CHAPTER I

INTRODUCTION

Introduction
Need and Significance of the Study
Objectives of the Study
Hypotheses
INTRODUCTION

Heart disease is one of the major causes of morbidity and mortality in modern society. Environmental and personal stressors resulting from rapid social changes like urbanization and industrialization have contributed a large extent to the occurrence of heart diseases. Health problems arising out of environmental pollution, changing lifestyle, ‘fast-food’ consumption and sedentary life pattern and unhealthy habits like smoking and alcoholism have led to several heart ailments which indirectly increase the morbidity and mortality rate. In addition, personal problems and psycho social problems such as social insecurity, lack of close and intimate relationships, depersonalisation, lack of identity and marital disharmony, indirectly contribute a lot in this regard.

One has to face many other personal stressors in this modern, competitive and dynamic world such as time constraints, job stress, role conflicts, financial problems, problems in interpersonal relationships etc. Moreover, disparity between ambitions and realities add fuel to the fire of stress and anxiety. When it exceeds the tolerance level of a person, he becomes a victim to various psychosomatic illnesses (diseases resulting from maladaptive behaviour to stress, characterised by physical illness which are psychological in origin). These diseases involve various systems in
the body such as respiratory system, cardiovascular system, gastrointestinal system and endocrine system. Bronchial asthma, peptic ulcer, ulcerative colitis, hypertension, coronary artery diseases and diabetes mellitus etc are examples of psychosomatic illnesses.

There is ample evidence to state that majority of the heart ailments are precipitated by strong and immediate psychologically provoking situations eliciting stress and anxiety in the individual. (Lavallo and William (1979), Graboys and Thomas (1984), Verrier et al. (1984), Russeck et al. (1976)]) Neuro circulatory asthma is a typical example, in which the disease is precipitated by situations that lead to fear and anxiety reactions. Further recurrence or exacerbations of symptoms appear in a person if similarly provoked. [Lovallo, (1979)] consider emotional circumstances to be the most common precipitating factor for heart diseases. Other than this, one may find strong emotional situations immediately preceding angina pectoris and myocardial infarction. [Bella Jain et al. (2000)]

In 1976 Russeck demonstrated that there is a direct relationship between intensity of emotion and speed of blood coagulation; i.e., the stimulation of sympathetic nervous system during stress and anxiety, increases the speed of blood clotting. Such clotting may occur inside the blood vessels at any part of
the body. If it happens in the coronary arteries it leads to coronary artery diseases such as angina pectoris and myocardial infarction. This is a fatal condition if not treated in time, may lead to sudden cardiac arrest. Several independent studies relate emotional circumstances to physiological conditions affecting cardiovascular functions as well as cardiac diseases. [Russek (1976)].

Emotional disturbances such as stress and anxiety produce a variety of changes in the normal activity of the heart. These include tachycardia, brady cardia, arrhythmias, and fibrillations. Other than this, we could observe shock, aneurysm, and haemorrhage as psychosomatic in origin. [Lavallo William (1979)] Hence it could be concluded that stress and anxiety are the major causes of cardiac illness.

Heart diseases may be congenital or acquired. Congenital heart diseases are present since birth, like Atrial septal defect (ASD), Ventricular septal defect (VSD), Patent ductus arteriosus (PDA), Tetrology of Fallot (TF), Coarctation of aorta, Abnormal position of heart and blood vessels etc. Heredity and maternal infections during pregnancy lead to these congenital defects of the heart. [Wong (1993); Tambulwadkar (1996)].
Acquired heart diseases may be inflammatory or metabolic in nature or due to degenerative changes in the myocardium or in coronary arteries. Endocarditis, rheumatic heart diseases, pericarditis, coronary artery disease etc. are some of the acquired heart diseases. Reasons like infection, inflammation and degeneration of various parts of the heart including valves and blood vessels are found reported to be responsible for the acquired heart diseases. [Black and Jacobs (1997), Tambulwadkar (1996)].

Heart diseases could be managed with pharmacological therapy, along with rest and dietary restrictions. If the symptoms are not relieved by these measures, surgical intervention is suggested. Structural defects of the heart, whether congenital or acquired, need surgical repair to relieve signs and symptoms. [Black and Jacobs (1997)].

The distressing physiological signs and symptoms of heart diseases cause a lot of physical stress and anxiety in a cardiac patient. The signs and symptoms of cardiac diseases include dyspnea, cough, hemoptysis, chest pain, palpitation, fatigue, giddiness, syncope, swelling of feet and puffiness of face. [Finkelmeir (1995)]. These symptoms could be distressing and anxiety provoking and could be relieved by surgical repair of the structurally defective heart. The patient could be rehabilitated to
the normal productive life with few restrictions after surgical intervention.

