CHAPTER – I

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Incidence of Coronary Artery Disease (CAD) is on the increasing trend and has become a true pandemic that respects no border (World Health Organization report, 2008). CAD is the second ranking cause of mortality in the age group of 15 to 59 years and first in the age group of above 60 years. Approximately 3.8 million men and 3.4 million women die each year worldwide due to CAD. India is topping the list with highest number of deaths due to CAD followed by China and Russia. The mortality burden per million in various countries is as follows: United States of America-188, U.K-188, Japan-106, Russia-688, India-428, and Kazakasthan-713 (WHO Report, 2008). The Death rates due to CAD have decreased in North America and other developed European Countries whereas in developing countries like India and Pakistan there is a steep rise in the death rates. It is expected that 82% of the future CAD mortality will occur in the developing countries.

CAD prevalence in India has increased by 300%. Currently, 10–12% of urban Indians have CAD compared to 3% of the US population. It has been predicted that cardiovascular diseases (CVD), which includes stroke and CAD, will increase rapidly in India (Enas, et al 2008). In the next 15 years, India is projected to have more than half of the cases of CVD in the world. India had 28 million people afflicted with CAD in 2000, and this number is projected to increase to 62 million by 2015—an increase of 114% in just 15 years. Of these, 23 million will be younger than 40 years of age, and only 11 million will be older than 60 years of age (Enas, et al. 2008). The notable change in the spectrum of this disease in India is that more of younger generation and people from lower socioeconomic strata are affected. Evidences show that young
patients from white communities do not show extensive disease whereas in young Indians there are often three vessel diseases with poor prognosis (Enas, 2008). The post-infarction course is also worse in Indians as compared to whites. This is reflected by three time higher rate of re-infarction and two-times higher rate of mortality. The nature and nurture both has contributed to the high prevalence of CAD. The CAD rates in rural areas of India are only half that found in urban India. This 2-fold urban-rural gradient and the 3-fold increase in the prevalence of CAD over the past 30 years, among people who share the same genetic pool, suggest a powerful impact of environmental/lifestyle factors superimposed over the possible genetic susceptibility.

A large community based Epidemiological Survey (Chadha & Singh, N, 2003) was done in a randomly selected urban population of 13,723 adults in the age group of 25-64 years with 6372 males and 7351 females. The total prevalence rate of CAD was estimated as 101/1000 and the annual incidence rate was 21/1000 in women in the age group of 25-64 years. Analysis of information on important risk factors such as family history, smoking, obesity, diabetes, hypertension and dislipidemia suggested that hypertension had the strongest association with CAD. Obesity and diabetes also had greater association with CAD in women than men.


The CAD leads to fatal attacks or leads to activity limitation. The CAD is the main cause of activity limitation for 11.5% of population which ranks second to orthopedic impairments (WHO report 2008). The Disability Adjusted Life Years (DALY’s) lost is a reflective measure of burden of the disease. Cardiovascular disease
is responsible for 10% of DALY’s lost in the low and middle income countries and
18% in high income countries. More than 60% global burden of CAD occurs in
developing countries (WHO report, 2008). The DALY’s lost per 1000 population in
developed countries range from 3 to 8 where as it is very high as 20 in South East
Asian countries like India, Pakistan, Bangladesh and Nepal.

The conventional risk factors such as hypertension, obesity, hyperlipidemia
are well known etiological factors. Evidence from a survey (Kasilwal, 2006) showed
that the role of at least one conventional risk factor was substantial with 96% of all the
patients studied. Dyslipidemia was present in 86% even when they were on statins. As
compared to older patient dyslipidemia, family history of premature CAD and
smoking were common in patients less than 45 years of age. Diabetes and
hypertension were more prevalent in older individuals.

Migration from rural to urban environment is a special risk-factor. Migration
is usually associated with stress of seeking and maintaining new job, stress of coping
with the new job-expectations, and stress of competing with the peer-group who is in
the organization longer. New affluence is associated with sedentary life-style and
higher consumption of calories, saturated fats, salt, tobacco, and alcohol. Indians are
facing the added jeopardy of newer risk factors such as Lipoprotein-a (Lp-a),
Homocysteinemia, Insulin resistance syndrome and high levels of Fibrinogen

The occurrence of CAD has profound impact on the patients and their family.
Aging has been implicated as one of the several determinants of differential reaction
to chronic illness. Young adult patients may experience distress out of fear that they
will be unable to establish financial or personal independences. Middle aged patients
may be frustrated over limits at fulfilling life tasks as spouse, parent and wage earner.
On the other hand, elderly patients may be less affected perhaps because they could
terminate the roles of wage earning and develop much easier adjustment to the disease (Malcolm, & Robbins, 1993).

