulant effect of fibrinogen depletion with streptokinase and urokinase treatment, it is less necessary there.

Intracranial bleeding (ICB) and subsequent cerebrovascular accident (CVA) is a serious side effect of thrombolytic use. The risk of ICB is dependent on a number of factors, including a previous episode of intracranial bleed, age of the individual, and the thrombolytic regimen that is being used. In general, the risk of ICB due to thrombolytic use for the treatment of an acute myocardial infarction is between 0.5 and 1 percent.

Thrombolytic therapy to abort a myocardial infarction is not always effective. The degree of effectiveness of a thrombolytic agent is dependent on the time since the myocardial infarction began, with the best results occurring if the thrombolytic agent is used within two hours of the onset of symptoms. If
the individual presents more than 12 hours after symptoms commenced, the risk of intracranial bleed are considered higher than the benefits of the thrombolytic agent. Failure rates of thrombolytics can be as high as 20% or higher. In cases of failure of the thrombolytic agent to open the infarct-related coronary artery, the patient is then either treated conservatively with anticoagulants and allowed to "complete the infarction" or percutaneous coronary intervention (PCI) is performed. Percutaneous coronary intervention in this setting is known as "rescue PCI" or "salvage PCI". Complications, particularly bleeding, are significantly higher with rescue PCI than with primary PCI due to the action of the thrombolytic agent.

**Percutaneous coronary intervention**

The benefit of prompt, expertly performed primary percutaneous coronary intervention over thrombolytic therapy for acute ST elevation myocardial infarction is now well established. Logistic and economic obstacles seem to hinder a more widespread application of percutaneous coronary intervention (PCI) via cardiac catheterization, although the feasibility of regionalized PCI for STEMI is currently being explored in the United States. The use of percutaneous coronary intervention as a therapy to abort a myocardial infarction is known as primary PCI. The goal of primary PCI is to open the artery as soon as possible, and preferably within 90 minutes of the patient presenting to the emergency room. This time is referred to as the door-to-balloon time. Few hospitals can provide PCI within the 90 minute
interval, which prompted the American College of Cardiology (ACC) to launch a national Door to Balloon (D2B) Initiative in November of 2006. Over 800 hospitals have joined the D2B Alliance as of March 16, 2007.

The current guidelines in the United States restrict primary PCI to hospitals with available emergency bypass surgery as a backup, but this is not the case in other parts of the world.

Primary PCI involves performing a coronary angiogram to determine the anatomical location of the infarcting vessel, followed by balloon angioplasty (and frequently deployment of an intracoronary stent) of the thrombosed arterial segment. In some settings, an extraction catheter may be used to attempt to aspirate (remove) the thrombus prior to balloon angioplasty. While the use of intracoronary stents do not improve the short term outcomes in primary PCI, the use of stents is widespread because of the decreased rates of procedures to treat restenosis compared to balloon angioplasty.

Adjuvant therapy during primary PCI include intravenous heparin, aspirin, and clopidogrel. The use of glycoprotein IIb/IIIa inhibitors are often used in the setting of primary PCI to reduce the risk of ischemic complications during the procedure. Due to the number of antiplatelet agents and anticoagulants used during primary PCI, the risk of bleeding associated with the procedure are higher than during an elective PCI.
Coronary artery bypass surgery

Coronary artery bypass surgery during mobilization (freeing) of the right coronary artery from its surrounding tissue, adipose tissue (yellow). The tube visible at the bottom is the aortic cannula. The tube above it (obscured by the surgeon on the right) is the venous cannula (receives blood from the body). The patient's heart is stopped and the aorta is cross-clamped. The patient's head is at the bottom.

Despite the guidelines, emergency bypass surgery for the treatment of an acute myocardial infarction (MI) is less common than PCI or medical management. In an analysis of patients in the U.S. National Registry of Myocardial Infarction (NRMI) from January 1995 to May 2004, the percentage of patients with cardiogenic shock treated with primary PCI rose from 27.4% to 54.4%, while the increase in CABG treatment was only from 2.1% to 3.2%.