Advancement in science and technology has revolutionised the diagnosis and treatment of cardiac ailments. Now-a-days cardiac surgery is adopted as a life saving measure to critically ill cardiac patients. Today, cardiac surgery is done at a rate of 5 or 6 patients per week in our medical colleges.

Cardiac surgery could be of various types, such as reparative, reconstructive or substitutional. Reparative surgery includes closure of Atrial Septal Defects (ASD), Ventricular Septal Defects (VSD), and ligation of ductus arteriosus etc. These surgeries are likely to produce complete cure or excellent and prolonged improvement.

Reconstructive surgery is a more complex curative procedure which require re-operation at a later stage; eg; coronary artery bypass surgery (CABG).

Substitutional surgeries include valve replacement and cardiac replacement. This is done in advanced cases where the reparative procedure is contra indicated. [Black and Jacob, 1997]

Cardiac patients need to go through three phases of surgical intervention, which is stressful and anxiety provoking.
They are the preoperative, operative and post-operative periods. There are various stressors associated with cardiac surgery during all these phases.

Carr and Powers (1985) have revealed the following stressors associated with cardiac surgery. The mere awareness that the patient needs to undergo cardiac surgery itself becomes the highest stressor rated by the cardiac surgical patients. Some of the other stressors perceived by them are resuming life-style, pain and discomfort due to illness or surgery, fear of death, absence from home or workplace, anxiety about progress in recovery. Moreover, prolonged interval before surgery, sleep interruptions, lack of income and related economic problems, fear about resuming sexual activity, needing help for all activities of daily living etc are also perceived as stressful by the cardiac patients.

In addition to what they had perceived, discussing surgery with doctors and nurses, changes in eating habits, transfer from ICU, different caretakers, following hospital schedule, monitors and other equipments, taking medications, restricted visiting hours etc are stressful and anxiety provoking. This long list of stressors inevitably develop stress and anxiety among cardiac surgical patients.
It is observed that the stress and strains of cardiac surgical patients start with admission in the hospital itself. Hospital environment presents several stressful and anxiety provoking situations for the cardiac patients and their relatives from the moment they are admitted in the hospital. The hospital environment is unfamiliar and new to the patients. In addition, it has its own restrictions, routines and procedures. Frequently there is loss of privacy, loss of independence along with separation from family, friends, relatives and work. [Sarafino, 1994] There will be aches, pains, dyspnea and other disturbing symptoms of illness which patients themselves have to suffer. Moreover, one loses control over personal routines and often becomes depersonalised as they are treated as one among many cardiac patients. People around are almost strangers with more or less similar signs and symptoms of illness. Patients are forced to tolerate loneliness and boredom along with the stress and strains of routine hospital life [Sarafino, 1994]. The extent to which the patient perceives these stressors and manifests anxiety depends on the nature and severity of his disease and his stress tolerance level. The hospital environment itself is noxious with bad smell of drugs, detergents, gangrenous wounds, smell of body excreta etc. There will be awful sights of infected wounds, burns, amputations etc. and fearful sounds of cry due to pain and sufferings. In short, one
could conclude that the hospital environment suffocates all sense organs of the patients with disgusting sights, sounds and smells.

Added to this, one may find that patients are often not properly cared by the caregivers due to work overload, time constraints and other factors. Sometimes patients are even considered as a burden due to inadequacies of hospital facilities and staff shortage. Doctors and nurses, due to the disproportionate caregiver-patient ratio, fail to provide the patients with adequate services and care. Their behaviour becomes very formal and the caregiver-patient relationship generally is not very smooth. [Mathew (1994)].

The job-stress and dissatisfaction of the caregivers such as doctors, nurses and other working staff will be reflected in their behaviour to the patient. Hence the patients experience neglect, lack of love and sympathy etc from the professional care givers. Other than this, inadequacies in the hospital wards, unhygienic ward situations, unfamiliar and strange routines of the hospital, pain and sufferings and emergencies in the ward situation, sleep disturbances due to noise and increased signs and symptoms of the disease etc., make the cardiac surgical patients anxious and they experience a lot of stress and strain during their hospital stay. [Carr and Powers (1985)] [Mathew (1989)].
The family too undergoes stress and anxiety while the patient is hospitalised. (Rykholm, Bailey et al., 1992) The situation becomes worse when one of the family members requires emergency surgical intervention on the heart—the most vital organ—to preserve and sustain his life. Since man is a social animal everyone has got a specific role to play in a family such as father, mother, brother or sister. If one among them require a cardiac surgery, the effect of which is unpredictable, there evolves a lot of emotional stress and strain. The reaction of the family members to these stressors depends on the role of the patient in the family, age, sex, education and socio economic background and the personal relationship he has with other family members. It is observed that the stress and strain experienced by the relatives and the bystanders get reflected in their behaviour, which indirectly affects the emotional state of the patients. [Mathew (1994)].