The role of psychosocial factors in the etiology and prognosis has been studied in depth by many researchers (Rosenkia, et al 1999; Szekely, et al 2007). Anxiety, depression, chronic anger and individual differences in physiological and behavioral responses to stress have been identified to be associated with the onset as well as aggression of the disease condition (Tung, et al 2007). Stress and anxiety can adversely affect the health outcomes of patients after Myocardial Infarction (MI).

The stress response is triggered when a person perceives a situation as a threat to his or her physical or psychological well being and perceives his or her coping ability inadequate to deal effectively with demand. Thus perception of threat to ones physical or psychological well-being generates a cascade of biochemical events originating in the central nervous system that affects the entire body, specifically the Autonomic Nervous System (ANS) and the Endocrine system. Impending cardiac surgery is one such event perceived by the patients and family members as a potential stressor.

The stress response initiated by perception of threat provides a framework for understanding the link between psychosocial factors and cardiovascular disease. These innate automatic physiological responses to stressful stimuli become counter productive, and result in symptoms such as anxiety, angina, dysrhythmias and hypertension. Psychological symptoms can induce angina. Angina can cause psychological symptoms like anxiety. Prolonged exposure to stress may influence the progression of atherosclerosis by affecting endothelial function, vasomotor tone, platelet aggregation, and cholesterol metabolism.
1.2 SIGNIFICANCE AND NEED FOR THE STUDY

Coronary Artery Bypass Grafting (CABG) is the main treatment for CAD. Increased prevalence of CAD in India has led to an increase in number of CABG and percutaneous transluminal coronary angioplasties being performed every year. CABG that accounted for 30% of all cardiac surgeries in 1980, has gone up to 90% in the new millennium. Every year 50,000 Coronary bypass operations are being carried out in India (Vettath, 2007).

The advancement in surgical technique the OFF PUMP CABG has reduced the length of hospitalization. It also reduces the operative and post operative complications. Studies have shown that CABG improves the quality of life and provides relief from angina symptoms. Nevertheless the prospect of undergoing CABG is stressful and provokes anxiety (White & Frusure Smith, 1995).

Being in pain, resuming previous lifestyle were the major stressors from the patient's perspective (Gallagher, 2007). Patients who reported high state anxiety before CABG experienced more pain and less symptom relief following surgery (Grossi, et al 1998). Another study reported a contrary finding (Koivula, et al 2001). In their study patients with less pain and younger patients subjected to CABG reported high anxiety than those who were in severe pain and older.

Uncertainty results in anxiety. Evidence from the study showed that uncertainty and psychologic stress in the patients subjected to PTCA and CABG were significantly positively correlated (White, 1995). There was little evidence of a mediating role for social support in the coronary artery bypass grafting group. In a study that evaluated state and trait anxiety in 94 patients 24 to 48 hours before cardiac surgery, acute preoperative anxiety was significantly associated with adverse
outcomes, acting as an independent risk factor for postoperative morbidity and mortality, whereas trait anxiety was not (Stengrevics, et al 1996; Perski, et al 1998).

The psychological status was the most important predictor of quality of life of patients following CABG. Better quality of life following CABG was associated with lower levels of anxiety (Tung, Hunter and Wei 2007). The factors that affect the psychological well being also affect the physiological well being. Emotional stress or anxiety can increase blood pressure, heart rate or it may even precipitate an anginal attack. Similarly physiological stress can affect emotional well being. In short, thoughts, feelings, attitudes, beliefs, behavior and biology are interconnected and can contribute to illness or potentiate health and healing (Buselli, & Stuart, 1999).

Despite the fact that the CABG is known to improve the physiological status patients do not resume former level of physical activity (Allen, et al 1990). Evidence from a longitudinal study showed that 13% of patients continued to report important functional disabilities and 45% reported difficulty in participation in moderately vigorous activities or did not participate. Moreover failure to resume previous level of activity is not necessarily related to physical status (Allen, et al 1990). It may reflect the psychological influence. The psychological factors such as anxiety and fear affect the self confidence and ability to perform a specific activity. Anxiety state is also a major predictor of self-reported general activity (Ruiz, et al 1992). Study findings of Elliot and associates (2006) revealed that there was a significant improvement in physical and emotional functioning whereas the mental health scores and social functioning significantly deteriorated six months after CABG. The study also indicates the need for instituting psychological intervention along with the traditional cardiac rehabilitation.

