CHAPTER - I

INTRODUCTION

Background of the study

World Health Organization (WHO) reported that cardiovascular diseases (CVD) were one of the most important causes of death globally, resulting in more than 17.3 million deaths annually, by 2030 the figure is anticipated to increase to more than 23.6 million (WHO, 2016). Thirty-one percent of all deaths globally were due to CVD, with eighty percent of those deaths occurred in the low and middle-income countries in 2013. CVD is causing more number of deaths than any other diseases throughout the world (Mozaffarian et al., 2016). CVD has become a main health problem in several developing countries and CVD is the most common cause of morbidity and mortality worldwide (Sharif, Shoul, Janati, Kojuri, & Zare, 2012).

Coronary artery disease (CAD) is the most common among all CVD and CAD has assumed widespread proportions worldwide. Globally, CAD has become the most leading cause of deaths and disabilities in the developing nations (Krishnan, 2012). The Global Burden of Disease Study and the WHO reported that Coronary Heart Disease (CHD) has become one of the important causes of disability adjusted life and growing trends in ages of life lost in India. In contrast, the number of deaths due to CAD is promptly declining in the developed nations. This increase is driven by industrialization, urbanization, and related lifestyle changes and is called epidemiological transition (Gupta, Mohan, & Narula, 2016).
CVDs are the number one cause of death worldwide: more people die every year due to CVD than any other disease conditions. An estimated mortality rate of 17.5 million occurred from CVDs in 2012, an estimated 7.4 million deaths from CHD and 6.7 million deaths resulted from the stroke. Middle and low-income countries had the incidence of higher CVD deaths over the last thirty years (WHO, 2016). The Registrar General of India indicated that CAD caused 17 percent of total deaths between 2001 and 2003, which raised to 23 percent of total deaths between 2010 and 2013. In India, research studies have stated increasing incidence of coronary heart disease over the last six decades, less than 1 percent to 4 - 6 percent in rural populations and from 1 percent to 9 - 10 percent in urban populations (Gupta et al., 2016).

National Commission on Macroeconomics and Health, reported that by 2015 sixty two million people in India will be diagnosed to have CAD, with 23 million of these people below the age of 40 years. It has been estimated that by the next 15 years CVD will increase drastically in India and it has been calculated that India will have more than 50% of CVD globally (Sekhri et al., 2014). Primarily the patients with CAD are treated with medical management that includes heart healthy lifestyle changes, medicines, percutaneous coronary interventions and cardiac rehabilitation. Patients are treated with Coronary Artery Bypass Graft (CABG) surgery when these treatments are not sufficient to restore coronary blood supply and if there is a severe block in coronary arteries. CABG surgical procedure is performed to increase quality of life and decrease cardiac-related death among the patients with CAD (Hillis et al., 2011).
CABG surgery is one of the common types of cardiac surgery and well established and an effective standard intervention to decrease the consequences of CHD (Mooney, Fitzsimons, & Richardson, 2007). A healthy vein or artery from the body is grafted or connected to the narrowed or blocked coronary artery during the CABG surgery. The grafted vein or artery will bypass the narrowed or obstructed portion of the coronary artery. The graft makes a new way for supply of oxygen rich blood flow to the affected heart muscle as the consequence of CAD. The main indications of CABG surgery are blocks in left main stem or when there are multiple blocks in strategic locations of coronary artery (Alexander & Smith, 2016).

Undergoing cardiac surgery may be a stressful experience for the patients physically and psychologically. While waiting for major heart surgery significant physical and psychological stressors, including higher anxiety, uncertainties, depression, and worries regarding outcomes of the surgery are typically experienced by the patients. These factors may aggravate the symptoms of existing disease and can have adverse effect on physiological parameters during anaesthesia, before and after surgery, and also can lead to disturbed recovery after the surgery (Guo, East, & Arthur, 2012).

Major changes in routine lifestyle provoke anxiety in the individuals, and one of the changes is undergoing CABG surgery. Hospitalization, irrespective of any medical condition, is familiar to cause anxiety in the patients admitted for surgical treatment. If not recognized sustained anxiety builds stress which may consequently disturb the patients and their prognosis (Yilmaz, Sezer, Gürler, & Bekar, 2012). Despite positive benefits, it is very unpleasant for any person to undergo a major surgery. The stress becomes more and severe
when surgery is performed on the heart, a vital organ of human body. The CABG surgery creates physical, psychological, and social adaptive challenges before and even after the surgery (Chunta, 2010).

