Stress and Coping of Patients with Myocardial Infarction in Bangladesh

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ABSTRACT

Myocardial infarction (MI) is a major health problem in Bangladesh. Myocardial infarction is a stressful event. Continuous stress after MI increases the mortality rate. Effective coping can help reduce the level of stress in MI patients. The aims of this descriptive study were to identify the levels of stress and coping of patients with MI and to examine the relationship between stress and coping of patients with MI. Eighty-eight subjects with MI participated in this study. Data were collected by using structured questionnaires. The questionnaires were validated and tested for reliability, yielding an acceptable value in terms of alpha coefficients ($>.80$). Descriptive statistics and the Pearson coefficient (r) were used.

The results revealed that most MI patients experienced a moderate level of stress, with 21.6% reporting high levels of stress. Overall, the subjects reported that they sometimes used coping strategies and supportant coping was rated as often used. No significant relationship was found between overall stress and overall coping. However some relationships were found between overall stress and coping subscales including tension, joy, and optimistic coping. The findings provide baseline data for

nursing practice, nursing education and nursing research. A stress management program should be developed for patients with MI in Bangladesh.

ACKNOWLEDGEMENT

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CHAPTER 1

INTRODUCTION

Background and Significance of the Problem

Myocardial Infarction (MI) is the greatest killer disease and cause of suffering all over the world especially for American men and women (Black & Hawks, 2001). In recent years, the mortality rate arising from MI has been increasing (Crilley & Farrer, 2001). According to the Bangladesh National Health System Profile (2005) and the World Health Organization Report in Bangladesh (2009), heart disease was the major cause of death in Bangladesh. Among all deaths 2.54% people died because of MI. The Bangladesh Bureau of Statistics (2008) reported that the combined death rate due to hypertension, heart diseases and stroke was 10.5%, 10.6%, 10.7%, 14%, 13.5% during the years 2002 to 2006 respectively. According to the Bangladesh Heart Care Foundation Report (2008) the deaths in 2003 among patients with coronary artery disease were more than 40% in developing countries and 25% in developed countries. However, the day-by-day incidence of coronary heart disease has increased in Bangladesh. It is a matter of fact that this figure will increase greatly in the future.

MI is defined as the death or necrosis of myocardial cells. Myocardial infarction (MI) means that part of the heart muscle suddenly loses its blood supply which, without prompt treatment, can damage the affected part of the heart. An MI is sometimes called a heart attack or coronary thrombosis. An MI is part of a range of disorders called acute coronary syndromes (Morton, Fontaine, Hudak, & Gallo, 2005). There are many risk factors that contribute to the development of MI. Some factors are modifiable, including high blood cholesterol, hypertension, physical

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inactivity, obesity, being overweight, taking birth control pills, excessive drinking of alcohol and diabetes mellitus. Some factors are non-modifiable such as age, heredity, sex hormones, and race (Morton et al., 2005).

Myocardial infarction is one of the most stressful life events to many individuals. Stress has a great impact on an MI patient's health. Stress stimulates the sympathetic nervous system and the release of neurotransmitters and endocrinic hormones occur in the initial stage, which is commonly referred to as the "fight or flight" response. Thyroxin raises the metabolic rate to prepare the body to take action in response to the stressor. As a result of the elevation of blood pressure, there is an increase in the heart rate, an increase in muscle tone, an increase in alertness and breathing becomes deeper and more rapid (Lachman, 1983; Urden, Stacy, & Lough, 2002). Continuous stress after MI, increase demands on the heart muscle that the diseased coronary arteries cannot meet, and the heart becomes ischemic. An ischemic heart muscle can cause either angina or a heart attack. A stage of exhaustion occurs when all reserves have been depleted, leading to further complications and or death. Reversal of these processes can be accomplished through stress reduction measures and psychotherapy (Urden et al., 2002). Non-pharmacologic and pharmacologic interventions may improve patients' responses to stress and decrease the morbidity associated with MI (Boone & Anthony, 2003). Patients with MI experience numerous factors that create stressful situations such as threat of death, significant residual problems related to illness, pain or discomfort, lack of sleep, loss of autonomy over most aspects of life and daily functioning, daily hassles or common frustration, separation from family and friends, and loss of ability to express one's self (Urden et al.). After MI, patients think that they may lose their control of their daily activities,

which creates anxiety that turns back into stress (Sjostrom-Strand & Fridlund, 2007). Clark (2003) revealed that after MI psychological thinking is the most common factor that creates stressful conditions. Patients are worried about their daily lives, their work and their illness. It is important to note that subjective stress increases the risk of further heart attacks or MI (Chockalingam et al., 2003).

MI patients described their feelings as being worried, tense, and experiencing demands that make their situation more stressful (Fliege et al., 2005). Stress is the individual's subjective perception and emotional response to stressors or environmental demands. Stress is a condition that, when applied to stimuli or events in our environment, makes physical and emotional demands, and sometimes stress affects physical and emotional reactions. Webster and Christman (cited in Stewart et al., 2000) found that continuing stress after MI made the patients less likely to return to work, and caused more hospital re-admissions and higher mortality rates. High levels of mental stress play an important role in increasing plaque instability and promoting the development of cardiac arrhythmias, which lead to doubling the risk of further acute coronary events (Krantz, Kop, Santiago, & Gottdiener, 1996). In this period MI patients need to cope with their stressful situations to minimize or reduce the levels of stress and to prevent further complications.

Coping means the cognitive and behavioral efforts made by individuals to manage stressful situations. Effective coping can help in many ways: it can reduce stress and maintain equilibrium; it helps decision-making; it maintains autonomy and freedom; it motivates meeting social and environmental demands; it maintains stable social, psychological and physical states; and it can control the potential stressor

before it becomes a threat, or avoidance through negative self-evaluation is used (Lazarus & Folkman, cited in Miller, 1992).

Lazarus and Folkman (1984) described different types of coping strategies that help reduce stress. Different coping strategies might cause different results, including effective coping, that can resolve or diminish stress (Livneh, 1999). If the stressful situation cannot be handled effectively (ineffective coping) a crisis may occur. The crisis may be resolved with or without professional intervention, and the individual returns to normal life and can perform at his/her previous levels of functioning (Livneh). Coping helps improve the patient's physical, psychological, social and emotional well-being (Taylor & Brown, 1994). Jalowiec (2003) identified eight coping strategies such as confrontive coping, evasive coping, optimistic coping, fatalistic coping, emotive coping, palliative coping, supportant coping, and self-reliant coping. Each focuses on improving the patient's physical and mental health, social well-being and incorporates elements of positive psychology.

MI patients who use ineffective coping strategies, such as avoidance or denial in seeking treatment or not adhering to medication, develop early signs of further MI (Alonzo & Reynolds, 1998). This leads to an increased likelihood of cardiovascular readmission and a higher risk of morbidity and mortality (Shemesh et al., 2004). Schwartz et al., (cited in Livneh, 1999) found these techniques serve to minimize distress especially at the beginning of heart attacks when individuals need to regroup and gather energy for further planning. However, too much avoidance and denial can lead to increased distress. Patients with cardiac disease, including MI, can cope with the stressful situations by applying psychological coping strategies. These include problem-focused versus emotion-focused coping, adaptive versus maladaptive

coping, dispositional optimism, hardiness and sense-active versus passive coping (Livneh).

When a stressor is evaluated he/she is likely to use coping strategies (Livneh, 1999). In brief, MI patients may use: confrontive coping to solving the problem; evasive coping to avoid feeling the problem; optimistic coping to think positively; fatalistic coping to feel pessimistic and hopeless; emotive coping for expressing and easing feelings; palliative coping to take action in order to feel well; supportant coping to use formal and informal support systems; and self-reliant coping to depend more on one-self than on others to solve one's problems (Jalowiec, 2003). All strategies can be effective in certain situations such as during the suffering of MI or chest pains.

In the context of Bangladesh, there is no evidence-based information about stress and coping in patients with MI. Based on the researcher's personal communication and practical experience, patients with MI raise numerous common, social and financial questions that create more stress. The patients thought that they had had heart attacks and would soon die. They also thought whether they could manage their treatment costs. Most of the patients received only partial payment for treatment from the Government. The patients pay most of the treatment costs by themselves. There were numerous questions in their minds, such as could they do normal work when they go home? How could they get better treatment? Patients thought their future would be uncertain. Studies on stress and coping by patients with MI have not yet been conducted in Bangladesh. There are multicultural and religious people living in Bangladesh. Most of them are Muslims and Hindus, they believe in

God and depend on the family. Most of the people live in villages and they cannot access cardiac care easily, so they pray to God and think miracles will happen.

The aims of this study were to identify: (1) the level of stress of patients with MI; (2) coping strategies used by MI patients; and (3) to examine the relationship between stress and coping of patients with MI. This study should provide useful information about the stress faced by patients with MI and it should help develop interventions to enhance effective coping strategies by patients with MI in Bangladesh.

Objectives of the Study

1. To describe the level of stress of patients with myocardial infarction

2. To examine the coping strategies that are frequently used by patients with myocardial infarction

3. To examine the relationship between stress and coping strategies of patients with myocardial infarction

Research Questions

1. What is the level of stress of patients with myocardial infarction?

2. What are the coping strategies frequently used by patients with myocardial infarction?

3. Is there any relationship between stress and the coping strategies of patients with myocardial infarction?

Conceptual Framework of the Study

The perceived stress response (Fliege et al., 2005) and the theory of stress and coping (Lazarus & Folkman, 1984) were used as the conceptual framework for this study. According to Fliege et al., stress means an individual's subjective perception and emotional response to stressors such as being a patient with MI. The term stressors is used for objects and events and a person's reaction to stress. Stress reactions consist of a variety of responses both physiological (rapid heart rate and breathing and increased blood pressure) and psychological (anger, fear, guilt and sadness) that occur when confronted with a stressor. Stress reaction consists of two types, which are: 1) internal stress reaction such as worries, tension, and joy; and 2) perceived external or environmental stressors such as demand. MI patients feel severe chest pains that make them worry. Worries represent an MI patient's anxious concern for the future and feelings of nervousness and frustration which create tension. Tension represents tense disquiet, fatigue and lack of relaxation. At this time, MI patients try to overcome their situation. If they thought positively and try to minimize the situation, they could enjoy a life that brings them joy. Joy concentrates with positive feelings of challenge, joy, energy, and security. Perceived external or environmental stressors are demands such as lack of time, fleeing from pressure, and overloads that makes situations more stressful (Fliege et al.).

As human beings, MI patients have to find ways to cope with uncomfortable feeling by using different types of coping strategies. Coping consists of specific cognitive and behavioral strategies that individuals use to deal with stressors. It is the perception of demands and coping capacity which determines stress levels (Lazarus & Folkman 1984). This present study measured MI patient's perception of stressors

and their use of coping strategies. Coping consists of both cognitive and behavioral efforts aimed at managing specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person (Lazarus & Folkman, 1984). Based on Lazarus and Folkman's coping strategies, Jalowiec (2003) modified coping strategies into 8 coping strategies. These are confrontive, evasive, optimistic, fatalistic, emotive, palliative, supportant and self-reliant coping. Patients with MI use different coping strategies in different stressful situations.

Patients with MI may experience chest pains, dyspnea, limited activity, fear of death, and feelings of uncertainty which are perceived as stressful. Stress increases their heart rate, respiration, blood pressure and muscle contraction. At this time, patients need to cope to minimize or reduce their stress to prevent further complications or another heart attack. MI patient may cope with their illness by using Jalowiec 8 coping strategies. Coping may decrease the level of stress. The conceptual framework of this study is presented in figure 1.