When individuals are faced with an illness threat they form cognitive representation of illness that directs their emotional and behavioral responses.
Cognitive representations of illness shortly after an MI have implications for aspects of recovery (Michie, 2006). Those believing that their MI had very serious consequences had greater levels of illness-related disability and took longer time to return to work. An intervention that altered patients’ negative beliefs about their MI resulted in substantially improved functional outcomes such as earlier return to work and lower rates and angina symptoms (Petrie, et al 2002 as cited in cited in Michie, 2006).

Anxiety may affect the perceived self confidence to perform the necessary activities following CABG. Self-efficacy theory by Bandura focuses on the effect of psychological and environmental factors on behavior. According to Bandura, Self-efficacy is the perceived self confidence or individual's perception or belief about how capable he/she is in performing the specific task or activity. Self perception of efficacy influence thought patterns, action and emotional arousal. Judgment of Self-efficacy also determines how much effort people will expend and how long they will persist in the face of obstacles. Self-efficacy has been correlated positively with functional capacity and caloric expenditure in patients who had MI, CABG and angioplasty (Gardner, et al, 2003). Similar relationship was elicited between Self-efficacy and physical conditioning (Carlson, et al 2001).

People's beliefs in their coping capabilities affect how much stress they experience in threatening or difficult situations, as well as their level of motivation (Bandura, 1994). Perceived Self-efficacy to exercise control over stressors plays a central role in anxiety arousal. People who believe they can exercise control over threats do not conjure up disturbing thought patterns. But those who believe they cannot manage threats experience high anxiety arousal. They dwell on their coping deficiencies. They view many aspects of their environment as fraught with danger. They magnify the severity of possible threats. Through such inefficacious thinking
they distress themselves and impair their level of functioning. Perceived coping Self-efficacy regulates avoidance behavior as well as anxiety arousal. The stronger the senses of self-efficacy the bolder the people are in taking on taxing and threatening activities.

Anxiety arousal is affected not only by perceived coping efficacy but by perceived efficacy to control disturbing thoughts. Perceived self-efficacy to control thought processes is a key factor in regulating thought produced stress. It is not the sheer frequency of disturbing thoughts but the perceived inability to turn them off that is the major source of distress. Both perceived coping self-efficacy and thought control efficacy operate jointly to reduce anxiety and avoidant behavior (Bandura, 1994).

Psychosocial factors such as self motivation and self-efficacy influence adoption and sustaining of healthy behaviors in patient. If patients are self motivated and having self efficacious beliefs, then they should be more likely to regularly attend cardiac rehabilitation and demonstrate behaviors associated with positive health outcomes. In turn, the improvements in self motivation and self-efficacy would result in more easy recovery and transition to normal life following CABG.

Though standardized cardiac rehabilitation has proven effective, the rate of attendance to cardiac rehabilitation program is very poor for varied reasons, such as travel consideration and financial problems. Highly supervised traditional rehabilitation program is a barrier to independent exercise in low and moderate risk cardiac patients (Carlson, et al 2001). A gap exists between what the traditional program offers and what patients expect (Paquet, et al 2005). The participants of their study focused on stress management rather than modification of health habits. Support groups were viewed as beneficial. According to patients accepting their condition, knowing the limits and better continuity of care would help them to reduce stress.
Studies suggest that psychosocial intervention that improve self-efficacy have broader applicability in heart disease population than previously appreciated (Sullivan, et al 1998; Linden, et al 1996; Allen, et al 1990). Based on the review of research studies Austin, et al (2005) suggested incorporation of psychosocial modalities for CAD, head aches, insomnia, in preparation for surgical procedures and in the symptom management of cancer, arthritis and urinary incontinence would be beneficial. They emphasized the need for paradigm shift from the biophysiological medical model to the bio psychosocial model.