Severe pain, anxiety, stress and sleep disturbances are commonly faced by the patients after a major cardiac surgery. All of these factors may compromise the treatment and quality of life of patients undergoing major heart surgery (Nerbass, Feltrim, Souza, Ykeda, & Filho, 2010). Undergoing major cardiac surgery is a highly stressful experience for the patients and will result in increased level of anxiety. Fear and anxiety are the major factors that strongly influence the patient’s capacity to persist with pain or discomfort. Pain can prolong the number of days stay in the hospital postoperatively and also affect patient’s satisfaction level (Gonzales et al., 2010).

Anxiety is a subjective unpleasant experience of the patients that disturbs them physically, emotionally, and psychologically (Hoyer et al., 2008). Anxiety negatively influences the recovery of the patients who undergo cardiac surgery. Anxiety during hospitalization is common and expected to some extent but it may become an important clinical concern that can significantly disturb the patients’ health if not treated. Presence of anxiety in patients following a major heart surgery can slow down their recovery and increase the incidence of morbidity and mortality. During this phase, the patient is threatened with awareness of her or his mortality and may have the concern regarding the influence of cardiac surgery on work, life, and relationship with others (Viars, 2009).

The presence of anxiety, pain, discomfort and psychological distress are associated with recovery of patients who underwent cardiac surgery. Patients experience pain at the
site of vein harvesting in legs, cutaneous and visceral pain on the chest during the postoperative period. A significant level of depression and state anxiety are present during the first week after the heart surgery. Appropriate management of psychological distress and physical concerns during the immediate postoperative period may improve the patient’s satisfaction with surgical experience, reduce postoperative complications and shorten the duration of hospitalization (Albert et al., 2009).

Fatigue is commonly a persistent and major problem in many patients after cardiac surgery. In spite of the many positive benefits resulting from coronary revascularization, less optimal outcomes are experienced by some patients. The presence of postoperative fatigue among patients following CABG surgery can have an adverse consequence on their recovery process and quality of life. Postoperative fatigue and associated conditions of vital exhaustion may disturb the physical capacity and quality of life of the patients who had heart surgery (Barnason et al., 2008).

Self-efficacy is known as individual’s abilities and confidence in carrying out the necessary and appropriate health behaviors to achieve an intended goal. Self-efficacy is individual’s capacity to overcome some specific situations and considerable factor to maintaining healthy behaviors. It has a significant role in the person-centered care and considerably advances the health among the patients who suffered from heart attack. Preoperative education improves self-efficacy after CABG surgery and good self-efficacy is an important concept in dealing with stressful situations and tensions resulting from the CAD. Self-efficacy also plays a significant psychological role in diminishing negative effects caused by the CABG surgery (Varaei et al., 2016).
Complete recovery after CABG surgery is a challenging experience and necessitates appropriate coping strategies as well as physical, psychological and social adaptation to overcome the stressful situation and decrease the level of anxiety. Anxiety is often connected to the adaptation process and lower level of anxiety is strongly correlated with improved quality of life (Tung, Hunter, & Wei, 2008). Patients typically experience anxiety and depression after CABG surgery. The higher level of anxiety is associated with poorer quality of life and worse long-standing psychological outcomes (Dehdari, Heidarnia, Ramezankhani, Sadeghian, & Ghofranipour, 2009).

**Need for the study**

CABG surgery is an important treatment option for the patients with CAD, bearing in mind that the technique reduces angina and enhances the quality of life of the patients. However, the patients experience distress, a sense of insecurity and disturbed quality of life (McKenzie, Simpson, & Stewart, 2010). CABG is the most commonly performed surgery throughout the world, in the United States with an annual estimate of 6,86,000 CABG surgeries. In 2010, the annual number of CABG surgery in India was about 60,000 (Kaul & Bhatia, 2010) and in 2012 the number was about 1.5 lakhs (Panda, 2012). Current and the latest annual statistics on CABG surgery in India is not available in any of the database.

Even though CABG is a quite common surgery, it is considered to be a highly stressful experience for patients. Many patients are highly anxious about surgery despite the well-documented lower death rates of bypass surgery and its confirmed relief of signs and symptoms of CAD. The presence of excessive anxiety throughout the treatment period is more often observed among women than men. Patients experience severe pain, lower
relief of symptoms after surgery, disturbed recovery and more readmissions if they were more anxious before CABG surgery (Gallagher & McKinley, 2007).