Emergency coronary artery bypass graft surgery (CABG) is usually undertaken to simultaneously treat a mechanical complication, such as a ruptured papillary muscle, or a ventricular septal defect, with ensuing cardiogenic shock. In uncomplicated MI, the mortality rate can be high when the surgery is performed immediately following the infarction. If this option is entertained, the patient should be stabilized prior to surgery, with supportive interventions such as the use of an intra-aortic balloon pump. In patients developing cardiogenic shock after a myocardial infarction, both PCI and CABG are satisfactory treatment options, with similar survival rates.
Coronary artery bypass surgery involves an artery or vein from the patient being implanted to bypass narrowings or occlusions on the coronary arteries. Several arteries and veins can be used, however internal mammary artery grafts have demonstrated significantly better long-term patency rates than great saphenous vein grafts. In patients with two or more coronary arteries affected, bypass surgery is associated with higher long-term survival rates compared to percutaneous interventions. In patients with single vessel disease, surgery is comparably safe and effective, and may be a treatment option in selected cases. Bypass surgery has higher costs initially, but becomes cost-effective in the long term. A surgical bypass graft is more invasive initially but bears less risk of recurrent procedures.

**Monitoring for arrhythmias**

Additional objectives are to prevent life-threatening arrhythmias or conduction disturbances. This requires monitoring in a coronary care unit and protocolised administration of antiarrhythmic agents. Antiarrhythmic agents are typically only given to individuals with life-threatening arrhythmias after a myocardial infarction and not to suppress the ventricular ectopy that is often seen after a myocardial infarction.

**Psychosocial approaches to treat myocardial infarction**

Psychosocial interventions have proved efficient for the emotional improvement of patients and for the reduction in post-AMI mortality. Studies
have shown that psychological support in coronary units and stress management programs for post-AMI patients have reduced the depressive and anginal symptoms of these patients. The symptomatic reduction obtained through a psychosocial approach may significantly contribute to the clinical and psychological improvement of these patients.

**STRESS MANAGEMENT**

Stress is a normal physical reaction that occurs when you feel threatened or overwhelmed. The perception of a threat is as stressful as a real threat. You perceive a situation as threatening or feel overwhelmed because you are dealing with an unusually large number of everyday responsibilities. With increasing demands of home and work life, many people are under enormous stress. Stress in one setting can affect stress levels in the other.

*Lifestyle habits to manage stress better*

- **Get enough sleep:** Adequate sleep fuels your mind, as well as your body. Feeling tired will increase your stress because it may cause you to think irrationally.

- **Connect with others:** Develop a support system and share your feelings. Perhaps a friend, family member, teacher, clergy person or counsellor can help you see your problem in a different light. Talking with someone else can help clear your mind of confusion so that you can focus on problem solving.
• **Exercise regularly**: Find at least 30 minutes, three times per week to do something physical. Nothing beats aerobic exercise to dissipate the excess energy. Physical activity plays a key role in reducing and preventing the effects of stress. During times of high stress, choose things you like to do. It is also beneficial to have a variety of exercise outlets. Be physically fit in ways appropriate for your age, rather than being sedentary.

• **Eat a balanced, nutritious diet**: Be mindful of what you put in your body. Healthy eating fuels your mind, as well as your body. Take time to eat breakfast in the morning, it will help keep you going throughout the day. Eating several balanced, nutritious meals throughout the day will give you the energy to think rationally and clearly. Well-nourished bodies are better prepared to cope with stress.

• **Reduce caffeine and sugar**: Avoid consuming too much caffeine and sugar. In excessive amounts, the temporary "highs" they provide often end in fatigue or a "crash" later. You’ll feel more relaxed, less jittery or nervous, and you’ll sleep better. In addition, you’ll have more energy, less heartburn and fewer muscle aches.

• **Don’t self-medicate with alcohol or drugs**: While consuming alcohol or drugs may appear to alleviate stress, it is only temporary. When sober, the problems and stress will still be there. Don’t mask the issue at hand; deal it with head on and with a clear mind.
• **Do something for yourself everyday:** Take time out from the hustle and bustle of life for leisure time. Too much work is actually inefficient and can lead to burnout. Recognize when you are most stressed and allow yourself some reasonable breaks. When things feel especially difficult, take a walk or change your scenery. Most importantly, have fun. Do things that make you happy.