The goal of psychosocial interventions in the acute phase of an event is initiated to mitigate or prevent symptoms of distress, which has implications across the biological, psychosocial, and spiritual domains. Mind-body interventions include but not limited to relaxation techniques, cognitive restructuring of information and self management skills. The specific aims of the interventions are: 1) to decrease physiological arousal (2) to increase the patient’s ability to identify cognitive distortions and realistically appraise stressors (3) to promote healthy lifestyle habits to enhance coping and (4) to promote connection with the self, others, and life meaning and purpose (Buselli & Stuart, 1999). For management of ischemic heart disease introduction or integration of other forms of exercise such as yoga may be of tremendous benefit (Jayasinghe, 2004). Yoga has shown to control sympathetic overdrive thus mimicking the beta blockade. The physiological adaptation acquired with the practice of yogic breathing techniques may be helpful in the care of patient with cardiovascular diseases particularly the CAD.

During recovery from CABG nurses have many opportunities to educate, motivate, facilitate and provide stress reduction interventions. The crucial period of first 3 months is filled with physical complaints, fatigue, nightmares and sleeplessness. The systemic complaints and physical inability result in anxiety. It may
get self perpetuated by pondering on the negative thoughts, perceptions, and beliefs in response to the stressful situation. Patient may misconstrue this transient situation to be a permanent phenomenon.

The role of a nurse during patient education can focus on helping the patient replace several inaccurate and negative perceptions about his recovery and its implications on his future functioning. Patients need to be encouraged to check out these perceptions and facilitate positive thinking. Anticipatory guidance by nurses regarding the disease and recovery process can alleviate both patient and family stress. A recent meta analysis on the effect of sensory procedural information on coping outcomes revealed that the combined sensory procedural information yielded the strongest and most consistent benefits in terms of negative affect, pain and distress (Suls & Wan, 1989).

Patient education may be done through many different modes. Video is one of the important and effective modes of patient education. The video has the strength of role modeling. When applied to well defined, self limited stressful situation the role modeling in video can decrease sympathetic arousal while increasing the knowledge, cooperation and coping ability (Gangliano, 1988). These effects may carry over to patients to similar stressful situation. In this study the researcher has developed a video containing the sensory procedural information related to CABG which is expected to facilitate cognitive restructuring among patients subjected to CABG and thereby reduce anxiety and improve Self-efficacy. The principle of cognitive modeling, verbal persuasion by credible authority and vicarious experience were incorporated in the video.

Another most important intervention to reduce stress is relaxation technique. Relaxation response is just opposite to the sympathetic mediated fight or flight response. Relaxation response is an innate response. To reduce relaxation response
two basic elements are necessary. 1. Focused awareness on a thought, word, phrase or repetitive motion and 2. Passive disregard of intruding thoughts. Busselli (1999) affirms that the breath focused techniques and progressive muscle relaxation are beneficial which might be included in acute care settings. She recommends the techniques which may take 10 to 20 minutes.

Researcher had attempted to determine whether simple relaxation techniques based on yoga principle namely the Naadi Suddhi Pranayama and Yoga Nidhra provided along with information in video format can help patient to reduce his autonomic arousal and gain self-efficacy and improved activity level following CABG. The Naadi Suddhi Pranayama means nerve purification. With awareness focused on the breath it is expected to calm down the mind.

The Yoga Nidra, a deep relaxation technique takes approximately 15 minutes. This technique is based on the principle of achieving relaxation in a step by step manner. First the physical body is relaxed by deliberately tensing and relaxing the body followed by mentally scanning and relaxing the body parts. Next step is relaxing through focusing awareness on breath. Next focusing on the passive observation of thought and lastly observing the innate blissful silence. Empirical evidence in support of the scientific soundness of this technique is available from the research database. Research on the effect of Yoga Nidhra on EEG by Mandalik, Jain & Jain (2008) showed the continued practice of Yoga Nidhra for 30 sessions had resulted in relaxation. Initial EEG showed Beta activity prominently with intermittent Alpha activity. With the advancement of Yoga Nidhra Beta activity was slowly replaced by Alpha activity and still further by smooth well formed Alpha activity. After 30 sessions of Yoga Nidhra gain of Alpha activity was better and with further advancement of Yoga Nidhra intermittent Theta activity was noted intermixed with Alpha activity suggestive of deep state of relaxation. Beta activity corresponds to alert
state and alpha waves to relaxed state. Theta and delta waves are seen in deep relaxation a state or in deep sleep.