Significant clinical morbidities such as anxiety, emotional distress, and physical pain are common despite the success of CABG surgery for many patients. Indeed, most often pharmacological interventions are not fully successful in restoring the patients to complete physical and emotional health. Hence, novel techniques or approaches are required to support patients’ recovery from cardiac surgery and help them to overcome the challenges (Bauer et al., 2010). Although surgery is actually beneficial and very essential, it is a highly stressful situation for patients. There are certain factors that influence anxiety during surgery such as anesthesia related issues, outcomes of surgery, pain, complications, and fear of death (Hart, 2009). Unnecessary stress due to fear, pain or discomfort after the major cardiac surgery may have a negative effect on recovery and can possibly influence the patient’s coping abilities during their post-operative period (Gonzales et al., 2010).

Cardiac surgery induces anxiety in most patients due to several factors, these include severe pain, consequent fatigue, persistent symptoms despite surgery, disability and fear of death. In longer duration, higher level anxiety is commonly accompanied by physiological consequences such as disturbed gastrointestinal and cardiovascular functions as well as increased metabolism and delayed wound healing due to weakened immune system. These consequences can subsequently result in exhaustion, high blood pressure, rapid heart beat, exhaustion, rapid changes in body temperature, breathing difficulties and even death (Bagheri - Nesami et al., 2014).
Vital exhaustion, characterized by unusual fatigue due to persistent stress is associated with higher risk of cardiac morbidity and mortality in many patients while recovering from CABG surgery (Miller et al., 2013). Factors, such as fatigue that may influence or contribute to disturbed recovery necessitates additional research. Assessment of the fatigue has a vital role during recovery among patients after CABG surgery and may support the researchers in identifying appropriate interventions to increase recovery, the quality of life and to reduce hospital readmissions of high-risk patients (Barnason et al., 2008).

Self-efficacy can lead to behavioral changes. It plays an important role in the self-management of chronic disease. Self-efficacy is positively connected to health behavior and to change in health status. Thus assessing and enhancing self-efficacy are important for patients who need to engage in better self-management (Tung et al., 2012). Cardiac self-efficacy (CSE) refers to a specific measurement of individual’s belief and abilities to carry out specific activities related to the challenges and symptoms of cardiac diseases. Lower CSE is associated with depression and poor health of the patients and they are very vulnerable to complications of the disease (Varaei et al., 2016). Regular reinforcement improves the adherence to self-management skills and permits them to make significant progress in quality of life.

Preoperative education is known as providing psychological support along with health related information to the patients, and an opportunity to learn specific skills in preparing them for surgery (Deyirmenjian, Karam, & Salameh, 2006). Preoperative education might include many components: providing information, interactive session
conducted either in groups or individually, involving patient’s family members and educating them specific skills that are helpful for better recovery. It is hypothesized that patient will have less anxiety, shorter duration of hospital stay and have better ability to cope with pain after the surgery by ensuring their complete understanding about the surgery, postoperative routines, promoting physical and psychological recovery through preoperative education (Lee, 2011).

A systematic review was conducted to determine the effect of preoperative educational interventions among patients who underwent heart surgery. Six randomized controlled trials were analyzed and concluded with conflicting results. A few studies reported that preoperative education improves physical and psychosocial recovery of patients who underwent cardiac surgery, while others reported that no evidence in decreasing pain, anxiety and duration of hospital stay. The review concluded that evidence of the effect of preoperative educational interventions remains inconclusive among patients undergoing cardiac surgery. Systematic review recommended that additional research is necessary to determine and prove the positive effect of preoperative education in non-Western countries like India and China (Guo, 2014).

The purpose of preoperative education in patients who are following cardiac surgery is to decrease postoperative complications and anxiety that are related with the longer hospital, impaired recovery, morbidity and mortality. Post-operative complications such as wound infections, atelectasis, infection and deep vein thrombosis may be associated with lack of patient education during the preoperative period. Arrhythmia, wound infections and sternal dehiscence were the most frequent causes for readmissions to the hospital among the patients who underwent cardiac surgery (Kalogianni et al., 2016).
Patients may experience the higher level of anxiety and depression while waiting for major cardiac surgery which can have an adverse effect on the surgery and results in long term recovery. There is a definite requirement for experimenting well-designed higher quality randomized controlled trials to generate a strong evidence base for preoperative education in decreasing anxiety and increasing recovery among patients who underwent cardiac surgery predominantly in non-Western countries like China and India (Guo, 2014).