**Emotional responses to handle stress better:**

• **Have realistic expectations:** Know your limits. Whether personally or professionally, be realistic about how much you can do. Set limits for yourself and learn to say “no” to more work and commitments.

• **Reframe problems:** See problems as opportunities. As a result of positive thinking, you will be able to handle whatever is causing your stress. Refute negative thoughts and try to see the glass as half full. It is easy to fall into the rut of seeing only the negative when you are stressed. Your thoughts can become like a pair of dark glasses, allowing little light or joy into your life.

• **Maintain your sense of humour:** This includes the ability to laugh at yourself. Watch a funny movie: the sillier the plot the better. The act of laughing helps your body fight stress in a number of ways.

• **Express your feelings instead of bottling them up:** In order to live a less stressful life, learn to calm your emotions. A good cry during
periods of stress, or sharing your concerns with someone you trust can be healthy ways to bring relief to your anxiety.

- **Don’t try to control events or other people:** Many circumstances in life are beyond your control, particularly the behaviour of others. Consider that we live in an imperfect world. Learn to accept what is, for now, until the time comes when perhaps you can change things.

- **Ask yourself “Is this my problem?”:** If it isn't, leave it alone. If it is, can you resolve it now? Once the problem is settled, leave it alone. Don't agonize over the decision, and try to accept situations you cannot change.

**Meeting the challenges of stressful situations**

- **Manage time:** One of the greatest sources of stress is over-commitment or poor time management. Plan ahead. Make a reasonable schedule for yourself and include time for stress reduction as a regular part of your schedule. When you try to take care of everything at once it can seem overwhelming and as a result, you may not accomplish anything. Instead, make a list of what tasks you have to do, and then complete them one at a time, checking them off as they're completed.

- **Give priority to the most important tasks and do those first:** If a particularly unpleasant task faces you, tackle it early in the day and get it over with. You will experience less anxiety the rest of the day as a result. Most importantly, do not overwork yourself. Resist the
temptation to schedule things back-to-back. All too often, we underestimate how long things will take.

- **Schedule time for both work and recreation:** Too much studying or working is actually inefficient and can lead to burnout.

- **Delegate tasks and break up big projects:** Being efficient and effective means you must delegate tasks and prioritize, schedule, budget and plan your precious time. Aim to work in short, intensive periods, which allow you to rest in between. Break big projects into smaller, more manageable tasks so you don’t feel overwhelmed and nothing gets done as a result.

**Common techniques for stress relief**

**Diaphragmatic breathing (abdominal breathing)** - Stress often causes our breathing to be shallow, which nearly always causes more stress because it puts less oxygen in the bloodstream and increases muscle tension. The next time you feel uptight, try taking a minute to slow down and breathe deeply. Breathe in through your nose and out through your mouth. Try to inhale enough so that your lower abdomen rises and falls. Count slowly as you exhale.

**Progressive Muscle Relaxation (PMR)**- Relaxation exercises help reduce anxiety and stress. First, you cause tension in certain muscle groups and then you totally relax them.
Meditation- Quiet the mind and engage in exercises that help you focus on your breathing, an object, or your body sensations. The goal is to relax the mind, body and spirit.

Practice Yoga for stress reduction- Yoga allows you to build up a natural response to stress and bring the relaxed state more into your daily life.

Practice Tai Chi for stress reduction- Tai Chi focuses on the breath and the mind’s attention in the present moment.

Use massage for stress relief - A massage provides deep relaxation and improves physiological processes. As the muscles relax, so does your entire body, as well as your overstressed mind.

Tips for coping with stress

- Take a mental vacation: Take a moment to close your eyes and imagine a place where you feel relaxed and comfortable. Notice all the details of your chosen place, including pleasant sounds, smells and the temperature. Or change your mental "channel" by reading a good book or playing relaxing music to create a sense of peace and tranquillity (meditation, yoga, and other relaxation techniques).

- Take a warm bath or shower: Wash the stress away and give yourself some time by yourself to reflect and quiet the mind. Soaking in the bathtub can make you feel like you are a world away from your reality.
• Use aromatherapy: Originating in ancient China, aromatherapy is based on the healing properties of plants; from which concentrated aromatic oils are extracted. The vapours of these “essential oils” are then inhaled and carried via the bloodstream, which controls the release of hormones and emotions.