Stress:
- Worries
- Tension
- Joy
- Demands

Coping:
- Confrontive coping
- Evasive coping
- Optimistic coping
- Fatalistic coping
- Emotive coping
- Palliative coping
- Supportant coping
- Self-reliant coping
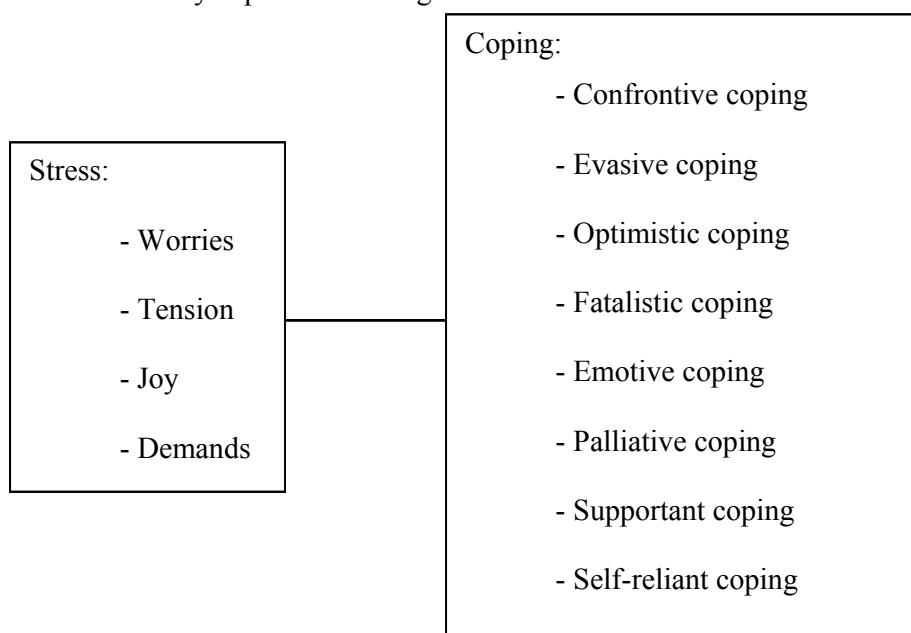
Figure 1

Conceptual framework of stress and coping of patients with myocardial infarction

Hypotheses

There is a relationship between stress level and coping of patients with MI

Operational Definitions

Stress of patients with MI

Stress is the individual's subjective perception and emotional response to stressors experienced during the suffering of illness. The term stress will be used for MI patient's internal reactions to stressors and perceptions about their individual and environmental situation. These are the result of their illness and make them worried, tense, joyful and demanding. Stress was measured by the 20 item Perceived Stress Scale which was constructed based on guidance of a Perceived Stress Questionnaire (PSQ) (Fliege et al., 2005). A Perceived Stress Measuring Scale (PSMS) consisted of 4 subscales which included worries, tension, joy, and demands. The higher scores present a higher level of perceived stress.

Stressors

Stressors are events or situations that are experienced as a perceived threat to one's wellbeing or position in life, when the challenge of dealing with them exceeds the person's perceived available resources.

Coping

Coping refers to cognitive and behavioral efforts which MI patients use to manage specific stressful perceptions that are appraised to be exceeding their resources. There are eight categories of coping strategies which Jalowiec called "coping strategies." Coping in this study was measured by a 60 item Coping Scale (CS) which was constructed by the researcher based on Jalowiec's Coping Scale

(JCS) (2003). These sixty items were categorized into 8 coping strategies: confrontive, evasive, optimistic, fatalistic, emotive, palliative, supportant, and self-reliant coping (Jalowiec, 2003). The higher scores represented higher level use of coping.

Scope of the Study

The population of the study comprised of MI patients who were readmitted to CCU wards and/or attended follow-up visits at the outpatients department, in Sher-E Bangla Medical College Hospital, (SBMCH) Barisal, Bangladesh. Data collection was conducted from November 2009 to January 2010.

Significance of the Study

The results of this study could contribute to nursing practice, nursing education and the development of further research as follows:

1. For nursing practice, the findings of this study could provide useful information about stress and coping by patients with myocardial infarction.

2. For nursing education, the knowledge gained from the study could be beneficial for developing knowledge, especially about effective coping methods.

3. For nursing research, the research findings about stress and coping could be used as baseline data for further research.

CHAPTER 2

LITERATURE REVIEW

The literatures reviewed for this study dealt with stress and myocardial infarction related stress, coping strategies and coping related to acute myocardial infarction are as follows:

1. Myocardial infarction (MI)

    1.1 Overview of MI

    1.2 Situation of MI in Bangladesh

    1.3 Impacts of MI

2. Stress of patients with MI

    2.1 Concept of Stress

    2.2 Assessment of stress

3. Coping of patients with MI

    3.1 Concept of coping

    3.2 Assessment of coping

    3.3 Factors related to coping of patients with MI

4. Relationship between stress and coping in patients with MI

Myocardial Infarction

Myocardial infarction is defined as the death or necrosis of myocardial cells. It is commonly known as a heart attack. Myocardial infarction occurs when myocardial ischemia exceeds a critical threshold and overwhelms myocardial cellular repair mechanisms designed to maintain normal operating functions and homeostasis.

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Ischemia at this critical threshold level over an extended period results in irreversible myocardial cell damage or death due to lack of blood and oxygen (Burke, Mohn-Brown, LeMone, & Eby, 2007).

1.1 Overview of myocardial infarction

Myocardial infarction refers to two subtypes of coronary syndrome, namely non-ST-elevated myocardial infarction and ST-elevated myocardial infarction. These are the most frequent manifestations of coronary artery disease. Myocardial cells require a constant supply of oxygen and nutrients in order to generate the high-energy phosphate compounds required for contraction. The most common cause of a reduced supply of oxygen is from the atherosclerotic narrowing of the coronary arteries. Atherosclerosis is a complex, insidious process, beginning long before symptoms occur. The initial vascular lesion leading to the development of atherosclerotic plaque is not known about with certainty. As fatty substances, cholesterol, cellular waste products, calcium, and fibrin pass through the vessel, they are deposited in the inner lining of an artery. As a result of this deposition of materials partial or complete blocking of the coronary artery occurs (Morton, Fontaine, Hudak, & Gallo, 2005). A nonocclusive thrombus develops on a disrupted atherosclerotic plaque, resulting in a reduction in myocardial perfusion. As the blood flow to the myocardium decreases, the auto regulation of coronary blood flow occurs as a compensatory mechanism. The smooth muscles of the arterioles relax, thus decreasing resistance to the blood flow in the arteriolar bed (Burke, Mohn-Brown, LeMone, & Eby, 2007).

Many risk factors that cause MI have been identified. Some factors are controllable and some are uncontrollable. Controllable factors are cigarette smoking, high blood cholesterol, hypertension, physical inactivity, obesity and being

overweight and diabetic mellitus. Uncontrollable factors are age, heredity, and race. Some contributing risk factors such as sex hormones, taking birth control pills, and excessive alcohol intake also contribute to develop MI (Morton, Fontaine, Hudak, & Gallo, 2005).

MI patients explain that they suffer chest pains which occur suddenly and continue despite rest and medication; and is the symptom most MI patients present. Some patients explain that the chest pain occurs at rest, they may awaken the individual from sleep, and may last longer than 20 minute. They feel crushed, tight or constricted. The pain begins in the center of the chest and radiates to the arms and neck. They feel a shortness of breath at rest or on exertion or when lying flat, and are overcome by hypoventilation, nausea, vomiting and anxiety. They may have a cool, pale, and moist skin. Their heart and respiratory rates may be faster than normal (Smeltzer, Bare, Hinkle, & Cheever, 2008). MI patients may develop several complications such as sudden death, arrhythmias, cardiac failure, hypoxia, hypotension, cardiogenic shock, papillary muscle insufficiency, ventricular aneurysm, myocardial rupture, pulmonary embolus, pericarditis, deep vein thrombosis, post-MI syndrome, and emotional difficulty (Morton, Fontaine, Hudak, & Gallo, 2005). Hypercholesterolemia, hypertension, hypertriglyceridemia, being overweight, diabetes, physical inactivity, smoking, and job strain were the stronger risk factors of MI (Morton et al., 2005). Patients with MI may be diagnosed by: (1) a clinical history of ischemic type chest pains lasting 20 minutes; (2) changes in serial ECG tracings; (3) and a rise and fall of serum cardiac biomarkers such as creatine kinase-MB fraction and troponin (Morton et al.; Bajzer, 2002).

Pharmacological therapy is an important component for the management of MI patients. The severity of symptoms, the hemodynamic status of the patient, and medication history all may guide the drug regimen. The major goals of drug therapy are anticoagulation, reduction in myocardial workload, and analgesic. Patients with MI anticoagulants may become deceased because of the incidence of embolic complication such as deep vein thrombosis and left ventricular thrombosis. Beta blocking agents are administered to MI patients to reduce the myocardial oxygen consumption by reducing myocardial contractibility. Calcium antagonists are beneficial for patients with unstable angina. Calcium antagonists decrease myocardial oxygen demands by decreasing the afterload, contractibility, and the heart rate. Antiplatelet therapy should be administered to patients with unstable angina (Morton et al., 2005; Urden, Stacy, & Lough, 2002).

Nursing intervention is an important part of managing MI patients. Nursing management of patients with MI incorporates a variety of nursing diagnosis. Nursing interventions are directed toward continuous patient assessment, the control of angina pain, the achievement of balance in the myocardial oxygen supply/demand and optimal cardiac output, the prevention of complications and provision for patient education.

1.2 Situation of MI in Bangladesh

Exact data is lacking about the incidence and prevalence of myocardial infarction in Bangladesh. The incidence of ischemic heart disease (IHD), which includes angina pectoris, unstable angina, and myocardial infarction was about 3 per thousand (Haque, 1997). Haque (1997) noted that a study in 1985 revealed that the incidence of IHD was about 14 per thousand. The prevalence of IHD in the urban

population was reported to be as high as about 100 per thousand (Haque). Myocardial infarction is the leading cause of death in Bangladesh, mostly in the fourth decade of life. According to the Bangladesh National Health System Profile (2005) and the World Health Organization Report in Bangladesh (2009) heart disease is the major causes of death in Bangladesh. Among all deaths 2.54% people died due to MI. The Bangladesh Bureau of Statistics (2008) reported that the combined death rate due to hypertension, heart diseases and stroke was 10.5%, 10.6%, 10.7%, 14%, 13.5% in the years 2002 to 2006 respectively. According to the Bangladesh Heart Care Foundation Report (2008) deaths in 2003 among patients with coronary arterial disease were more than 40% in developing countries and 25% in developed countries. However, day by day the rate of MI significance is increasing in Bangladesh. Every day 3 to 9 MI patients are admitted to the Sher-E Bangla Medical College Hospital Barisal (SBMCH), Bangladesh (Hospital Record, 2008).

Up to 2010 at the SBMCH there were no cardiac specialists in the outpatients department and there was and is no cardiac rehabilitation center. MI patients who come for follow-up visits or with any problems want to meet with a cardiologist. They do not want to receive treatment from general practitioners at the outpatients department or the emergency department. The Sher-E Bangla Medical College Hospital is the biggest hospital in the southern part of Bangladesh containing cardiac facilities. Most of the MI patents come from the village, Thana, and Districts levels. Their living area is far away from the hospital. Some MI patients from rural areas arrive at the SBMCH for follow-up visits when the outpatients department had closed. As a result patients had to attend the emergency department, but there were no cardiologists present. Normally a general physician admitted them to the CCU ward

for better advice or treatment. In addition, most of the MI patients want to be admitted to an CCU ward to see a cardiologist when they attend for follow-up visits.

1.3 Impacts of MI

MI has an enormous impact on patients' health, not only their physical health but also social and psychological health. Mortality associated with myocardial infarction has much increased in recent years due to the impact of MI (Crilley & Farrer, 2001). MI may affect patients' minds and their consciousness. Patients with MI physically develop several symptoms and complications, and mentally they feel more stress. Socially patients become isolated due to loss of jobs. The impact of myocardial infarction has been linked with physical, psychological and social status.

1.3.1 Physiological impact of MI

Mortality associated with myocardial infarction has much improved in recent years due to the impact of thrombolysis and secondary pharmacological preventive measures (Crilley & Farrer, 2001). Fatigue, dyspnea and sleep disturbances may occur in patients with MI and these affect the patient's functional status. After MI, many complications may arise such as: ventricular tachycardia; ventricular fibrillation; arterial tachycardia; atrial fibrillation; bradycardia; second-degree heart block; third degree heart block; myocardial ischemia; congestive heart failure; cardiac arrest; reinfarction; and cardiac death (Cherrington, Moser, Lennie, & Kennedy, 2004). Of all MI patients, half of them develop congestive heart failure and manifestations of acute alterations in the left ventricular functions.

Dysrhythmias is the most common impact on the physical health of patients with MI. Of patients with MI 40% to 50% die due to dysrhythmias (Tazbir & Keresztes, 2001). They may develop heart failure at the onset of infarction or this

may occur weeks later. One-third of MI patients die due to heart failure (Tazbir & Keresztes). According to functional capacity, the American Heart Association (1994) classify heart disease in four categories. These are: (i) no evidence of cardiovascular disease (patients can do normal physical activity and do not appear to have fatigue symptoms fatigue, palpitation, dyspnea, or angina pain); (ii) evidence of minimal cardiovascular disease (patients feel comfort at rest and fatigue, palpitation, dyspnea, or angina pain arise when performing ordinary physical activity); (iii) evidence of moderately severe cardiovascular disease (limitations to physical activity, patients feel comfortable at rest but in performing normal activity patients may feel fatigue, palpitation, dyspnea or angina pain); and (iv) evidence of severe cardiovascular disease (patients become unable to do any physical activity without physical discomfort, heart failure or anginal symptoms may be present at rest). Patients' own perceptions of the limitations placed on them by their symptom is that they are most likely to influence their quality of life. Sometimes MI patient develop physical disabilities that may create self-care obstacles.