Complementary therapies or non-pharmacological methods have many non-invasive techniques that are cost effective, and simple with fewer side effects when compared to drugs. Massage therapy is one of the types of complementary therapy used in clinical practice. It helps in reducing tension and aids in relaxation which is widely accepted; massage therapy may be a powerful tool according to emerging research evidence which states that it is a useful intervention in reducing anxiety, pain, discomfort and duration of hospital stays postoperatively. Massage also increases the levels of serotonin and endorphin contributing to higher levels of growth hormone (Field, 2014).

A systematic review was conducted to assess the effect of massage therapy among patients who underwent cardiac surgery on postoperative outcomes. Seven studies were analyzed and reported that six studies showed positive results in improving positive post-operative outcomes such as anxiety, pain, and fatigue and one study did not support the use of massage therapy. The review concluded that evidence of the effect of massage therapy remains inconclusive among patients who underwent cardiac surgery and recommended that, additional research is needed to evaluate and prove the positive effect of massage therapy (Ramesh et al., 2015).
There is a growing attention in the evaluation of the quality of life among the patients after CABG surgery. The findings of a review reported that symptoms of anxiety and depression among the patients who underwent CABG surgery are best predicted by proper evaluation before the surgery. The review also emphasized the significance of complete preoperative evaluation and appropriate educational interventions for the patients at risk of higher anxiety and depression to promote their quality of life after CABG surgery (McKenzie et al., 2010).

Addressing patients’ physical and psychological concerns towards major surgery and designing and conducting appropriate interventions to support patients is the primary goal of the nurses and other health care workers. Hence, the researcher decided to assess the anxiety, pain, and fatigue among the patients following CABG surgery and conduct a trial on the effectiveness of Comprehensive Nursing Intervention Programme (CNIP). It is a multi-component approach that comprises preoperative education through video, foot massage, and self-care booklet. The main goal of this study was to evaluate whether implementing such interventions can decrease symptoms of anxiety, decrease perceived pain, fatigue and improve self-efficacy and quality of life.

The results from this trial will generate evidence on the effectiveness of CNIP among patients undergoing CABG surgery on anxiety, pain, fatigue, self-efficacy, and quality of life. It is anticipated that this trial could support health care professionals in India to take evidence based decisions concerning whether this kind of interventions should be implemented into routine care for patients undergoing CABG surgery.
Chapter I

Introduction

Statement of the problem

Effectiveness of comprehensive nursing intervention programme (CNIP) on anxiety, fatigue, self-efficacy and quality of life among patients undergoing coronary artery bypass graft surgery in a tertiary care hospital - A randomized controlled trial.

Purpose of the study

The purpose of the study was to evaluate the effectiveness of comprehensive nursing intervention programme (CNIP) for patients following CABG surgery in comparison to as routine care in post-operative period. The findings of the trial will support the health care professionals by widening knowledge base regarding a comprehensive approach in providing post-operative care using therapeutic interventions for faster and better recovery, which in turn leads to quality health care for the patients undergoing CABG surgery.

Objectives of the study

The objectives of the study were to

1. assess anxiety among patients undergoing coronary artery bypass graft surgery
2. measure the bio-physiological parameters among patients who underwent coronary artery bypass graft surgery
3. evaluate the effect of comprehensive nursing intervention programme among patients who underwent coronary artery bypass graft surgery in terms of
   a. decrease in anxiety in the experimental group as compared to the control group
   b. decrease in pain in the experimental group as compared to the control group
c. decrease in fatigue in the experimental group as compared to the control group

d. increase in self-efficacy in the experimental group as compared to the control group

e. increase in quality of life in the experimental group as compared to the control group

Hypotheses

All hypotheses were tested at .05 level of significance

H₁. There will be a significant difference in the mean post-test anxiety scores within and between the groups after the intervention of CNIP.

H₂. There will be a significant difference in the mean post-test pain scores within and between the groups after the intervention.

H₃. There will be a significant difference in the mean post-test fatigue scores within the group and between the groups after the intervention.

H₄. There will be a significant difference in the mean post-test self-efficacy scores within and between the groups after the intervention.