• Care for a pet: Petting an animal can help reduce stress and lower blood pressure.

• Keep a journal: One strategy that many people have found effective in coping with stress is keeping a journal, sometimes referred as a “stress diary.” Writing thoughts down has a marvellous way of putting problems into perspective. Putting your worries into words may help you see that you don’t really have that much to worry about, or it may help you get organized and manage your stress, rather than letting it manage you. Regardless, keeping a journal should help you identify your concerns and establish a plan for moving forward. In your journal:

  • List the situations that produce stress in your life (e.g., moving to a new location, work or school demands, balancing priorities, job promotion, etc.).
  • Describe how you cope with each type of stressful experience.
  • Evaluate your responses. Are they healthy or unhealthy, appropriate or unproductive?
REHABILITATION

Cardiac rehabilitation aims to optimize function and quality of life in those affected with a heart disease. This can be with the help of a physician, or in the form of a cardiac rehabilitation program.

Physical exercise is an important part of rehabilitation after a myocardial infarction, with beneficial effects on cholesterol levels, blood pressure, weight, stress and mood. Some patients become afraid of exercising, because it might trigger another infarct. Patients are stimulated to exercise, and should only avoid certain exerting activities such as shovelling. Local authorities may place limitations on driving motorised vehicles. Some people are afraid to have sex after a heart attack. Most people can resume sexual activities after 3 to 4 weeks. The amount of activity needs to be dosed to the patient’s possibilities.

Secondary prevention

The risk of a recurrent myocardial infarction decreases with strict blood pressure management and lifestyle changes, chiefly smoking cessation, regular exercise, a sensible diet for patients with heart disease, and limitation of alcohol intake.

Patients are usually commenced on several long-term medications post-MI, with the aim of preventing secondary cardiovascular events such as further myocardial infarctions, congestive heart failure or cerebrovascular accident (CVA). Unless contraindicated, such medications may include: Antiplatelet
drug therapy such as aspirin and/or clopidogrel should be continued to reduce the risk of plaque rupture and recurrent myocardial infarction. Aspirin is first-line, owing to its low cost and comparable efficacy, with clopidogrel reserved for patients intolerant of aspirin. The combination of clopidogrel and aspirin may further reduce risk of cardiovascular events, however the risk of haemorrhage is increased.

Beta blocker therapy such as metoprolol or carvedilol should be commenced. These have been particularly beneficial in high-risk patients such as those with left ventricular dysfunction and/or continuing cardiac ischemia. β-Blockers decrease mortality and morbidity. They also improve symptoms of cardiac ischemia in NSTEMI.

ACE inhibitor therapy should be commenced 24–48 hours post-MI in hemodynamically-stable patients, particularly in patients with a history of MI, diabetes mellitus, hypertension, anterior location of infarct (as assessed by ECG), and/or evidence of left ventricular dysfunction. ACE inhibitors reduce mortality, the development of heart failure, and decrease ventricular remodelling post-MI.

Statin therapy has been shown to reduce mortality and morbidity post-MI. The effects of statins may be more than their LDL lowering effects. The general consensus is that statins have plaque stabilization and multiple other
("pleiotropic") effects that may prevent myocardial infarction in addition to their effects on blood lipids.

The aldosterone antagonist agent eplerenone has been shown to further reduce risk of cardiovascular death post-MI in patients with heart failure and left ventricular dysfunction, when used in conjunction with standard therapies above.

Omega-3 fatty acids, commonly found in fish, have been shown to reduce mortality post-MI. While the mechanism by which these fatty acids decrease mortality is unknown, it has been postulated that the survival benefit is due to electrical stabilization and the prevention of ventricular fibrillation. However, further studies in a high-risk subset have not shown a clear-cut decrease in potentially fatal arrhythmias due to omega-3 fatty acids.

1.4. NEED AND SIGNIFICANCE OF THE STUDY

Myocardial infarction (MI) is the rapid development of myocardial necrosis caused by a critical imbalance between the oxygen supply and demand of the myocardium. This usually results from plaque rupture with thrombus formation in a coronary vessel, resulting in an acute reduction of blood supply to a portion of the myocardium.