1.3.2 Psychological impact of MI

General health and the overall quality of life, fatigue, dyspnea, and sleep disturbance all affect an individual's psychological and socioeconomical status. Depression most commonly occurs in patient with MI. A study found that depression may occur during hospital admission or after discharge (Lesperance, Frasure-Smith, & Talajic, 1996). MI patients may develop loss of interest in activities, poor concentration, and lack of confidence. Patients with unpleasant negative perceptions of their health were more likely to experience complications during hospitalization for acute events than were patients with more positive perceptions (Cherrington et al.,

2004). Studies have been made of the clinical impact of negative psychological states. These states expand the spectrum of risk for coronary artery disease. The use of self-reported scales identified five negative states that have been linked in cardiovascular disease such as hopelessness, pessimism, rumination, anxiety and anger (Cherrington et al.).

1.3.3 *Social and economical impacts of MI*

A social impact is another important consequence for patients with MI. Patients who suffer from MI may feel a dependency on others that may be either real or imagined. Most MI patients could not perform their normal job and cannot earn money. On the other hand, they need to spend money given their diagnosis and treatment. As a result, individual patients or their families may face an economic crisis. In the year 1991 the US spent $38 billion for the treatment of chronic heart failure patients. This indicates that the cost of treatment of chronic MI patients is higher than for treatment of other diseases (Bundkirchen & Schwinger, 2004). MI patients may not feel independent. They think about their health, illness and future. Suddenly stopping working properly and even endangering one's life may cause a loss of bodily integrity. Patients who develop physical disabilities become family and social burdens. MI patients who reported both social isolation and high levels of stress had more than 4 times the mortality risk of those who were neither isolated nor suffered from stress (Burg et al., 2005). A study found that higher unemployment and a reduced expectation of one's health status will have important implications on hopes of returning to work (Cherrington et al., 2004). Bangladesh is a developing countries and most people's economic status is not high. When they suffer from MI

they need to spend money for their diagnosis and treatment; as a result they become poorer.

2. Stress of Patients With MI

During a period of acute MI, patients usually have high level of stress (Chockalingam et al., 2003). Hutton and Perkins (2008) revealed that patients feel fear, uncertainty and are confused about what they should do and are worried about doing too much. Patients lost their confidence about important parts of recovery from disease. Patients changed their self-image. Some patients feel frustration about their physical limitations and early recovery of disease. Chockalingam et al., reported fifty-three percent of patients with an MI had high stress and 20% could control their stress. Source of stress are suffering from unexpected financial difficulty or fear of death (Chockalingam et al.). Some common factors, such as sleep disturbance, sever chest pain and difficulty in breathing may contribute to increased levels of stress.

Alonzo and Rynolds (1998) stated that after diagnosis of MI patients may not feel independent. Patients cannot do their normal work due to chest pains. They think they cannot go to their job, and will not be able to manage their treatment cost. They depend on other either real or imaginary ideas. As a result patients feel more stress and this helps to develop further heart attacks (Alonzo & Rynolds). This would lead to an increase in their disease symptoms and increased hospital readmission which further leads to higher risks of morbidity and mortality (Shemesh et al., 2004). Concerning the mental strain of patients with MI, it was revealed that they were often or always worried about being rushed at work and being unable to keep up with their

workload (Jerlock, Johansson, Kjellgren, & Welin, 2006). Al-Hassan and Sagr (2002) found that most of MI patients experience a moderate level of stress, with 20% reporting high stress levels.

   2.1 Concept of stress

   Stress is the condition that makes the body react in specific situations. Stress is a condition that involves a particular relationship between a person and the environment. Stress is a physiological phenomenon (Hans Selye, cited in Hanson, 1994; Lazarus & Folkman, 1984). Today stress continues to have many definitions, but for purposes of this study its definition will be taken from the theoretical framework offered by Lazarus and Folkman (1984, P.33) on perceived stress (Fliege, 2005). These authors defined stress as a transactional relationship between the person and the environment appraised by the person as taxing or exceeding his/her well-being.

   According to Fliege et al. (2005) when a specific event occurs and the body produces changes and whether a person is exposed to nervous tension, frustration or worries the result is called stress. Stress is an individual's subjective perception and the emotional response to stressful situations comes about in his or her own way. Stress is a psychological and physiological response to events that upsets personal balance in some way. When faced with a threat, whether to physical safety or emotional equilibrium, the body's defenses create rapid action, an automatic process known as the fight or flight response (OTIS, 2006). The "flight or fight" stress response involves biological changes that prepare the body for emergency action. Biological stress response tries to protect and support the person. However, psychological stress brings harm, threat or a challenge (Lazarus & folkman, 1984).

Chronic stress affects mental health causing emotional damage in addition to physical ailments.

Long-term stress can affect the brain and creates more vulnerability to everyday pressure and lowers the ability to cope. Over time, stress can lead to mental health problems such as anxiety and depression. However, positive stress helps a person to cope with problems that might arise. On the other hand, living under very stressful condition for long periods of time may harm a person's health and enjoyment of life. In patients with MI, stress stimulates the sympathetic nervous system and a release of neurotransmitters and endocrine hormone occurs in the initial stage. This is commonly referred to as the "fight or flight" response. Thyroxine raises the metabolic rate to prepare the body to take action in response to the stressor. As a result there is an elevation of blood pressure, heart rate, an increase in muscle tone and alertness and breathing becomes deeper and more rapid (Lachman, 1983; Urden, Stacy, & Lough, 2002). A stage of exhaustion occurs when all reserves have been depleted, leading to further complications and/or death.

2.2 Assessment of stress

Many instruments have been used to measure the level of stress. These include the Perceived Stress Scale (PSS), the Stress Response Inventory (SRI) and the Perceived Stress Questionnaire (PSQ).

The Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983) consists of 14 items which are used to measure the level of stress. Respondents are asked how often certain experiences of stress occurred in the last month. The content of the items is nonspecific. Two items directly address stress or hassles; three items deal with burdensome situations; and nine items refer to uncontrollable, unmanageable, or

irregular situations. Thus, the perceived stress scale focuses on a cognitive appraisal of stress and the respondent's perceived control and coping capability. A total score is provided and no subscales are reported (Cohen et al. 1983).

The Stress Response Inventory (SRI) consists of 39 items that comprehensively focus on cognitive, emotional, behavioral, and somatic stress responses, In addition to a total score, its subscales differentiate between depression, frustration, anger, aggression, tension, and somatization. It does not cover the individual's perception of external stressors or demands (Koh, Park, Kim, & Cho, 2001).

The Perceived Stress Questionnaire (PSQ) (Fliege et al., 2005.), consists of 20 items and 4 subscales which deal with worries, tension, joy, and demands. Each subscale consists of 5 items. The Perceived Stress Questionnaire should be used in different clinical groups and has an alternative stress questionnaire. Respondent rate how often an item applies to them on a 4-point Likert type rating scale: 1 = almost never; 2 = sometimes; 3 = often; and 4 = usually. Among the 20 questionnaire 7 items are positively stated and its score range is 7 to 21. The total Perceived Stress Questionnaire score ranges from 20 to 80. Higher scores will represent high levels of perceived stress. Test-Retest reliability and validity is strong. Coefficient alpha reliabilities have been shown to range from 0.70 to 0.80.

In comparing the aforementioned instruments, it has been found that the Perceived Stress Questionnaire (PSQ) is better for assessing the level of situational stress. From a conceptual point of view, perceived stress should be asked about as directly as possible, without inferring it from control or coping factors. Information is required and obtained that not only concerns the person's stress response, but also

concerns the perception of external stressors (Fliege et al., 2005). Therefore given the Bangladesh cultural contest and for ease of understanding the researcher develop 20 items on the Perceived Stress Measuring Scale (PSMS) to measure the level of perceived stress of patients with MI.

3. Coping of Patients With MI

    3.1 Concept of coping

        Coping strategies involve what the person actually thinks and does within the context of a specific encounter and how these thoughts and actions operate as the encounter unfolds. In recent years a conviction has grown that the way individuals cope with stress that influences a person's psychological wellbeing, social functioning, and somatic health. According to Lazarus and Folkman (1984), coping is the strategy that a person uses in specific situations or during stressful situations to minimize the level of stress. Within this framework, coping is defined as cognitive and behavioral efforts to manage specific external and or internal demands that are appraised as taxing or exceeding the resources and the persons (Lazarus & Folkman). In the process of coping, the individual shapes as well as responds to a demand or stress.

        Coping is a multidimensional process depending on the nature of the stressful event (Pearlin & Schooler, cited in Judkins, 2001). Coping is seen as something one can do before stress occurs. Stress is the condition of the circumstances with which a person might have to cope, and coping is a response that aims to reduce the level of stress (Keil, 2004). Lazarus and Folkman (1984) have made a distinction between coping as a trait and coping as strategies. Coping as a trait is regarded as a part of a

person's character, which predisposes him or her to react in certain ways across different types of stressful situations and over time.

According to Lazarus and Folkman (1984), coping is made up of three important characteristics. Firstly, it is process-oriented. Coping refers to what an individual actually thinks or does and changes these thoughts and actions as the situation unfolds. Secondly, the definition is contextual which emphasizes that the transaction and process for any two events are not the same. Individuals use different coping strategies at phases of efforts to solve a given problem. Thus, coping is not determined only by personal disposition but also by the individual's appraisal of the demands of a particular situation. Thirdly, coping is defined without reference to its outcome (Lazarus & Folkman). Coping is viewed in terms of a self-protective process, traits or the cognitive transactional theory of stress developed by Lazarus and Folkman. The cognitive transactional theory purports that coping cannot be defined as effective or ineffective independent of the context in which it is used. Individuals and their environments reciprocally affect each other. In the face of a potentially stressful event, individuals appraise to determine if an event has personal relevance.

Therefore, it was found that different coping strategies are used in different situations (Folkman et al., cited in Elderen, Maes & Dusseldorp, 1999). People are often confronted with situations that cannot be mastered or controlled. In such cases, effective coping involves coming to terms with undesirable outcomes rather than mastering them. Coping consists of efforts to manage, reduce, tolerate or minimize the demands created by the stressful events which represent a dynamic process. Coping can be seen as a benign mutual transaction by which the event and the individual influence each other (Fox-Wasylyshyn, El-Masri, & Krohn, 2007).

Lazarus and Folkman (1984) identified two forms of coping: (1) problem-focused coping, which is the management of the problem that is causing the distress; and (2) emotion-focused coping, which is the management of the emotions or distress that arise from the stressful transactions. Based on Lazarus and Folkman two forms of coping, Jalowiec (2003) developed eight coping strategies to cover and assess a wide range of coping behaviours within the field of nursing research. These are confrontive, evasive, optimistic, fatalistic, emotive, palliative, supportive and self-reliant coping. Confrontive coping refers to problem solving strategies. Problem solving strategies are directed at defining the problem, generating alternative solutions and weighing up the options for action in terms of their costs and benefits. Evasive coping refers to avoiding fleeing or repressing the problem. Optimistic coping refers to positive thinking. A person thinks about his/her situation positively. Optimistic coping is used to think positively. Fatalistic coping refers to feeling pessimistic and hopeless. MI patients think or sees only the negative or worst aspects of all things and to expect only bad or unpleasant things to happen. Emotive coping refers to expressing and easing feelings. Patients express their feelings with their family members or friends. Palliative coping refers to taking action in order to feel well. Supportive coping refers to the use of formal and informal support systems. Self-reliant coping refers to depended on the self to solve the problem rather than on others.

However, in finding out if there are distinctions in coping, it became clear that people used various forms of coping. People used complex combinations of the eight coping strategies to cope in stressful encounters. If coping resources were adequate for dealing with a threat, the degree of threat was diminished. However, an

event that at first might seem non–threatening could become threatening if the coping resources were inadequate for countering environmental demands or overcoming environmental or personal constraints (Lazarus & Folkman, 1984).