Owing to the serious condition of the cardiac patients, they are always accompanied by their relatives as bystanders. Hospitalization involved many changes in the homeostasis of the family system. If a person is sick and hospitalised, it affects the entire family system, resulting in work-overload, role changes, financial expenses, lack of rest and sleep due to constant and vigilant care giving, absence from work place and related economic
and other problems, added responsibility as a bystander etc. These factors increase the stress and strain of the bystanders, which will be naturally reflected in their behaviour to the patient. [Rukholm et al. (1992)] These problems mount up when the critically ill cardiac patient requires a major surgery for his survival. Along with the cardiac surgical patients, the family also undergoes all the stress and strain of cardiac surgery, the result of which is unpredictable. Their stress and anxiety reaches the peak in cases where these critical patients have to depend on government or other voluntary agencies for financial assistance for surgery and wait for the same.

All these factors, along with painful invasive investigative and treatment procedures, increase the stress and anxiety of patients in the hospital. The patients undergoes emotional crisis while he happens to witness the death and emergency situations occurring around him in the ward.

Cardiac patients need to go through three phases of surgical intervention, which is stressful and anxiety provoking. They are the preoperative, operative and post-operative periods. There are various stressors associated with cardiac surgery during all these phases. [Smeltzer and Base (1996)].
Cardiac surgery involves elaborate pre-operative preparations and comprehensive post-operative management in cardiac intensive care units. This itself becomes stressful to the patients undergoing cardiac surgery. The mere fact that the patient requires a cardiac surgery, the result of which is unpredictable, itself is stress producing. [Carr, Powers (1985)].

The pre-operative preparations include physical preparation, physiological preparation, psychological preparation and legal preparation of the patients undergoing cardiac surgery [Black and Jacobs(1997)].

Signing a consent-agreement to undergo surgery, the result of which is unpredictable after knowing all its consequences, is really anxiety provoking and stressful. Other than this, arrangement for blood donors, fasting for hours together, numerous invasive and non-invasive diagnostic procedures and referral check ups by various doctors of other departments like dental, ENT and physicians are strange, distressing and anxiety provoking [Mathew (1994)]. Another odd situation arises when the surgery of a patient is postponed due to technical reasons after all these laborious preoperative preparations.

The stress and anxiety experienced by cardiac surgical patients has an impact on post-operative recovery. The phase of
post-operative rehabilitation is critical and stressful to all cardiac surgical patients. During the immediate rehabilitation phase the cardiac surgical patients undergo a lot of physiological stress due to the use of cardiopulmonary bypass machines during surgical intervention. The internal environment of the patient may be altered due to surgical intervention, anaesthesia and cardiopulmonary bypass procedures. [Moskovtchenoko (1977) Foliguet (1977)] The homeostasis of internal functions of vital organs such as heart, lungs, kidney, brain and liver need to be maintained within normal functioning.

Usually during this immediate post-operative rehabilitation period the physiological stress and strain appear more prominent than the psychological stress. Hence more attention is paid on body functions by a comprehensive approach to cardiac patients in an intensive care unit (ICU). As a routine, cardiac surgical patients are given comprehensive nursing care in ICU for 2-3 days.

The post-operative recovery of a cardiac surgical patient greatly depends on the type of illness, the grade of symptoms, general physiological and psychological conditions of the patient and the pre-operative, operative and post-operative management [Mathew (1994)]
Since mind and body are intricately interwoven, the stress and anxiety experienced by the patients affect their physical conditions which in turn affect the post-operative recovery process. Healing will be promoted if the muscles are relaxed and the person himself is relieved of stress and anxiety. There are many psychological interventions, which could be adopted to relieve stress and anxiety of cardiac surgical patients. These include stress reduction programmes such as relaxation exercises, meditations, yoga, information giving counselling etc. (Lesarman, Stuart et al. (1989), Vihang (1993), Irvine et al. (1986), John (1989), Hwang (1998)].