Although the clinical presentation of a patient is a key component in the overall evaluation of the patient with MI, many events are either "silent" or are
clinically unrecognized, evidencing that patients and physicians often do not recognize symptoms of a MI. The appearance of cardiac markers in the circulation generally indicates myocardial necrosis and is a useful adjunct to diagnosis.

**Burden of myocardial infarction**

- Prevalence of Heart attack: 7.5 million people with AMI (NHLBI)
- Prevalence Rate: approx 1 in 36 or 2.76% or 7.5 million people in USA
- Incidence (annual) of Heart attack: 1.25 million annually USA (NHLBI); 1.1 million with 650,000 new events and 450,000 recurrences.

<table>
<thead>
<tr>
<th>Country/Region</th>
<th>Extrapolated Prevalence</th>
<th>Population Estimated Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>8,097,115</td>
<td>293,655,405</td>
</tr>
<tr>
<td>India</td>
<td>29,367,754</td>
<td>1,065,070,607</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1,661,876</td>
<td>60,270,708</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>3,897,255</td>
<td>141,340,476</td>
</tr>
<tr>
<td>Japan</td>
<td>3,511,020</td>
<td>127,333,002</td>
</tr>
<tr>
<td>Austria</td>
<td>225,407</td>
<td>8,174,762</td>
</tr>
<tr>
<td>China</td>
<td>5,968,968</td>
<td>1,298,847,624</td>
</tr>
<tr>
<td>Pakistan</td>
<td>731,600</td>
<td>159,196,336</td>
</tr>
</tbody>
</table>
• 95 per 100,000 rate for Acute Myocardial Infarction hospitalizations in Canada 1995 Surveillance on-line, 1998 LCDC, Health Canada)

• 1.033% (105,476) of hospital consultant episodes were for acute myocardial infarction in England 2002-03 (Hospital Episode Statistics, Department of Health, England, 2002-03)

• 66% of hospital consultant episodes for acute myocardial infarction required hospital admission in England 2002-03 (Hospital Episode Statistics, Department of Health, England, 2002-03)

• 0.13% (34) of hospital episodes for acute myocardial infarction in public hospitals occurred in males aged 15 to 24 years in Australia 2001-02 (Australian Hospital Data, AIHW, Australia, 2001-02)

**FORECASTING CORONARY HEART DISEASE IN INDIA**

- Cases of CVD may increase from about 2.9 crore in 2000 to as many as 6.4 crore in 2015
- Deaths from CVD will also more than double
- Most of this increase will occur on account of coronary heart disease – AMI, angina, CHF and inflammatory heart disease
- Prevalence rates of CVD in rural population will remain lower than that of urban population, they will continue to increase, reaching around 13.5% of the rural population in the age group of 60-69 years by 2015
- The prevalence rates among younger adults (age group of 40 years and above) are also likely to increase
Prevalence rates among women will keep pace with those of men across all age groups.

Table 1.4: Forecasting the number of cases of coronary heart disease in India (Gender and Age groups)