First, a person needs to justify the situation as either a threatening condition or not. Second, one needs to identify if he/she has enough resources that can help them to deal with that situation. Stress experience helps to maintain the balance between two steps. If a person perceives a threat as mild and his or her ability to cope is high, the stress level will be minimal. Coping is not a single strategy, but it is a process that applies to all circumstances. Therefore, the techniques one uses can change over time and depending on certain circumstances. Several personal and environmental factors influence coping with stressful situations. These include commitments, beliefs, values, feelings, emotions, and views of what is important. A seemingly appropriate solution might not be useful because it conflicts with an individual's values and beliefs.

Lazarus and folkman's theory of stress and coping consisst of three processes: primary appraisal; secondary appraisal; and coping. Primary appraisal is the individual perception of whether the stressor is threatening or challenging. Secondary appraisal is the assessment of the person's own coping resources available for dealing with the stressor. Coping behaviors are the specific cognitive and behavioral strategies that individuals use to deal with the stressor. This study was conducted to measure individual perceptions of internal and external stressors, not to measure stress appraisal.

3.2 Assessment of coping

There are many coping scales used to measure the level of coping. The Way of Coping Questionnaire (WCQ) has been used to measure individual coping (Folkman & Lazarus cited in Vollman, LaMontagne, & Hepworth, 2007). The original version of the WCQ response format was Yes/No. It was revised in 1985 and some redundant and unclear items were deleted or reworded and some items added.

The Revised Ways of Coping Scale (Folkman et al., 1986) has been used to measure the level of coping. This scale contains 50 statements describing 8 different cognitive and behavioral strategies used to cope with stressful encounters. Respondents are first asked to consider the most stressful situation they had experienced in the previous week. They subsequently respond to each statement in the scale by expressing the extent to which they used the strategy in coping with that stressful situation on a 4-point scale. This ranges from 0 (not used /does not apply) to 3 (used a great deal). Confrontive coping (6 items) describes hostile and aggressive efforts and risk-taking. Distancing (6 items) is composed of items describing efforts to distance oneself from the stressful situation. Self control (7 items) includes efforts to regulate personal feelings and actions. Seeking social support (6 items) describes attempts to seek emotional and informational support. Accepting responsibility (4 items) includes accepting one's own role in the stressful situation and trying to correct or better the situation. Escape-avoidance (8 items) describes efforts used to escape the situation and wishful thinking. Planful Problem-solving (6 items) is composed of problem-focused attempts at coping with or changing the situation. Positive reappraisal (7 items) includes items that have a religious tone and create positive meaning while focusing on personal growth. The items are summed with the

higher scores representing greater use of coping strategies in dealing with stressful situations. The internal reliabilities in this sample (Cronbach alphas) for each of the aforementioned coping strategies were .65, .55, .58, .71, .55, .79, .66, and .73 respectively.

Jalowiec's Coping Scale (JCS) was developed and based on Lazarus and Folkman's stress and coping theory. Coping is measured by using 60 items on the Jalowiec Coping Scale (Jalowiec & Powers, 1981). The 60 JCS items are classified into 8 coping strategies or coping patterns: confrontive, evasive, optimistic, fatalistic, emotive, palliative, supportive and self-reliant. Confrontive coping is constructive problem solving, facing up to and confronting the problem or situation. It consists of 10 items. Evasive coping is doing things to avoid confronting the problem and consists of 13 items in the questionnaire. Optimistic coping is positive thinking or positive attitudes about the problem or the situation and consists of 9 items. Fatalistic coping is pessimistic thinking or pessimistic attitudes toward the problem or situation and consists of 4 items. Emotive coping is expressing/releasing emotions and consists of 5 items. The palliative coping style is doing things to make yourself feel better and consists of 7 items. Supportant coping is using support systems including religious support systems and consists of 5 questionnaire items. Self-reliant coping style is depending on yourself to deal with the situation, rather than on others, and consists of 7 questionnaire items.

Each item of the JCS assesses how often a strategy is used to handle stress. The subjects rate how much they used each coping strategy to deal with or handle the stressor. The degree of use of the coping strategy is rated on a four point (0-3) Likert-type rating scale: 0 = never used; 1 = seldom used; 2 = sometimes used; 3 = often

used. The total score is 0 to 180. The higher score represents more frequent use of coping. This instrument assesses either general coping behavior or situation-specific coping. The JCS has been assessed at various times for stability and reliability. Several nurse researchers have checked the test–retest reliability. Jalowiec (2003) reported the reliability coefficient of the total scale was 88 to .91. The use of subscale alpha ranged from .47 to .86. The effectiveness subscales alpha ranged from .49 to .89. The three strongest subscales in terms of homogeneity reliability for both use and effectiveness were: confrontive = .82; evasive = .78; and optimistic = .78. The homogeneity or internal consistency reliability of this instrument was determined by Cronbach's coefficient alpha. This instrument was developed and based on western countries. To use it in different cultures, settings and populations requires easily understandable language. For this study the researcher developed a 60 item Coping Scale based on the JCS and literature review.

3.3 Factors related to coping of patients with MI

For Patients with MI there are different factors related to coping with their disease. These are associated with each patient's conditions, functional limitations, environmental involvement, and long term impacts. In patients with MI several factors such as diet, activity and exercise, sleep, safety and security and previous experience may influence how they cope with their illness (Craven & Hirnle, 2009). After diagnosis of MI, patients were advised to avoid fatty food, cholesterol containing food, and over eating. By following dietary regulations, MI patients may think they can overcome their illness. Activity and exercise give MI patient psychological and physiological well-being. It improves their cardiovascular condition, and controls body weight (Craven & Hirnle). Activity and exercise helps

the MI patients to cope with their illness. Economic, social and familial support makes the MI patient feel safe and secure and that helps them cope with their illness. Social support plays an important role in coping. Previous experience is a most important factor for coping as family members and friends learn from previous exposure to stressful situations. This helps them to cope with their situation effectively.

Fox-Wasylyshyn, El-Masri, and Krohn (2007) found that where they lived, sex, educational level, and patients' ages and demographic factors are associated with the use of coping strategies. They also found that patients with lower education are more likely to take prescription medication to cope with their disease. Moser (1994) reported that cardiac patients, including those with MI, with low levels of social support are at risk to further cardiac events and decreased physical and psychological well-being during recovery. Social support includes social networks, social relationships, social ties, and social activities (Kristofferzon, 2006). During the course of each chronic disease such as MI, different coping strategies are adopted to meet the conditions imposed by each disease. These may include prognostic indicators such as medical status, specific health problems, methods of treatment and psychosocial reactions (Andersson & Ekdahl, 1992).

Evidence based information about factors related to coping in patients with MI is still lacking in Bangladesh. However, the researcher's personal experiences suggests that sex, religious beliefs, treatment facilities, financial solvency, family support, education, information about MI and perceptions about their disease all have some influence on patients' coping abilities. Some patients cope with their illness by praying more than usual, some by doing more exercise.

4. Relationship Between Stress and Coping of Patients With MI

Stress is a condition or circumstance with which a person should feel the need to cope, and coping is a response that decreases the level of stress (Keil, 2004). Continuous stress after MI may develop further heart attacks. If patients use effective coping strategies their level of stress will be decrease. Levels of stress depend on the use effective coping strategies. MI patients are more vulnerable to stress. Continuous stress may prevent recovery from their sickness or disease. When MI patient face stress they need to cope to maintain their physical and social wellbeing. Coping strategies, such as seeking help, learning new skills, and venting anger are examples of the cognitive and behavioral efforts a person uses in response to a stressor.

Toth (1993) found that women and men experience similar levels of stress during hospital discharge after MI. Another study reported that women use more coping strategies than men, including problem-focused, emotion-focused and avoidance strategies (Bogg, Thormton, & Bundred, 2000; Svedlund, & Axelsson, 2000). Jenson, Suls, and Lemos (2003) found that women resumed household duties early in their recovery, which could increase the risk of complications. White (1999) found that the less chest pain a man felt after MI, the greater the difficulties he had with restrictions and acknowledging the importance of lifestyle changes and cardiac rehabilitation. Higginson (2008) revealed that women often fail to recognize the signs of MI and delay seeking treatment for symptoms of MI. Jerlock, Johansson, Kjellgren, and Welin (2006) found that women used emotive coping to a greater extent than did men. Physical activity decreased emotive coping. Age, sex, sleep, mental strain at work, and negative life events increased emotive coping.

Evasive coping, such as disengagement and denial, has been shown to be associated with anxiety, depression and physical limitations in men (Bennett & Connell, 1999). Personal coping resources and self-esteem were stronger predictors of emotional and cognitive readjustments in men who had experienced an MI than instrumental coping resources, such as education and socio-economic status (Ben-Sira & Eliezer, 1990). Stewart et al. (2000) found MI patients used diverse emotion-focused, problem-focused and relationship focused strategies to cope with MI.

Different situations need different strategies to cope with stress by patients with MI. In some cases the individual may need to confront a difficulty or overcome an obstacle. In other circumstances, the individual must learn how to carry on with his life in the face of an ongoing situation such as bereavement, disability or unemployment (Leefarr, 1999). The way an individual uses coping methods is influenced by the nature of their belief system, culture, psychological well-being, perception of illness, previous experience of using varied methods, and cognitive capacity (Miller, 1992).

Cardiac disease such as MI is a primary example of a life threatening chronic disease. Studies have found that stress and coping have a close relationship with alleviating survivor stress (Moser, 1994). Patients who survived after MI were those who used a more general problem solving coping style. They reported better social and psychological adjustment following hospital discharge compared with those using a more global emotional focused coping style, (Keckeisen & Nyamathi, 1990). Webster and Christman, (cited in Livneh, 1999) measured the perceived uncertainty and coping (affective oriented and problem–oriented) with emotional distress among individuals recovering from MI. The 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 result also showed that those who reported using affective oriented coping more frequently reported higher levels of emotional distress, notably anxiety and depression. Those who used problem solving coping more experienced lower levels of emotional distress.

Fox-Wasylyshyn, El-Masri, and Krohn (2007) reported on specific coping behaviors used when experiencing MI symptoms. Sometimes MI patients ignored their symptoms and used emotion focused coping. Patients with knowledge of MI symptoms used problem focused coping strategies (Fox-Wasylyshyn, cited in Fox-Wasylyshyn et al., 2007). Hutton and Perkins (2008) revealed that many MI patients avoid stressful situations by dietary changes, reducing their alcohol intake or stopping smoking, increasing exercise particularly walking, and increasing their security by avoiding certain situations. They used cognitive coping strategies that included acceptance, religious faith, humor and avoiding thinking about a heart attack. Kristofferzon (2006) revealed that women and men most frequently used Optimistic, Self-reliant and Confrontational coping. This study also revealed that women used more evasive and supportive coping strategies than men. Evasive coping was, for example, used by women at the onset, when they avoided bothering others with their problems and practiced self-treatment. This might delay the time of diagnosis and this in turn may have a negative impact on cardiac prognosis (Kristofferzone). Women were angry with themselves for repressing their own needs over many years. This anger encouraged them to be less subservient and more self assertive. They then gave less priority to household duties and thought more of their own needs.

Summary of Literature Review

It is apparent from the literature that MI is a leading cause of death. Recently mortality and morbidity rates have increased in Bangladesh due to MI. MI has a great impact on patients' physical, mental, social and economic status. Patients with MI become physically disabled, mentally depressed, socially isolated and they faced economic crises.

An MI experience is stressful event. Stress is triggered to further develop MI. Patients with MI experience numerous conditions such as financial, interpersonal or familial problems. They worry about the future, treatment facilities, problems of self-care or dealing with physical difficulties, and the loss of jobs. All these create more stressful situations. Continuing stress after MI patients make them less likely to return to work, and undertake more hospital re-admissions and experience higher mortality rates.

Coping can help to decrease the level of stress. Coping and stress are interrelated. Increased use of coping decreases levels of stress; decreased use of coping increases levels of stress. Several factors such as information about MI, diet, activity and exercise, the use of supportive system and previous experience of MI help the MI patients to cope with their stress. Effective coping can minimize the level of stress and prevent further complications or heart attacks. It can minimize or reduce further complications arising from MI or readmission to hospitals. MI patients use different coping strategies in different situations to manage their stress. Coping is a dynamic process consisting of the efforts made to manage to reduce, tolerate or minimize the demands created by stressful events.

In conclusion, MI patients need to cope with their stress to minimize their symptoms and suffering and prevent further complications. Evidence-based stress information can help nurses to provide effective stress management intervention. This literature review shows there is a gap in Bangladesh about evidence based stress levels and the coping strategies of patients with MI. There has been no recently, research study of stress and how patients cope with MI in Bangladesh

CHAPTER 3

METHODOLOGY

This descriptive correlational study aimed to identify the level of stress and coping strategies of patients with MI in Bangladesh, and to examine the relationship between stress and coping in patients with MI.