It is observed that patients who could cope well with stress and anxiety during the pre-operative period could very well adjust to the stress of post-operative rehabilitation. Usually they are very co-operative and adaptive to the instructions of caregivers and go through this critical phase of post-operative rehabilitation smoothly without any complications. Yet another group of patients exhibit a lot of stress and anxiety during their pre-operative period itself. They are less co-operative, easily irritable, suspicious, anxious and depressed and argue with caregivers. Usually these patients exhibit higher levels of heart rate, pulse rate and blood pressure and they constantly maintain a physiologically aroused state of stress and anxiety. Signs and
symptoms of stress and anxiety could be easily elicited in their behaviour and talks. These are the types of patients who face fatal complications during their post-operative rehabilitation phase [Mathew (1994)].

The operated heart will not be able to cope with the increased workload resulting from physiological arousal due to stress and anxiety during the immediate post-operative period. If there is stress and anxiety these will have an adverse effect on the repaired heart and its mutilated blood vessels. This may result in serious post-operative complications like heart failure, leading to death of the cardiac patients during the immediate post-operative rehabilitation period. Hence it can be concluded that appropriate stress management programmes should be taught to those patients, who find it difficult to cope well with stress and anxiety, in order to prevent post-operative complications. This will help the cardiac surgical patient to have a smooth and uneventful recovery from cardiac problems.

**Need and Significance of the Study**

Although advancement in science and technology have minimised the morbidity and mortality rate in relation to cardiac surgery, researchers have reported several complications, often fatal, following cardiac surgery, as heart failure, respiratory
failure, kidney failure, liver failure, cerebrovascular accidents, postcardiotomy syndromes, psychosis etc. [Black and Jacobs (1994)] Sometimes these complications may be known to the patients prior to surgery, which adds to their stress and strains.

Other post-operative complications reported by researchers are pericardial effusion, cardiac tamponade, [Alkhulaifi et al., (1996)] diaphragmatic dysfunction, [Chang et al. (1995)] nosocomial pneumonias, [Lainez et al. 1994] sepsis-1993 [Thomas et al. (1993)] sciatic neuropathy, [Lempster et al. (1991)] respiratory failure, [Burgss et al. (1989)] infectious endocarditis, [Sanguinetti (1977)] acute renal failure, [Moskovtchanoko (1977) Hellberg et al.(1975)] myocardial infarction [Delaye (1976)] and hepatic complications [Guio. et al. (1975)]. Other than these complications the investigator witnessed hemiplegia due to cerebral embolism, cardiac arrest, post-operative psychosis, infections, anxiety neurosis, septicemia etc during her clinical experience. Vital organs like brain, liver, lungs, kidneys and heart itself could be seriously damaged during surgery or afterwards, leading to the above mentioned complications. It was also observed that the rate and intensity of these complications differ from person to person depending on their temperament, attitude and emotional state. [Mathew (1994)].
These patients are likely to develop psychosis, depression, anxiety neurosis etc. during their post-operative rehabilitation phase. Complications like myocardial infarction, heart failure, ventricular rupture, hypertension, arrhythmias etc are likely to occur in patients with high levels of stress and anxiety during their immediate post-operative period. From the above discussion it is evident that stress and anxiety experienced by cardiac surgical patients during pre-operative, operative and post-operative periods could precipitate post-operative complications. All these complications could be prevented by using appropriate psychological measures such as stress management programme prior to surgery itself. [Blacher (1975)].

The various stressors perceived by the cardiac surgical patients and the adverse effect of these stressors on the patient’s body and mind during and after cardiac surgery are evident from the discussion so far. The covert problems of stress and anxiety precipitated by these stressors are injurious to the morbid heart of the cardiac surgical patient. Investigations in this field have explored this area in Western Countries. [Blythe et al. (1986). They have given several suggestions to overcome these covert clinical problems.
There are reports of several stress management packages having an effect on hypertension, diabetes mellitus and other psychosomatic diseases such as asthma, from many parts of the world. Several techniques like meditation, yoga, prayer meetings, wet and dry floating, music and relaxation techniques have been suggested to deal with stress and anxiety among individuals. Majority of experts suggest that adequate information about the procedure a person is supposed to undergo reduces stress and anxiety [Nigcl (1981)]. Some of the researchers have suggested relaxation as the most effective stress reducing technique. [Laserman (1989), Shaw et al. (1991)]. Others have opined that breathing exercises could also be used to relieve stress and anxiety in an individual. [Margo (1986)]. But these stress management programmes have not been tested on cardiac surgical patients in our country. In fact the medical professionals in India give less importance to the psychological problems, like stress and anxiety. They believe that these problems have no medical treatment and that things will be all right in due course of time.