<table>
<thead>
<tr>
<th>Year</th>
<th>Area</th>
<th>20–29 years</th>
<th>30–39 years</th>
<th>40–49 years</th>
<th>50–59 years</th>
<th>60–69 years</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>Urban</td>
<td>2,711,501</td>
<td>2,635,019</td>
<td>2,775,974</td>
<td>2,286,412</td>
<td>1,089,109</td>
<td>12,300,104</td>
</tr>
<tr>
<td></td>
<td>Rural</td>
<td>1,799,661</td>
<td>2,664,547</td>
<td>3,242,472</td>
<td>3,500,885</td>
<td>3,193,512</td>
<td>14,740,808</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>4,511,162</td>
<td>5,299,566</td>
<td>6,018,446</td>
<td>5,787,296</td>
<td>5,282,621</td>
<td>27,040,912</td>
</tr>
<tr>
<td></td>
<td>Rural</td>
<td>2,012,363</td>
<td>3,230,816</td>
<td>4,217,201</td>
<td>4,544,974</td>
<td>3,849,544</td>
<td>18,007,899</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>6,150,408</td>
<td>7,130,720</td>
<td>8,334,032</td>
<td>7,718,831</td>
<td>7,202,244</td>
<td>35,986,788</td>
</tr>
<tr>
<td>2010</td>
<td>Urban</td>
<td>5,992,412</td>
<td>5,154,768</td>
<td>5,606,721</td>
<td>4,233,272</td>
<td>3,710,621</td>
<td>24,886,119</td>
</tr>
<tr>
<td></td>
<td>Rural</td>
<td>2,334,722</td>
<td>3,940,722</td>
<td>5,537,797</td>
<td>5,817,363</td>
<td>4,929,922</td>
<td>22,263,577</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>8,327,134</td>
<td>9,095,490</td>
<td>10,144,518</td>
<td>9,051,635</td>
<td>8,640,543</td>
<td>47,159,696</td>
</tr>
<tr>
<td>2015</td>
<td>Urban</td>
<td>8,167,024</td>
<td>7,927,848</td>
<td>8,493,463</td>
<td>6,156,089</td>
<td>5,346,075</td>
<td>36,092,297</td>
</tr>
<tr>
<td></td>
<td>Rural</td>
<td>2,334,087</td>
<td>4,523,697</td>
<td>5,816,588</td>
<td>6,852,050</td>
<td>5,913,024</td>
<td>25,400,046</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>10,491,111</td>
<td>12,451,542</td>
<td>14,310,051</td>
<td>12,008,139</td>
<td>11,259,101</td>
<td>61,492,343</td>
</tr>
</tbody>
</table>

Table 2. Forecasting the prevalence rate (%) of coronary heart disease (CHD) in India

<table>
<thead>
<tr>
<th>Year</th>
<th>Area</th>
<th>20–29 years</th>
<th>30–39 years</th>
<th>40–49 years</th>
<th>50–59 years</th>
<th>60–69 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>Urban</td>
<td>5.14</td>
<td>5.06</td>
<td>6.16</td>
<td>6.14</td>
<td>8.16</td>
</tr>
<tr>
<td></td>
<td>Rural</td>
<td>1.90</td>
<td>1.20</td>
<td>2.10</td>
<td>2.90</td>
<td>3.11</td>
</tr>
<tr>
<td></td>
<td>Rural</td>
<td>1.90</td>
<td>1.30</td>
<td>4.45</td>
<td>2.90</td>
<td>3.94</td>
</tr>
<tr>
<td></td>
<td>Rural</td>
<td>1.90</td>
<td>1.30</td>
<td>4.45</td>
<td>2.90</td>
<td>3.94</td>
</tr>
<tr>
<td></td>
<td>Rural</td>
<td>1.90</td>
<td>1.30</td>
<td>5.13</td>
<td>2.90</td>
<td>4.32</td>
</tr>
</tbody>
</table>

Anxiety is present in all patients in various degrees. Anxiety included in the category of atherosclerosis. The major Atherosclerotic heart disease is MI, which occurs when ischemic intracellular changes become irreversible and necrosis results.

The threat associated with myocardial infarction in-patient an one family member causes as situation of stress for the whole family and especially the
spouse, leading to a need to adjust. The unexpectedness of the event may make the situation worse and so may an unawareness of what the patient can do, or whether a situation is dangerous.

As mentioned earlier, MI is frightening that disrupts sense of control in a patient and coping which such a sudden and frightening event requires patients to make major psychological adjustments. At least 20% will have more persistent symptoms of clinical anxiety or depression (Jones et al, 1995).

Health care professionals are in a position of developing trust and patients may expect them to make decisions on their behalf. Difficulty in the IPR between a health care professional and patient may compound these feelings.

Psychological interventions to assist the patient to adapt to change, become self empowered and regain control of their life. Results of a study add to the growing literature demonstrates the efficacy of psychosocial as an important component of cardiac rehabilitation programmes and document that stress management training has a significant and incremental effect on cardiovascular morbidity and its burden on the health care system in comparison to routine cardiological care.