Population, Setting, and Samples

Population

The population of this study consisted of MI patients who were readmitted to coronary care units, or came for follow-up visits to an outpatient department.

Setting

Sher-E Bangla Medical College Hospital (SBMCH), Barisal is the largest government hospital in the southern part of Bangladesh. It was convenient to select it as the target setting of the study. It has 750 beds and high level of case referrals from primary and secondary levels of government hospitals, private hospitals and clinics. It provides care to both rural and urban people at tertiary level. In the southern part of Bangladesh only the SBMCH provides cardiac facilities with doctors on duty for 24 hours daily. Every day from 9 AM to 2 PM cardiologist work in the coronary care unit and visit the patients. There is an on-call cardiac specialist standing by for 24 hours in case of emergency. The nurse rotate over three shifts: 8.00 am to 2.00 pm; 2.00 pm to 8.00 pm; and 8.00 pm to 8.00 am. The researcher selected this hospital to collect data from a number of patients with MI that satisfied the minimum sample size needed for this study.

Samples

The sample used for this study were MI patients who were re-admitted to a coronary care unit, and/or came for follow-up visits to the outpatient department the SBMCH, Barisal, Bangladesh. A purposive sampling technique was used to recruit the sample based on the following inclusion criteria.

1. Age above 20 years

2. Were diagnosed with myocardial infarction

3. Were able to understand and communicate

4. Agreed to participate

Sample size

The sample size in this study was estimated using power analysis (Polit & Hungler, 1999). In quantitative studies establishing the significance of a bivariate liner relationship, power analysis is useful to ascertain the significance of the study findings. The estimated sample size was calculated with a level of significance (α) of .05, a power (β) of .80, and an estimation effect size (γ) of .30. The effect size could also be estimated based on previous related studies (Polit & Beck, 2008). The effect size had been determined from the previous studies conducted on coping and adjustment among dialysis patients (Lok, 1996), and from the study entitled "Stress and coping strategies of patients with cancer" (Kim et al., 2002). These two study used effect size at a medium level of .30 and found significant relationship. Therefore the investigator used the medium effect size of .30, which represents 88 subjects (Polit & Beck) in order to ensure the researcher able to detect the relationship between stress and coping of patients with MI.

Instrumentation

The instruments used in this study for data collection were structured form questionnaires. There were three parts. Part 1 comprised of a demographic data form and health related questionnaire (DDF&HRQ). Part 2 was a Perceived Stress Measuring Scale (PSMS). Part 3 comprised of the Coping Scale (CS). Patients completed the questionnaires by themselves. For those patients who were unable to read the questionnaire, the researcher helped them by reading it to them and rating the items.

Demographic Data Form and Health Related Questionnaire

(DDF&HRQ)

The demographic data consisted of 11 items: age; gender; residential area; educational background; religion; occupation; income per month; satisfaction with income; way of payment for treatment; number of family members; and family support. The Health Related Questionnaire consisted of: common signs and symptoms affecting patients' health; any history of other additional chronic illnesses; duration of MI; frequency of hospital admissions; family history of MI; knowledge of MI; distance from treatment facilities; adherence to treatment; and experience of stressful events. These questionnaires were developed by the researcher. Descriptive statistics were used for analyzing the demographic and health related data. These were described in terms of frequency, percentage, range, means and standard deviation.

Perceived Stress Measuring Scale

In this study, perceived stress was measured by the 20 item Perceived Stress Measuring Scale (PSMS). The PSMS has 4-subscales; worries; tensions; joy;

and demands. These were constructed by the researcher through the literature review and based on the Bangladesh cultural contest. A Perceived Stress Measuring Scale was used to measure an individual's subjective perception of the stress of patients with MI experience. Among the 20 items, item numbers 1, 4, 6, 8, 12, 14, 16, and 19 were positively stated. These positive item score were reversed before interpretation. Participants were asked to respond to the 20 items in the questionnaire with respect to how they thought and felt regarding their illness. A 4 points (1-4) likert type was used with the following rating scale: 1 = almost never; 2 = sometimes; 3 = often; and 4 = usually. Scores ranges from 1 to 4 points for each item. The total scores ranged from 20 to 80 points.

The higher scores represented high levels of perceived stress. For interpretation, the researcher divided the total score and subscale score into three levels based on the range of scores. The three levels were determined by dividing the difference between the largest and smallest score by the number of class interval used (Kiess, 1996) as follows:

Total score	Subscale score	Interpretation of stress
20.00 – 40.00	05.00 – 10.00	Low level of stress
40.01 – 60.00	10.01 – 15.00	Moderate level of stress
60.01 – 80.00	15.01 – 20.00	High level of stress

Coping Scale

Coping was measured by using the 60 item Coping Scale. It was constructed by the researcher and based on the 60 item Jalowiec Coping Scale (JCS) (Jaloweic, 2003) and the review of literature dealing with the Bangladesh cultural context. The Coping Scale was used to examine how much coping strategies used by

the subjects.   The Coping Scale consisted of a 60 items questionnaire divided into 8 coping strategies. These were:

1. Confrontive coping; constructive problem solving, facing up to & confronting the problem or situation, 10 items

2. Evasive coping: doing things to avoid confronting the problem, 13 items, 39 scores

3. Optimistic coping: positive thinking or positive attitudes about the problem or the situation, 9 items

4. Fatalistic coping: pessimistic thinking or pessimistic attitudes toward the problem or situation, 4 items

5. Emotive coping: expressing/releasing emotions, 5 items

6. Palliative coping: doing thing to make yourself feel better, 7 items

7. Supportant coping: using support systems including religious support systems, 5 items

8. Self-reliant coping: depending on oneself to deal with the situation, rather than on others, 7 items

For the Coping Scale, subjects were asked to rate how much they used each coping strategy to deal with or handle the stressor. The degree of using the coping strategy was rated on a four point (0-3) Likert type rating scale: 0 = never used; 1 = seldom used; 2 = sometimes used; 3 = often used. The total score was 0 to 180. This total score was arranged by the sum of the scores for the items. The higher score represents high levels of coping.

For interpretation the researcher used mean item scores and subscale percentage scores. Mean item scores or subscale percentage scores were used to

compare different coping strategies between subjects or groups. Based on the mean item scores for each coping strategies were interpreted as follows:

Frequency of coping score Mean of each item score Interpretation of coping strategies

0.00 – 60.00	1.00 – 2.00	Seldom use
60.01 – 120.00	2.01 – 3.00	Sometimes use
120.01 – 180.00	3.01 – 4.00	Often use

To interpret scores of the coping items, the researcher followed Jalowiec (2003) description of eight coping strategies and the statements of the 60 items.

Instrument translation

The original Coping Scale and Perceived Stress Measuring Scale were developed as an English version. It was translated to the Bengali language by the back translation technique (Sperber, Deverllis & Boehlecke, 1994) with the help of three bilingual translators. They were literate in both English and Bengali and translated the instruments to ensure the accuracy of the translation and identify discrepancies between two versions. The processes of back translations were:

Step 1: The first bilingual translator translated the English version 1 of the instrument into the Bengali language.

Step 2: The second bilingual translator back translated the Bengali version into the English version 2.

Step 3: An English expert evaluated both the original English version 1 and the English back translated version 2 to ensure the equivalence of the two versions

Validity and reliability

Validity

The content validity of the instrument was assessed by a panel of three Bangladeshi experts. One was physician and two were nursing experts, and they had knowledge of research methodology. The experts were asked to check the relevancy between the items and objectives of three sets of questionnaires.

Reliability

The reliability of the translated instrument was analyzed for internal consistency using the coefficient alpha (Cronbach's alpha) method. This method is widely used for testing the internal consistency or homogeneity of this type of instrument (Polit & Hungler, 1999). The reliability of the Perceived Stress Scale and Coping Scale were analyzed for internal consistency by testing with 10 subjects from a pilot study. The alpha coefficient of the stress (.88) and coping (.87) instruments were established.

Data Collection Procedure

The data collection procedure included two phases, the preparation and implementation phases.

Preparation phase

1. Data were collected after obtaining approval for the thesis proposal from the Institutional Review Board (IRB) of the Faculty of Nursing, Prince of Songkla University, Thailand. Permission was also obtained from the director of the Sher-E Bangla Medical College Hospital, Barisal, Bangladesh.

2. The researcher asked for permission to collect data from the Director of nursing services and the Hospital Director of the Sher-E Bangla Medical College Hospital, Barisal, Bangladesh. Researcher informed them about the research objectives, methods, and the benefits expected from the study.

3. The researcher contacted the Nursing Superintendent and explained to her about the objectives of the study, the methods and the benefits expected from the study. Permission was obtained to collect data.

4. The researcher introduced himself to the nurse in charge, and explained the purpose of the study and asked for permission to collect data from the subjects.

5. The researcher selected a convenient sample of the MI patients in the coronary care unit, or the out patients department. All met the inclusion criteria.

Implementation phase

1. The researcher met with each subjects in the CCU unit and the out patients department through the nurse in charge of the ward. He explained to each subject about the objectives, their rights and the benefits of the study and asked them to participate in the study.

2. The researcher obtained either written or verbal consent from each subject after she/he agreed to participate in the study.

3. The researcher distributed a set of questionnaires including the Demographic Data Form and Health Related Questionnaire (DDF&HRQ), the Perceived Stress Measuring Scale (PSMS) and the Coping Scale (CS) among the subjects. He explained to them how to complete the questionnaire. Subjects were asked if they had any questions to ask the researcher. A few of the subjects, especially the older and nonformal educated persons, needed help from the researcher for

reading and marking the questionnaire. The researcher helped them by reading the questionnaire and asking which items were closest to their answer and marked these. The researcher realised that some items of the Health Related Questionnaires were increased patients' stress levels. Which were Do you have any family history of MI?, or Do you have any experience about stressful events in your life?. The researcher noted that questionnaire, and changed the order of data collection by asking these items at the end. After filling in the answers, the researcher checked that questionnaires were complete. The researcher finished the data collection procedure by thanking the participants.

Ethical Considerations

1. The thesis proposal was approved by the Institutional Review Board (IRB) of the Faculty of Nursing, Prince of Songkla University, Thailand.

2. Permission for data collection for the study was obtained from the Directorate of Nursing Services, the Hospital Director and the Nursing Superintendent of the selected hospital in Bangladesh.

3. The researcher informed the subjects about the objectives and methods of the study, and also informed them that their participation depends on their willingness. They were freed to withdraw from the study at any time without penalty. There were no costs and there was nothing to pay by participants in this study. In addition, the researcher explained to the participants that their names would not be disclosed and a code number would be used for their name so that their identity and score would be anonymous. The information and responses in connection with this study would remain confidential. Only the researcher could access the data. Neither

their names nor any identifying information would be used in reporting the study. Verbal explanations were given when they asked any questions about the study.

Data Management

The researcher performed all data management procedures including coding, data entry, data screening, data cleaning and editing, and data analysis. The total score was arranged by summing up total items scored and summing up the total subscale score.

Data Analysis

Data were analyzed by using a data processing program. Before analysis, the data were checked and entered into a computer program. The analysis included descriptive statistics and inferential statistics relating to the research questions. Descriptive statistics were used for presenting the demographic characteristic and health related information. The levels of stress and coping strategies that were used by the patients were described in terms of frequency, percentage, means and standard deviation. The Pearson product-moment correlation coefficient (r) was used to identify the relationship between stress and coping. Before the correlational analysis, preliminary testing was done to check the assumptions of the Pearson's correlation (r), including the normal distribution of each variable, and the linear relationship between variables. That was included in the test of normality, interval or ratio scales, and linear variables. The Pearson product-moment correlation statistic (r) was calculated between the overall scores for stress, the subscale scores for stress, the overall score for coping, and the subscale scores for coping. These were done to

examine the relationships between stress and coping. Normality was detected by an inspection of skewness, the standard error of skewness, and kurtosis.

CHAPTER 4

RESULTS AND DISCUSSION

This descriptive correlational study aimed at identifying the level of stress and coping, and to explore the relationship between stress and coping. It was conducted on stress and coping of patients with myocardial infarction at the outpatient and inpatient departments, Sher-E Bangla Medical College Hospital Barisal, Bangladesh. The findings were presented as tables with descriptive statistics regarding demographic characteristics, health-related characteristics, stress, coping, and the relationship between stress and coping strategies.

Results

During the data collection period 98 MI patients were approached to participate in this study. Ten patients refused to participate because they had not enough time to answer of all the questionnaires, which took 1 hour to 1.5 hours to complete. A total of 88 subjects continued their participation in this study.