H₅. There will be a significant difference in the mean post-test quality of life scores within and between the groups after the intervention.
Definition of Terms

Effectiveness

In this study effectiveness refers to the level to which the comprehensive nursing intervention programme has achieved the desired outcome as measured by decreased anxiety, fatigue, pain, and improved self-efficacy and quality of life.

Comprehensive Nursing Intervention Programme (CNIP)

CNIP is an interventional package developed by the investigator and validated for the patients undergoing CABG surgery. It comprised of three components as follows

- Pre-operative education
- Foot massage
- Self-Care booklet (SCB) - A guide to recover from CABG surgery

Pre-Operative Education

In this study pre-operative education refers to teaching given to the patients in the form of educational video on the perceived learning needs of patients on postoperative experience and management after CABG surgery.

The major areas of preoperative education included in the video were information regarding preoperative preparation, coronary artery bypass graft surgery, intensive care unit experiences, pain management, deep breathing exercises, nutritional management, discharge and follow up
Foot Massage

In this study foot massage refers to manipulation of superficial and deeper layers of muscle focus on the foot, massage of the sole and dorsum of the foot for the patients between 2\textsuperscript{nd} and 5\textsuperscript{th} postoperative days administered for a duration of ten minutes in each foot with total duration of twenty minutes per day after coronary artery bypass graft surgery.

Self-Care Booklet (SCB)

In this study self-care booklet (SCB) - A guide to recover from CABG surgery refers to informational booklet prepared on various aspects of self-care activities after CABG surgery based on the perceived learning needs of the patients.

The major aspects of self-care activities included in the booklet were care of incision site, infection control, medications, activity, exercise, dietary pattern and psychosocial well-being.

Fatigue

In this study fatigue refers to subjective experience of patients undergoing CABG surgery as measured by Fatigue Visual Numeric (FVN) scale on 2\textsuperscript{nd} & 5\textsuperscript{th} post-operative days and Identity Consequences Fatigue Scale (ICFS) during the first and third month follow up.

Anxiety

In this study anxiety refers to subjective emotional experience of the patients undergoing CABG surgery as measured by State Trait Anxiety Inventory (STAI).
State and Trait anxiety inventory was carried out before the surgery as the baseline assessment and state anxiety inventory was administered on 2\textsuperscript{nd}, 5\textsuperscript{th} post operative days and first month during the follow up.

\textbf{Pain}

In this study pain refers to an unpleasant sensation reported by the patients undergoing CABG surgery measured by Visual Analogue Scale (VAS).

\textbf{Bio-physiological parameters}

In this study bio-physiological parameters refers to assessment of heart rate, respiration rate, systolic blood pressure, diastolic blood pressure and oxygen saturation on 2\textsuperscript{nd} and 5\textsuperscript{th} postoperative days.

\textbf{Self-Efficacy}

In this study self-efficacy refers to ability and confidence of the patients who underwent CABG surgery in performing their self-care activities and self-management skills after the discharge from the hospital as measured by Barnason Efficacy Expectation Scale (BEES).

Self-care activities included in this study were care of incision site, infection control, activity, exercise, dietary pattern and psychosocial well-being

\textbf{Quality of Life}

In this study quality of life refers to overall wellbeing of patients who underwent CABG to lead normal life in various domains of health such as general health, physical, psychological, spiritual, social, economic, and family as measured by Quality of Index (QLI) - Cardiac Version IV.
Assumptions

- Anxiety in the preoperative period is unique to the individual
- Anxiety and fatigue may affect the quality of life among patients
- Preoperative education brings change in the patients

Conceptual Framework

Nola J. Pender developed the Health Promotion Model (HPM) in 1991 (Revised 1996) and offered as a holistic model for health promotion and to use in research and practice (Shin, Yun, Pender, & Jang, 2005). Health promotion seeks to enhance one’s health and well-being. HPM describes the multi-dimensional nature of individuals as they communicate within their environment to attain optimal health (Pender, Murdaugh, & Parson, 2011).