The cardiac patients need to suffer prolonged hospitalization and even face death during or after cardiac surgery due to severe complications. It is observed that the professional caregivers, including doctors and nurses, are very keen and enthusiastic
regarding the physiological and physical well being of the cardiac surgical patients. But they remain helpless and ignorant about the management of psychological problems like stress, fear and anxiety. This may be due to negligence, ignorance or lack of interest regarding the psychological aspects of care. [Mathew (1994)]. It is evident that the stress and anxiety of cardiac surgical patients yet remain a problem to be solved. It is this miserable and helpless clinical situation of the critically ill cardiac surgical patients that inspired the investigator to attempt to a solution to this burning, unattended problem.

The investigator has attempted to find out a solution for the same by designing a simple and practical stress management programme. The investigator feels that the stress management programme must be so planned that it can be practised by any trained nurse.

Researchers like De Jong and Emmelkamp (2000) have found that there is no significant difference in effectiveness between the stress management training given by clinical psychologists and that by other professionals. Hence the stress management programme may be given by other professionals too. Hence the investigator intends to work out a new stress management programme, which could be administered by professional nurses.
The investigator has designed a stress management programme which is simple and practical. The efficiency of the newly designed stress management programme (SMP) need to be tested in a selected population of cardiac patients, so that this package of programme if proved effective may be widely used in the clinical area in future.

Efforts have been made by medical professionals, with the help of behavioural scientists, to reduce the stress and strains among cardiac patients by using appropriate stress reduction techniques. Some of the techniques which have yielded positive effects are progressive muscular relaxation techniques, [Scheufele (2000)] breathing exercises, [Ruth (1981)] music therapy, adequate pre-operative teaching [Nigel, (1981)] and patient counselling. Hawang et al. (1998).

Jacobson’s progressive muscular relaxation technique is found to be one of the most effective methods to reduce stress among cardiac patients. [Jacobson (1938)].

It has also been proved that stress and anxiety can be reduced by appropriate breathing exercises such as deep breathing exercises, diaphragmatic breathing exercises, [Ruth (1981)] incentive spirometry, pursed lip breathing exercises etc. These exercises help
to increase the oxygen intake and refresh the patient by filling his body with the energy required to deal with the stress and strain.

Music therapy, Yoga [Irvine et al. (1986)] and Meditation [Vihang (1993)] are also found effective to reduce the stress. As the heart beats are maintained within normal limits, the patients experience a calm and symptom-free existence.

Many researchers have given ample evidence regarding the positive effects of pre-operative teachings on cardiac surgery. [Nigel (1981), John (1989)].

Research findings have proved that the effect is more when more than one technique is used to reduce stress and anxiety among cardiac surgical patients. [Scheufele (2000), Irvine et al. (1986)] The physical, psychological and cognitive domains of the cardiac patient may be cared for sufficiently in advance so that the patient would be better equipped to deal with the stress and anxiety involved in the process of surgery and also in the process of healing. Hence a combination of relaxation techniques, breathing exercises and information giving method is thought to be the most ideal stress management programme to be tried in the case of the cardiac surgical patients.
The purpose of the study thus is to test the efficacy of the stress management programme and to bring out a package which when administered would help to speed up the recovery rate of cardiac surgical patients during their immediate post-operative rehabilitation phase.

Therefore, the study is stated as "THE EFFECTIVENESS OF STRESS MANAGEMENT PROGRAMME ON CARDIAC SURGICAL PATIENTS."

The Stress Management programme includes Deep Breathing Exercises (DBE), Guided Somato Psychic Relaxation (GSPR), and Information regarding cardiac surgery and its preparation.

The following objectives are formulated for the present study.

**Objectives of the Study**

- To find out the level of stress experienced by the cardiac surgical patients before and after cardiac surgery.
- To find out the level of state anxiety experienced by the cardiac surgical patients before and after cardiac surgery.
- To find out the level of trait anxiety experienced by the cardiac surgical patients before and after cardiac surgery.
To find out the post-operative complications developed in the cardiac surgical patients.

To develop a stress management programme (SMP) for the cardiac surgical patients.

To test the effectiveness of SMP on the cardiac surgical patients.

Based on the clinical experience of the investigator, the objectives framed, and the literature reviewed, the following hypotheses are formulated for the present study.

**Hypotheses**

H.1. There will be significant difference between the pre operative stress and post-operative stress in the experimental group.

H.2. There will be significant difference between the pre-operative state-anxiety and post-operative state anxiety in the experimental group.

H.3. There will be significant difference between the pre-operative trait anxiety and post-operative trait anxiety in the experimental group.

H.4. There will be significant difference between experimental group and control group in the post-operative stress.
H.5. There will be significant difference between the experimental group and control group in the post-operative state anxiety.

H.6. There will be significant difference between the experimental group and control group in the post-operative trait anxiety.

H.7. There will be significant difference between experimental group and control group in the occurrence of post-operative complications.