Demographic characteristics

The demographic characteristics of the subjects are shown in Table 1. The subject's ages ranged from 30 to 79 years, with the majority being 50 to 59 years (36.4%). This result indicated that the majority of the subjects were middle aged adults (M = 51 years, SD = 10.30). Most of the subjects were male (77.3%) and lived in rural areas (71.6%). Thirty seven point five percent of respondents' educational levels were high school, only and 6.8% of the subjects completed University level. The majority of the subjects were Muslim (85.2%). Approximately one-fourth (22%)

of the subjects' occupation was business. More than one-fourth of the subjects (27.3%) earned more than US$143 per month, but 21.6% had no income and 59.1% of the subjects said their income was not enough. A majority of the subjects (76.1%) received partial payment for treatment from the hospital and 97.7% of the subjects received family support during their MI experience.

Table 1

Frequency and Percentage of Subjects Demographic Characteristics (N = 88)

Characteristics	n	%
Age (Years) (Mean = 51, SD 10.30, Min= 30, Max= 79)		
30-39	10	11.4
40-49	24	27.3
50-59	32	36.4
60-69	17	19.3
70-79	5	5.7
Sex		
Men	68	77.3
Women	20	22.7
Living status		
Rural	63	71.6
Urban	25	28.4
Education		
No formal education	15	17
Primary education	19	21.6
High school	33	37.5
College	15	17
University	6	6.8

Table 1 (*Continued)*

Characteristics	n	%
Religion		
Islam	75	85.2
Hindus	13	14.8
Occupation		
Farmer	14	15.9
Government employee	13	14.8
Private	8	9.1
Business person	20	22.7
Retired person	14	15.9
House wife	18	20.5
Other	1	1.1
Earned income per month (Bangladeshi Taka)		
None	19	21.6
< 5000	5	5.7
5,000 – 7,000	17	19.3
7,001- 10,000	23	26.1
> 10,001	24	27.3
Income satisfaction		
Enough	3	3.4
Fair	19	21.6
Not enough	52	59.1
No income	14	15.9

Table 1 (*Continued*)

Characteristics	n	%
Treatment payment		
Total hospital pay or any organization	2	2.3
Partial hospital pay	67	76.1
Total self paid	19	21.6
Family support		
Yes	86	97.7
No	2	2.3

Health-Related characteristics

Table 2 shows the health related characteristic including the functional class of the heart failure, the number of hospital admission patients with MI experience, the common illness symptoms that affected patients' health, and the duration of MI. The result show that 51.1% MI patients had heart failure in the functional class 1. Most of the patients stated that the common symptoms of MI were chest pains (96.6%), dyspnea (77.3%), palpitation (55.7%), distress (47.5%), fatigue (89.8%), and paroxysmal noctural dyspnea (17%). Most of the patients stated that sometimes they had MI related symptoms. Nearly half of the patients had been treated for MI for from 4 to 6 months (40.9%), with a mean of 2.80 months, and ranging from 1 month to more than 24 months. The majority of the subjects (62.5%) were admitted twice to the hospital with their MI. More than two-thirds of the subjects (78.4%) had no family history of MI. Most patients with MI (68.2%) expressed they had not enough knowledge about MI, and 21.6% of the subjects stated they had knowledge about MI,

but they did not know its cause. They stated that the symptoms of MI were chest pains and pain radiating to the back of the scapula, shoulder and hand. When feeling the chest pains they felt distressed (87.5%). Nearly three-fourths of the subjects (71.6%) took drugs regularly and 68.2% of the subjects stated that they had experience of stressful events. These were related to family reasons such as death of spouses, fathers, mothers and separation, and economic problem.

Table 2

Frequency and Percentage of Subjects Health Related Characteristics (N = 88)

Characteristics	n	%
Functional class of heart failure		
Class-1	45	51.1
Class-2	34	38.6
Class-3	9	10.2
Common symptom affect on patients health		
Chest pain		
Yes	85	96.6
No	3	3.4
Chest pain frequency		
Always	21	23.9
Sometimes	64	72.7
Occasional	3	3.4
Dyspnea		
Yes	68	77.3
No	20	22.7
Dyspnea frequency		
Always	9	10.2
Sometimes	59	67
Occasional	20	22.7

Table 2 *(Continued)*

Characteristics	n	%
Palpitation		
Yes	49	55.7
No	39	44.3
Palpitation frequency		
Always	4	4.5
Sometimes	45	51.1
Distress		
Yes	77	87.5
No	11	12
Distress frequency		
Always	16	18.2
Sometimes	61	69.3
Fatigue		
Yes	79	89.8
No	9	10.2
Fatigue frequency		
Always	35	39.8
Sometimes	44	(50)
Paroxysmal noctural dyspnea		
Yes	15	17
No	73	83
Paroxysmal noctural dyspnea frequency		
Always	6	6.8
Sometimes	9	10.2

Table 2 *(Continued)*

Characteristics	n	%
Duration of MI		
1-3 month	12	13.6
4-6 month	36	40.9
7-11 month	13	14.8
1-2 years	12	13.6
Above 2 years	15	17
Number of hospital admission from MI		
1	5	5.7
2	55	62.5
3	23	26.1
4	4	4.5
>4	1	1.1
Family history of MI		
Yes	19	21.6
No	69	78.4
Knowledge about MI		
Yes	28	31.8
Not enough	60	68.2
Treatments adherence		
No	25	28.4
Yes	63	71.6
Experience about stressful event		
Yes	60	68.2
No	28	31.8

Stress among patients with MI

Patients with MI who participated in this study experienced a moderate level of stress (M = 65.89, SD = 6.83) (Table 3). Item analysis as indicated in Table 3 that the worries level was high. The majority of them (76.1%) experienced a moderate level of stress followed by 21.6% patients had high level of stress (Table 4). Among the four dimensions of stress, worries was at the highest level and rated the highest mean score (Table 3).

Table 3

Minimum, Maximum, Mean, Standard Deviation, and the Level of Stress of Patients With MI (N = 88)

Stress	Min	Max	M	SD	Level
Overall Stress	33	74	65.89	6.83	Moderate
Worries	5	20	15.18	1.95	High
Tension	9	18	13.53	1.95	Moderate
Joy	6	20	13.75	2.89	Moderate
Demands	6	20	13.43	2.81	Moderate

Table 4

Percentage of Subjects Classified by the Level of Stress of Patients With MI (N = 88)

Level of Stress	Percentage of the subjects
Low	2.3
Moderate	76.1
High	21.6

Top six stress items

Table 5 shows the top six perceived stress items that were occasional and always felt by the subjects. Three of the top rank perceived stress items were equally felt (77.3%) which were: "are you anxious?"; "have you had many worries?"; and "are you afraid for the future?". Other three top rank of perceived stress items were: "are you feared that you may not manage to attain your goals? (75%)"; "do you feel frustrated? (70.4%)"; and "are you feel mentally exhausted? (70.4%)". Four out of six top perceived stress items were in the worries subscale, which were: "have you had many worries?"; "are you feared that you may not manage to attain your goals?"; and "do you feel frustrated?"; while two perceived stress items, "are you anxious?"; and "are you mentally exhausted?"; were in the tension subscale.

Table 5

Top Six Perceived Stress Items that Occasional and Always Felt by Patients With MI
 (N = 88)

Perceived Stress Scale	Percentage		Total
	Occasional	Always	percentage
Are you anxious?	31.8	45.5	77.3
Have you had many worries?	40.9	36.4	77.3
Are you afraid for the future?	28.4	48.9	77.3
Are you feared that you may not manage to attain your goals?	33	42	75
Do you feel frustrated?	31.8	38.6	70.4
Are you mentally exhausted?	40.9	29.5	70.4

Coping among patients with MI

Patients with MI who participated in this study used various coping strategies (Table 6). Overall the patients reported that they sometimes used them. Among 8 types of coping strategies, the supportant coping style was often used (minimum score = .20, maximum score = 3.00, M = 2.09 and SD = .49). Emotive coping and palliative coping were occasionally used by this group of subjects. The other styles, such as confrontive coping, evasive coping, optimistic coping, fatalistic coping, and self-reliant coping were reported as "sometimes used" (Table 6).

Table 6

Minimum, Maximum, Mean, Standard Deviation, and the Level of Coping Style Being Used by Patients With MI (N = 88)

Coping	Min	Max	M	SD	Uses of Coping Methods
Confrontive coping	.90	2.40	1.66	.31	Sometimes used
Evasive coping	.54	2.00	1.23	.34	Sometimes used
Optimistic coping	.78	2.11	1.49	.32	Sometimes used
Fatalistic coping	.25	2.75	1.58	.37	Sometimes used
Emotive coping	.00	2.00	.74	.42	Occasional used
Palliative coping	.43	1.86	.99	.32	Occasional used
Supportant coping	.20	3.00	2.09	.49	Often used
Self- reliant coping	.86	2.57	1.87	.42	Sometimes used

Top ten coping items

Table 7 shows the top ten items of coping out of 60 items that were "often" and "sometimes" used by the subjects. These top ten coping items were under five coping strategies out of eight: supportant coping, optimistic coping, evasive coping, confrontive coping, and self-reliant coping. Supportant coping is using support systems including religious support systems. Optimistic coping is positive thinking or positive attitudes about the problem or the situation. Evasive coping is doing things to avoid confronting the problem. Confrontive coping is constructive problem solving, facing up to and confronting the problem or situation. Self-reliant coping is depending on yourself to deal with the situation, rather than on others.

Supportant coping item: "have you prayed to God for believing the Almighty?", often and sometimes used score, was highest (98.9%) and "have you discuss about the problems with friends and family members? (84.1%)". Results indicate that most of the MI patients prayed to God for recovery from their disease. Confrontive coping item, "have you tried to keep the situation under your control?" and "have you tried to control your emotion?"; evasive coping item, "have you keep your feelings in yourself?"; optimistic coping item, "have you hope that all will be well?"; often and sometimes used scores were the similar (88.6%). Four other coping strategies used at different levels were: "have you remembered how you solve the previous problem? (83.0%)"; "have you told yourself not to worry because everything would work out fine? (90.9%)"; "have you hoped that the problem will be overcome? (83.0%)"; and "have you hope that the problem would go away? (89.7%)".

Table 7

Top Ten Coping Items that Sometimes and Often Used by Patients With MI (N = 88)

Coping Scale	Percentage		Total
	Sometimes used	Often used	percentage
Have you prayed to God for believing the Almighty? (SU)	18.2	80.7	98.9
Have you told yourself not to worry because everything would work out fine? (OP)	47.7	43.2	90.9
Have you hoped that the problem will be overcome? (EV)	42	47.7	89.7
Have you try to keep the situation under your control? (CO)	30.7	58	88.7
Have you kept your feelings in yourself ? (EV)	60.2	28.4	88.6
Have you hope that all will be well? (0P)	50	38.6	88.6
Have you tried to control your emotion? (CO)	60.2%	28.4%	88.6
Have you discuss about the problems with friends and family members? (SU)	28.4	55.7	84.1
Have you tried to do the work by yourself? (SE)	39.8	43.2	83
Have you remember how you solve the previous problem? (SE)	73.9	9.1	83

OP = Optimistic coping,   SU = Supportant coping,   CO = Confrontive coping,
EV = Evasive coping,   SE = Self-reliant coping

Relationship between stress and coping

Table 8 presents the correlation between overall stress, the subscales of stress and overall coping, and the subscales of coping strategies. The results of the bivariate correlation analysis using Pearson correlation coefficients are presented in Table 9. The results showed a non significant relationship between overall stress and overall coping ($r = -.05$, $p > .05$). Overall stress was statistically and negatively significant correlated with optimistic coping and self-reliant coping ($r = -.25$, $p < .05$). There were statistically low level of positive significance relationship found between worries and evasive coping ($r = 31$, $p < .01$), and fatalistic coping ($r = .24$, $p < .05$). The stress subscale of tension had statistically and negatively low levels of correlation with self-reliant coping and optimistic coping ($r = -.31$, $p < .01$, $r = -.32$, p, $< .01$, respectively), and was positively correlated with supportant coping ($r = 25$, $p < .05$). A negative moderate significant relationship was found between the stress subscale of joy and over all coping and the subscales of the self reliant coping style ($r = 51$, $p < .01$). Low level negative correlations were found between joy and Confrontive coping ($r = -37$, $p < .01$), evasive coping ($r = -.41$, $p < .01$), optimistic coping ($r = -.35$, $p < .01$), emotive coping ($r = -.35$, $p < .01$), and palliative coping ($r = -.26$, $p < .05$. Demands was statistically and positively correlated with overall coping and evasive coping ($r = .23$. $p = < .05$, $r = .30$, $p < .01$, respectively).