The HPM concentrates on following three areas:

- Individual Characteristics and Experiences
- Behavior-Specific Cognitions and Affect
- Behavioral Outcomes – Health Promoting Behavior

The health promotion model describes that each and every individual has unique personal characteristics and experiences that affect subsequent actions. These behaviors and variables can be changed through nursing interventions or actions. Promotion of health behavior is the anticipated behavioral outcome and is the end point in the HPM. Health promoting behaviors should lead to faster recovery, improved health, functional capacity and higher quality of life. The final behavioral demand is also influenced by the immediate competing demand and preferences, which can disturb the intended health promoting actions.
In the present study, the individual characteristics and experiences are age, gender, physical activity, personal habits, dietary habits, family history, life style, hypertension, environmental factors, diabetes, CAD, undergoing CABG surgery, knowledge and hospitalization. These factors may affect the recovery speed of the patients who underwent heart surgery and have an impact on overall health and quality of life. The anticipated improvement in the recovery from the heart surgery will help in the reduction of anxiety, pain, and fatigue. Improved self-efficacy and quality of life are considered to be the perceived benefits of the action.

Anxiety, pain, fatigue and lack of knowledge are considered to be the barriers among patients who underwent CABG surgery which may affect their recovery. The other barriers may include lack of motivation, exhaustion, and inadequate knowledge on self-care management. Perceived self-efficacy is the judgment of personal capability to organize and execute a health-promoting behavior. In this study perceived self-efficacy refers to willingness and self-motivation to perform self-care activities after the surgery. The activity related effect in the study are decrease in anxiety, pain, and fatigue and increase in self-efficacy and quality of life.

Healthcare professionals, nurses, family members and researcher influence the patients in modifying their behavior. The interpersonal influences motivate the patients to make the commitment in self-care activities such as dietary restrictions, activity, exercise, stress reduction and following the health instructions mentioned in the booklet. In this study, the competing demands are anxiety, fatigue, pain, and lack of knowledge and self-efficacy and preferences are preoperative education, foot massage, and self-care booklet.
The ultimate outcome is the health promoting behavior of the patients measured in terms of reduced anxiety and fatigue and improved self-efficacy and quality of life.

Summary

This chapter has dealt with background and need for the study, statement of the problem, purpose, and objectives of study, assumption, hypotheses and definition of terms, variables, and conceptual framework of the study.

Outline of the study

The report of the study is presented in following chapters:

Chapter II: Review of literature

Presents an overview of the related literature and systematic reviews.

Chapter III: Methodology

Deals with research process, data collection process and plan for data analysis.

Chapter IV: Analysis and Interpretation

This chapter presents data analysis, interpretation of data and discussion.

Chapter V: Discussion and Conclusion

Presents summary of research study, major findings, conclusion, implications, strengths, limitations of the study and recommendations for further studies.
**INDIVIDUAL CHARACTERISTICS**

Demographic Variables
- Age
- Gender
- Religion
- Education
- Marital Status
- Occupation
- Monthly income
- Physical activity
- Place of residence
- Habit of smoking
- Habit of alcohol
- Tobacco use
- Dietary pattern
- Exercise
- Family history

Clinical Variables
- Ejection fraction
- BMI
- Hypertension
- Diabetes mellitus
- Heart attack
- PCI
- Number of grafts
- Type of CABG
- Number of ICU stays

**BEHAVIOUR SPECIFIC CONDITIONS AND AFFECT**

**Perceived Benefits to Action**
Anticipated reduction in anxiety, fatigue, pain and improvement in self-efficacy, quality of life.

**Perceived Barriers of Action**
Anxiety, fatigue, pain, lack of motivation, time constraints, lack of knowledge and self-efficacy skills

**Perceived Self Efficacy**
Willingness, motivation & self-confidence to perform foot massage and self-care activities as given in self-care booklet

**Activity Related Effect**
Decrease in anxiety, pain and fatigue, and increase in self-efficacy and quality of life.

**Interpersonal Influences**
Healthcare providers, researcher, family members

**Situational Influences**
Participation in the study, Comprehensive Nursing Intervention Programme, and reinforcements.

**BEHAVIOURAL OUTCOMES**

**Immediate Competing Demands**
Anxiety, Fatigue, Pain, Time constrain, Lack of motivation

**Competing Preferences**
Preoperative education, Foot massage, Self-Care Booklet

**Health Promoting Behavior**
Reduction in anxiety, pain and fatigue. Improvement in self-efficacy and quality of life

**Commitment to Plan of Action**
Adherence to CNIP Regular follow up

*Figure 1: Conceptual Framework on Effectiveness of CNIP based on Pender’s Health Promotion Model (1996)*