In countries like India, the cost of health care is mostly borne by the individuals. Cardiac rehabilitation need to be tailored to suit the local needs which could be achieved by incorporating the strategies like yoga techniques to help the cardiac surgical patients. Hence, the investigator attempts to integrate video assisted information along with yoga relaxation technique as the rehabilitation interventions and elicit their effect on anxiety, Self-efficacy and activity level following CABG. Empirical evidence in support of this innovative nursing strategy would help re-engineering the cardiac rehabilitation.

1.3 STATEMENT OF THE PROBLEM

Effects of stress reduction strategies on anxiety, self-efficacy and activity level among patients following Coronary Artery Bypass Grafting.

1.4 OBJECTIVES OF THE STUDY

Objectives of the study were to

1. compare the state anxiety scores of patients subjected to CABG who receive stress reduction strategies with those who do not receive them.

2. compare the Self-efficacy scores of stress reduction intervention group with that of control group.

3. ascertain if there is any improvement in the activity level of the patients of stress reduction intervention group when compared to control group.

4. determine the nature of relationship between state anxiety and Self-efficacy.
5. identify the relationship between Self-efficacy and activity level.

6. associate the socio demographic variables with that of anxiety, Self-reported activity level and Self-efficacy.

1.5 OPERATIONAL DEFINITIONS

Stress reduction strategies include

a) Video assisted information

b) Yoga relaxation techniques

a) Video Assisted Information: The preoperative information provided using the investigator developed video titled “Cope up with CABG easily” was the video assisted information. The video has portrayed sensory and procedural details of surgery and methods of coping with CABG, and was prepared applying the principles of verbal persuasion and vicarious experience of enhancing self-efficacy.

b) Yoga Relaxation techniques: Two Relaxation techniques based on the Hatha Yoga principles of Integral Yoga School namely the Naadi Suddhi Pranayama or Alternate Nostril Breathing and the Yoga Nidhra were the yoga relaxation techniques.

Anxiety

Anxiety is an unpleasant emotional state consisting of two distinct forms namely the State anxiety and Trait Anxiety.
State Anxiety (S-Anxiety)

It is an unpleasant subjective feeling of tension, apprehension, nervousness, worry and activation of autonomic nervous system at any given moment of time as measured by the Spielberger State Trait Anxiety Inventory (STAI form Y-1) and clinical parameters namely pulse and blood pressure.

Trait Anxiety (T-Anxiety)

It refers to difference between people in the tendency to perceive stressful situation as dangerous or threatening and in the disposition to respond such situation usually with more or less elevation in State Anxiety as measured by the STAI Form Y-2.

Self -Efficacy

The individuals own perception about his/her ability to perform selected activities namely Activities of Daily Living (ADL), physical exercises, social activities, leisure activities and spiritual activities as measured by Self-efficacy scale.

Activity Level

Performance of selected activities namely the Activities of Daily Living (ADL), physical exercise, social and spiritual activities and leisure activities either with or without difficulty as perceived and reported by the individuals through the Self-reported activity checklist.

It also refers to the individuals ability to perform ADL in the post operative hospitalization period as observed using the Modified Scoring for Barthel Index (MSBI).
1.6 HYPOTHESES

Hypothesis 1: \( H_1 \)


Hypothesis 2: \( H_2 \)

The participants who receive stress reduction strategies demonstrate improved Self-efficacy scores for the ADL, physical exercise, social, spiritual and leisure activities than those who do not receive them.

Hypothesis 3: \( H_3 \)

The CABG patients belonging to the stress reduction group participate more in the ADL, physical exercise, social, spiritual and leisure activities than those patients belonging to the routine care group.

Hypothesis 4: \( H_4 \)

The CABG patients with lesser anxiety would report higher level of Self-efficacy for activities.

Hypothesis 5: \( H_5 \)

The Self-efficacy scores for selected activities and the corresponding self-reported activities scores are positively correlated.

Hypothesis 6: \( H_6 \)

S-Anxiety, Self-efficacy and self reported activity are associated with selected demographic variables
1.7 ASSUMPTIONS

1. State anxiety scores tend to fluctuate with situations whereas the trait relatively stable.

2. Sensory procedural information delivered with the video assistance facilitates cognitive processing of information.

3. The autonomic nervous system mediated anxiety results in changes in the vital signs.

4. Vicarious experiences, verbal persuasion by credible authority are self-efficacy enhancing measures.

5. Relaxed state of mind influence the perception of event or situation.