Table 8

Correlation Between Overall Coping Style, Subscale of Coping Style, and Overall

Stress and the Subscale of Stress (N = 88)

Coping	Stress				
	Overall Stress	Worries	Tension	Joy	Demands
Overall coping	-.05	.19	-.13	-.51**	.23*
Confrontive coping	-.05	.06	-.04	-.37**	.21
Evasive coping	.11	.31**	-.02	-.41**	.30**
Optimistic coping	-.25*	-.03	-.32**	-.35**	-.00
Fatalistic coping	.17	.24*	.07	-.13	.17
Emotive coping	.00	.17	-.13	-.35**	.22
Palliative coping	-.06	.03	-.07	-.26*	.12
Supportant coping	.16	.12	.25*	.12	-.07
Self-reliant coping	-.25*	- .01	-.31**	-.51**	.13

 **< 0.01, * <0.05

Discussion

Stress is the subjective perception of MI patients about the need to cope to

minimize the levels of stress and prevent further complication. For patients with MI

there were numerous factors that helped to increase the levels of stress. Patients tried

to cope with their stressful situations by using different coping strategies. However

the overall aims of this study were to identify the level of stress of patients with MI

and how they coped with stress and to find out the relationship between stress and

coping.

Stress of patients with MI and related factors

The findings indicated that patients with MI who participated in this study had moderate levels of stress with the highest mean score for the 'worries' subscale. MI is a serious condition and contributes to a high level of stress during the acute phase (2 to 3 days) which gradually reduces (Alexander, Fawcett, & Runciman, 1994; Bennett, Owen, Koutsakis, & Bisson, 2001). In this present study, the data were collected from patients who came for a follow-up visit at an outpatient department and hospitalized patients. The results show that both groups of patients had the same level of stress. For the latter group, the data were collected 3 days after admission when the patient's hemodynamic status was stable. This timing of the data collection may have contributed to the moderate levels of stress as opposed to the high level of stress probably found in patients in the acute attack stage. However, they would continue to have certain worries. This finding is supported by the work of Al-Hassan and Sagr (2002) who found that stress decreased after discharge. They collected data at two to six weeks after first MI experience and discharge from the hospital. It was found that most of the patients experienced moderate levels of stress with only 20% of them reporting high level of stress.

Some other factors may help explain why subjects in this study reported only moderate levels of stress. First, more than three-fourths of the subjects had a family history of MI. This may make them more familiar with the disease and its conditions. Second, family bonding was and is a Bangladeshi cultural tradition. Parents and their children lived together. In this study the majority (97.7%) of the subjects received family support and discussed their problems with friends and family members often or sometimes (84.1%). During the period of illness patients may receive more support

from his/her family, particularly from their female spouse (wife) or children. Even though there was no data on who their primary caregivers were, it was evident that there were more male patients in this study (77.3%). These male patients may be more likely to receive support from their wives and that can help lessen their stress. This phenomenon has been well-established in family support literature; male patients receive higher support from their wives as opposed to when husbands take care of their wives (Kristofferzon, Lofmark, & Carlsson, 2003). In this study the subjects were under supervision and treatment by the nurses and physicians and that might have helped to lessen their stress. Additional item analysis revealed that 34.1% of the patients felt safe and protected and they felt free from anxiety (25.9%). Sick persons share their feeling or suffering with their family member when planning about the future. One study found that women tended to speak first to their son or daughter about their symptoms, while men spoke first to their wives (Ashton, cited in Kristofferzon et al., 2003).

Third, although one-fourth of the subjects reported that their income level was more than US$143 a month, more than a half of them stated that their income was not adequate. Fortunately, in this study more than three-fourths of the subjects received partial payment for treatment from the hospital. This factor could help reduce their stress.

Fourth, nearly three-fourths of the subjects (68.2%) had too little knowledge about MI but most of them had adhered to their medication treatment. Nurses may have not enough time to provide all informational support to MI patients because of their workload and shortage of manpower. In Bangladesh the nurse: patient ratio was 1:13 (DNS, 2007). Lack of knowledge may affect moderate level of stress. In

addition, patients reported that the common symptoms of MI that may made them worry were severe chest pains, dyspnea, distress, and fatigue. Additional item analysis revealed that they reported high mean scores on two particular items: "you are afraid for the future"; and "you have many worries". In addition, they felt worried about their future and taking care of themselves.

Coping with stress

Subjects who confronted a moderate level of stress in this study reported coping was "sometimes used". Coping is a process that aims to reduce the level of stress and stress is the condition or circumstances with which a person might have to cope (Keil, 2004). Coping is a constantly changing cognitive and behavioural effort to manage specific external and/or internal demands. Patients with MI use different types of coping strategies in different stressful situations. Patients who have experienced MI have to cope with the consequences of this disease, such as symptoms, treatments/interventions and lifestyle changes (Maeland & Havik, cited in Kristofferzon, Lofmark, & Carlsson, 2003). Jalowiec (2003), proposed eight coping strategies which are confrontive, evasive, optimistic, emotive, fatalistic, palliative supportive, and self-reliant coping that patients used in different situations to cope their stressful situation.

The results reveal that the supportant coping used score was higher and more often used than other coping subscales (M = 2.09, SD = .49). MI has serious consequences for a patient's physical, mental, and social health. They need support to cope seriously to reduce their stress, and to prevent further complications. This result was similar to other studies and indicated that both women and men most frequently

used optimistic, self-reliant and confrontive coping but supportant coping was more used by the women (Kristofferzon, 2006). Another study found that men and women used different types of coping strategies except fatalistic coping, but women used more evasive coping (Kristofferzon, Lofimark, & Carlsson, 2005).

Some factors may help explain why subjects in this study reported that they often used supportant coping. First, traditionally Bangladeshi people live in families with good family bonding. They talked the problem over with family or friends and received family support (97.7%). The family member is the first person who care and support and that the patient can easily receive. Bangladeshi people traditionally, culturally, and religiously believe that providing care and support are their ethical responsibility. Subjects also received partial payment for treatment (76.1%) from the hospital. Second, in this study the majority of the subjects (85.2%) was Muslim and strictly maintains religious beliefs. Each Muslim prays to God at least five times per day. When they are in an endangered situation, or become sick or face other problematic situations, they pray more than five times to remedy their condition or illness. Sickness is viewed by Muslims as a test from God (Allah), as noted by an Islamic scholar, Dr. Mahmud Es'ad Cosan (cited in Mills, 1996). Sickness wakes people up from their heedlessness, it guides them to give up their sins, makes them think about the hereafter, and leads them to the foundations of their religion. They are more thankful to Allah and it teaches them the necessity of taking better care of their health and making better use of their life. This might be the reason MI patients often used supportant coping.

Patients with MI face numerous problems and they use confrontive coping to solve the problem. This study revealed that MI patients sometimes used confrontive

coping. The study result shows that some confrontive coping items score were higher. These were: have you tried to keep the situation under your control?; have you thought out different ways to handle the situation?; do you work as per planning?. These higher used coping items indicated that MI patients tried to solve their problem by using confrontive coping. However for overcoming their problems the majority of the subjects (71.6%) adhered to their treatment.

This study revealed that patients with MI sometimes use evasive coping and optimistic coping. Evasive coping was used to avoid their problems and optimistic coping was used to think positively. This result was in accord with Kristofferzon, Lofimark, and Carlsson's study (2005), mentioned that after MI both women and men most frequently used optimistic coping but women used more evasive coping strategy than men. Additional item analysis showed that some evasive coping and optimistic coping strategies were used more often such as: have you hope that problem will be overcome?; have you tried to put the problem out of your mind and think of something else?; and have you told yourself not to worry because everything would work out fine?. The results showed that MI patients try to avoid problems such as avoid drinking or smoking and think positively. A possible explanation was that most of the respondents were Muslim and they believed in Allah (God). Islamic teaching teaches human beings how to face difficulties in life, such as fear, hunger, illness, suffering, the loss of goods and death. Muslims view these problems as tests from God, which should be received with patience and prayers. They consider an illness, as with other tests, as an apology for their sins and a way to achieve the best life in the hereafter. Despair, hopelessness, and frustration are sins in Islamic belief because everything that happens on the earth is with God's supervision. Hope and optimism

for the best life in the future is embedded in Islamic philosophy (Mills, 1996). From a Muslim perspective alcoholic drink or addiction are sins. In the palliative coping item "took a drink to make yourself feel better," all respondents said they had never done this. The value of a belief system, including religious beliefs, as a coping resource was also acknowledged by Lazarus and Folkman (1984).

Relationship between Stress and Coping

The Pearson product-moment correlation coefficient was used to examine the relationship between overall coping strategies, the subscales of coping strategies and overall stress and the subscales of stress.

For the stress subscales, joy had a negatively significant relationship with overall coping and 6 out of the 8 coping strategies (confrontive, evasive, optimistic, emotive, palliative and self-reliant coping). Items on the joy scale were positively stated. Higher joy scores indicated lack of joy. A study identified that patients with post-acute coronary syndrome levels of stress scored higher than the uses of coping (Benedetto, Lindner, Hare, & Kent, 2007). Additional item analysis may help why joy was negatively significant with most of the coping strategies. Some scores of the items of the joy subscale were higher such as: are you enjoy your life?; do you feel safe and protected?; and do you feel you're doing things you really like?;. A possible explanation was that MI is a serious and life threatening disease. Most of the respondents had experience of the symptoms of MI. They were worried that these symptoms might come again. For this reason MI patients did not feel safe and protected. MI patients need to follow some rules and regulations. They could not do everything that they really liked. On the other hand there were confrontive coping

items to consider: have you tried to solve the problem at a time?; and have you tried to find out the problem in depth?;. Evasive coping items included: have you slept for a longer period?; and have you told to yourself that the problem arose by others' mistakes?. Optimistic coping items included: have you tried to keep sense of humor?; and have you tried to see the good side of the problem?. Emotive coping items were: have you took out your tension on someone else?; and have you thought guilty yourself in that situation?. Palliative coping items included have you taken medicine for removal of anxiety?. Self-reliant coping items were have you told yourself that you could handle anything no matter how hard?. The scores for all these items were very low. This phenomenon might be responsible for lack of joy and less use of coping strategies.

There was a negative significant relationship between overall stress and optimistic coping. Optimistic coping refers to positive thinking. A person thinks about his/her situation positively. Additional item analysis may establish why there is negative relationship. Some stressed items such as: are you anxious?; are you a worried man?; and you have any anxiety for the future?. These item scored were higher and respondent showed they feel more stress. On the other hand there was some optimistic coping with very low scores. These included: have you tried to keep a sense of humor?; have you tried to see the good side of the situation?. A possible explanation that MI patients cannot maintain a sense of humor and they feel there is no good side. This phenomenon may responsible for the negative relationship.

A non significant relationship was found between overall stress and overall coping strategies ($r = -.05$, $p > .05$). This finding is in accord with another study (Kristofferzon, Lofimark, & Carlsson, 2005). The possible explanation might be that

36.40% of the subjects were middle-aged adults (50-59 years) and they received partial treatments facilities (76.10%) and family support (97.7%). Among the subjects 40.90% had 4-6 months of MI experience that may have made the patients familiar with their disease. This may help the patients to deal with stress.

Worries were statistically and positively significantly linked with evasive coping and fatalistic coping. A recent study showed that women used more evasive coping (Kristofferzon, Lofimark, & Carlsson, 2005). Item analysis revealed that MI patients are afraid of the future. On the other hand, patients used evasive coping such as "wished that the problem would go away", and fatalistic coping such as, "accepted the situation because very little could be done". Score were higher for these items. A possible explanation is that MI patients used evasive coping and fatalistic coping than their worst feelings.

Tension showed a statistically negative significance when correlated with optimistic coping and self-reliant coping. MI patients need continuous adherence to their treatment that makes them financially constrained. On the other hand, patients could not perform their jobs and cannot earn money. These factors might contribute to the negative relationship between them. Additional items analysis suggested that in some areas MI patients had high levels of stress thus causing responses such as; "you feel mentally exhausted"; "you feel tension"; and "you have trouble relaxing". A possible explanation was that subjects in this study had experienced chest pains (96.6%) and dyspnea (77.3) that made the MI patients more tense. Patients could not take rests and they became mentally irritable.