Recent guidelines for cardiac rehabilitation indicate that as few and 10% of all eligible patients who could potentially benefit from cardiac
rehabilitation services actually participate in formal cardiac rehabilitation programmes. Although the findings from this study must be regarded as preliminary and will require confirmation from larger clinical trials, the present results provide compelling evidence for the value of psychological interventions as important components of cardiac rehabilitation services and indicate that behavioural interventions provide additional benefit over and above standard medical therapy in patients with myocardial ischemia.

From the above facts and experience of the investigator, it was observed that it is essential to determine the stressors and coping mechanisms or patterns, used by patients with MI. Not many studies have been done with regard to the above aspect and knowledge about such coping strategies would be useful to health care provider in helping the patient to deal with the changing demands required when living with of MI.

1.5. STATEMENT OF THE PROBLEM

A Study to assess the level of Stress and Coping Behaviour seen Among Patients with Myocardial Infarction at Sri Jayadeva Institute of Cardiology, Bangalore, India.
1.6. OBJECTIVES

1. To describe the socio-demographic characteristics of study subjects diagnosed with Myocardial Infarction.

2. To assess the level of stress among the subjects.

3. To identify the level of coping behaviour seen among subjects.

4. To identify the relationship between stress and coping.

5. To find out the association between specific socio-demographic characteristics and level of stress and coping behaviour.

Note: The study was done on patients on the first day of admission after appropriate medical therapy started and patient stabilized.

1.7. OPERATIONAL DEFINITIONS

Stress: for the purpose of the present study, it was defined as summation of total scores obtained on Death Anxiety Scale, Family Burden Interview Schedule, Perceived Social Support Appraisal Scale and Quality of Life Scale.

Death Anxiety: It is the emotional reactions and the cognitive responses that are evidenced by the patients towards the concept of death and the anticipation of one’s own death. The degree to which Death Anxiety manifests in the patients and the factors which mediate its experience is assessed by the researcher using Death Anxiety Scale (DAS) of Donald I. Templer (1970).

Family Burden: Family Burden in this study is measured by assessing the family member on seven dimensions such as Financial burden, Disruption of routine activities, Disruption of family leisure, Disruption of family
interaction, Effect on physical health of others, Effect on mental health of others and Over all subjective well being by using Family Burden interview schedule (Pai and Kapur, 1981).

**Social Support:** It is the degree to which perceived Social Support is experienced by the patient from his/her social environment in their interactions with his/her friends and family as measured by “Perceived Social Support Appraisal Scale” prepared by Alan Vaux et.al, 1993.

**Quality of Life:** refers to the MI Patient’s evaluation of his/her attitude towards himself/herself and the changes that the person perceives in the various aspects of his/her life as measured by Kaasa, Mastekaasa and Naess’s (1988) Quality of Life scale.

**Coping Behaviour:** refers to the types of response made by MI patients that directed action, tendencies of them aimed at removing or actualizing stressful event as assessed using a Coping Behaviour Scale (Rao.K, Subbakrishna D.K & Prabhu G.G, 1989) of items which are considered coping behaviour and strategies.

**Patients:** Subjects who are admitted to the hospital with diagnosis of Myocardial Infarction.

**Myocardial Infarction:** is stated as when the blood supply to the part of the heart muscle is blocked, usually by the sudden formation of a blood clot within the coronary artery, leading to death of part of the heart muscle. Classically it is diagnosed when two of these three things occur like typical symptoms (chest pain, shortness of breath), typical changes on the
electrocardiogram (ECG) and elevation in the blood of certain biomarkers (The enzyme like CK-MB, Troponin-T or Troponin-I) (The American Heart Association & world Heart Federation, 2007).

1.8. HYPOTHESES

- **H₁**: there will be statistically significant association between the level of stress and selected Socio-demographic variables such as age, sex, and domicile.
- **H₂**: there will be statistically significant association between the level of coping and selected Socio demographic variables such as age, sex, and domicile.
- **H₃**: there will be statistically significant association between the level of stress and coping behaviour.

1.9. ASSUMPTIONS

1. Patients with Myocardial Infarction face different levels of Stress.
2. Coping behaviour of Myocardial Infarction patients differ according to their level of stress.
3. Higher the perceived social support, better the coping behaviour, lesser will be the level of death anxiety, lesser will be the level of family burden leading to higher quality of life among Myocardial Infarction patients.