Summary

In this study the majority of the subjects were male (77.3%) middle aged adults with a mean age of 51 years (SD = 10.30). The majority of them experienced a moderate level of stress (76.1%). Overall the subjects were reported sometimes used of a coping style, supportant coping, which was "often used". A negative significant relationship was found among overall stress, tense and optimistic coping. A negative moderately significant relationship was found between joy and overall coping. Family support and religious belief may help to explain the moderate level of stress and the coping style sometimes used.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

This chapter presents the summary, limitations, and recommendations of the study.

Summary of the Study

The purpose of this study was to identify the levels of stress and coping strategies used by patients with MI and to examine the relationship between stress and coping strategies of patients with myocardial infarction.

Subjects were recruited from the CCU unit and the outpatients department in Sher-E Bangla Medical College Hospital, Barisal, Bangladesh, using a convenience sampling method. The study took place from November, 2009 to January, 2010. Eighty eight MI patients participated in this study. Data was collected by using structured questionnaires made up in three parts: the Demographic Data Form and Health Related Questionnaire; the Perceived Stress Measuring Scale; and the Coping Scale. The data gathered in this study were subsequently analyzed using a computer data analysis program. An alpha level of .05 was used to establish statistical significance.

Most of the MI patients in this study were male with a mean age of 51years (SD = 10.30). The majority of subjects were Muslim, high school educated, had an income level of more than 143US$ per month (27.3%) and received partial treatment payment from the hospital. They received family support (97.7%) and lived together with families. Most of the MI patients had been diagnosed with MI for 4 to 6 months

(40.9%) and the majority of them were admitted in the hospital two times. They experienced the common signs and symptoms of MI which were chest pains, pain radiating into the shoulder and back of the scapula, dyspnea, distress, and fatigue. Patients with MI who participated in this study had moderated level of stress (M = 65.89, SD = 6.83) and the worries subscale was at the highest level with the highest mean score. Patients with MI sometimes used overall coping strategies. Supportant coping strategies were often used out of the eight coping strategies with the highest mean score (M = 2.09). There was no significant relationship found between overall stress and coping. Joy had a negatively significant relationship with overall coping and with 4 out of eight coping strategies.

Limitation of the Study

The limitations of the study are: 1) This cross-sectional study focused on stress and coping strategies at one moment in time and had certain weakness. This approach neglects the dynamic process of stress and coping with life. 2) The numerous items in the questionnaires used in this study that took more than one hour to complete and some participants discontinued their participation. 3) The Perceived Stress Measuring Scale (PSMS) directly asked the patients how they felt and thought but did not mention any time frame. 4) The sample size was small and there was only one study setting, so the findings may not be generalized.

Recommendations

The findings of this study provide several important implications for the nursing profession such as nursing practice, nursing education, and nursing research.

Nursing practice

1. The results of this study indicated that a combination of coping strategies might be required to relieve the stress of MI patients. Nurses need to be aware of the various coping strategies being used by patients with MI.

2. Assessment of coping strategies with respect to beliefs, values, and cultural background is a prerequisite to facilitating appropriate care for patients with MI.

3. Nurses can assist patients with MI experience by providing support, encouragement, information, and alternative strategies to promote effective coping in order to reduce their levels of stress.

However, it is important to stress that the use of coping strategies is an individual matter and often changes over time, and their effectiveness is often situation-dependent. By knowing the coping strategies nurses may gain some insight into which nursing intervention should be given priority and what resources are needed to help patients to cope with their stress effectively.

Nursing education

The findings of this study indicate that the levels of stress and the coping strategies used reflected beliefs, values, and cultural background of the subjects. The content of basic nursing education related to the caring of patients with MI should thus incorporate stress and coping with regard to culture, values, beliefs, and wisdom of the local population.

Nursing research

Based on the limitations the findings of this present study, several recommendations for further research should be concentrated on the following:

1. Action research techniques or experimental research designs are recommended to study the effects of stress management intervention and improving effective coping levels of patients with MI.

2. The study should be extended to populations in other cultural settings and to more diverse socioeconomic groups.

3. It is suggested that further studies that explore stress and coping should not only rely on quantitative measurements but also incorporate qualitative measurements. This will obtain new information as baseline data that will help to develop new appropriate nursing interventions.

However, this study should be replicated on a regional or national basis. The population should be larger and more diverse to improve the generalizability of the findings.

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APPENDICES

APPENDIX A

Invitation Letter and Informed Consent

Dear patients

You are invited to participate in a research project entitled "Stress and Coping of Patients with MI" at Sher-E- Bangla Medical College Hospital (SBMCH), Barisal, Bangladesh. Please read this form carefully, and feel free to contact the researcher prior to the beginning of the study, if you have any questions.

My name is Mr. Ali Asgar. I am a master of nursing student, Faculty of Nursing, Prince of Songkla University, Thailand. I am going to conduct a research study on the stress and coping of MI patients in Bangladesh. This study is required as partial fulfillment for the degree of Master of Nursing Science at Prince of Songkla University, Thailand. I hope that these study findings will be helpful for nurses to provide useful information to MI patient about stress and coping. Information will be supportive for MI patients to cope with their stressful situations and improve their physical, mental and social well being and will also be helpful for the nurses to provide quality of nursing care.

The Institutional Review Board, Faculty of Nursing, Prince of Sangkla University, Thailand, has approved this study title and the process. The study procedures do not involve risk or harm to you. I invite you to participate and give information that will be helpful to conduct my research study. I am committed to you that anonymity and confidentiality will be maintained strictly. I will ask some questions that will need approximately 30 to 40 minute. I use code number so your identity will not discover.

Your information only used to be writing in the research study. Your participation in this study is voluntary. You have the right to participate or not participate. You also have the right to withdraw from the participation in this study at any time, and no penalty will be incurred if you decide to withdraw.

If you have any question or suggestion in this study, you can directly conduct with me by mobile 01712612574. If you decide to participate in this study voluntarily, I will request to sign your name on the consent form.

Thank you for your kind cooperation.

Md. Ali Asgar

If you have any questions, please contact

MD. Ali Asgar	MD Ali Asgar
Senior Staff Nurse	Masters of Nursing Science
SBMCH Barisal	Prince of Songkla University
Email: ali_asgar1972@yahoo.com	Thailand
	+660876310544
	ali_asgar1972@yahoo.com

Consent Form:

Title: Stress and Coping of Myocardial Infarction Patient in Bangladesh

Researchers: Md. Ali Asgar.

Masters of Nursing Science Student,

Faculty of Nursing,

Prince of Songkla University

Hat Yai Thailand.

Patients Name ………………………………   Age……………

I   ………………………………………………….. was informed of the details of the

research entitle "Stress and Coping of Myocardial Infarction Patients in Bangladesh".

I am willingly to participate in this research study and give my personal history as

required. If any problems arise, I can discuss it with the researchers. I reserve the

right to withdraw from this study at any time without any effect. Hereby endorse my

signature.

Given by :…………………………………………..(Consenter)

Date: ………………………………..

APPENDIX B

Data Collection Permission Letter

A: Data collection permission letter from IRB, Prince of songkla University, Thailand

FACULTY
OF

PRINCE OF SONGKLA UNIVERSITY

P.O. BOX 9, KHOR HONG, HATYAI
SONGKHLA, THAILAND, 90112
FAX NO. 66-74-212901
TEL. NO. 66-74-286456,
66-74-286459

MOE 0521.1.05/ 3351

October 19 , 2009

Director of Sher-E BanglaMedical College Hospital,
Barisal, Bangladesh.

Dear Sir,

This letter is to inform you that Mr. Ali Asgar, a master student of the Faculty of Nursing, Prince of Songkla University, Thailand, is taking a thesis in his last semester. As passed of the requirement of the course, he has to conduct a research study in Bangladesh. His thesis entitled: "Stress and Coping of Myocardial Infarction Patients in Bangladesh." Under the supervision of Asst. Prof. Dr. Tippamas Chinnawong. The thesis proposal has been approved on 13 October 2009. Therefore, he will collect data from patients at Sher-E Bangla Medical College Hospital, Barisal , Bangladesh. During 2 months (November, 2009 – January, 2010)

I will be greatly appreciated if Mr. Ali Asgar is permitted to collect his data in your hospital, as it will provide valuable information for medical nursing to care for hospitalized medical patients.

If you need any further information regarding his study, please do not hesitate to contact us at the above address or e-mail us at: tippamas.c@psu.ac.th. as his advisor.

Sincerely Yours,

Assistant Professor Sang-arun Isaramalai, PhD., RN
Acting Dean,
Faculty of Nursing
Prince of Songkla University
Hat Yai, Songkhla 90110
THAILAND

B: Data collection permission letter from Sher-E Bangla Medical College Hospital,

Barisal, Bangladesh

|Government of the peoples republic of Bangladesh
Office of the Directorate
Sher-E Bangla Medical College Hospital Barisal, Bangladesh.

Memo No-SBMCH/09/ 5106   Date- 13.12.09

MD. Ali Asgar
Master of Nursing Science
Prince of Songkla University
Hat Yai Thailand

       This is to inform you that the Sher-E Bangla Medical College Hospital Barisal
have approved your request and permitted to collect data in CCU, OPD, and Emergency
department entitled "Stress and Coping of Myocardial Infarction Patients in Bangladesh.

(Dr Dhirendra Nath Sarder)
Sher-E Bangla Medical College Hospital
Barisal Bangladesh.

Memo No-SBMCH/09/   Date-
Copy send to inform and necessary action
1. Professor and head of the department CCU ward SBMCH Barisal

2. RP Medicine, SBMCH Barisal

3. Emergency Medical Officer Incharge SBMCH Barisal

4. Nursing Superintendent SBMCH Barisal

(Dr Dhirendra Nath Sarder)
Sher-E Bangla Medical College Hospital
Barisal Bangladesh.

APPENDIX C

Table 9 – 14

Table 9

Percentage of Perceived Stress Felt by Patients With MI (N = 88)

Perceived Stress	Never (1)	Sometimes (2)	Occasional (3)	Always (4)
1. Do you think that you are at rest?	9.1	60.2	19.3	11.4
2. Do you think that you are in many demands?	22.7	25	28.4	23.9
3. Do you think that you cannot do so many things?	21.6	14.8	27.3	36.4
4. Do you feel you're doing things you really like?	21.6	34.1	35.2	9.1
5. Are you feared that you may not manage to attain your goals?	12.5	12.5	33	42
6. Do you feel calm?	5.7	34.1	33	27.3
7. Do you feel frustrated?	13.6	15.9	31.8	38.6
8. Do you feel enough energy?	36.4	26.1	23.9	13.6
9. Are you anxious?	5.7	17	31.8	45.5
10. Do you think that you have raping up problem?	5.7	30.7	30.7	33
11. Do you think you are hurried man?	11.4	30.7	27.3	30.7
12. Do you feel safe and protected?	8	58	21.6	12.5
13. Have you had many worries?	5.7	17	40.9	36.4
14. Are you enjoying your life?	3.4	43.2	43.2	10.2

Table 9 (Continued)

Perceived Stress	Never (1)	Sometimes (2)	Occasional (3)	Always (4)
16. Are you free from anxiety?	42	42	10.2	5.7
17. Are you mentally exhausted?	5.7	23.9	40.9	29.5
18. Do you have problem for rest?	11.4	35.2	38.6	14.8
19. Do you think you have sufficient time for yourself?	18.8	38.6	29.5	17
20. Have you had any time constrain?	4.5	34.1	34.1	27.3

Table 10

Mean and Standard Deviation (SD) of Each Stress Item Regarding Patients With MI

(N = 88)

Perceived Stress Items	Mean	SD
Worries		
1. Are you afraid for the future?	3.19	.95
2. Have you had many worries?	3.08	.87
3. Do you think that you have raping up problem?	2.91	.93
4. Are you feared that you may not manage to attain goals?	3.05	1.03
5. Do you feel frustrated?	2.95	1.07
Tension		
1. Are you anxious?	2.91	.93
2. Do you think that you are at rest?	2.33	.80
3. Are you mentally exhausted?	2.94	.88

Perceived Stress Items	Mean	SD
4. Do you have problem for rest?	2.57	.88
5. Do you feel calm?	1.32	.90
Joy		
1. Do you feel you're doing things you really like?	2.32	.92
2. Are you enjoying your life?	2.60	.72
3. Are you free from anxiety?	1.80	.80
4. Do you feel enough energy?	2.15	1.07
5. Do you feel safe and protected?	2.39	.81
Demands		
1. Do you think that you cannot do so many things?	2.78	.57
2. Do you think you have sufficient time for yourself?	2.89	.95
3. Have you had any time constrain?	2.84	.38
4. Do you think you are hurried man?	2.77	1.01
5. Do you think that you are in many demands?	2.53	1.1

Table 11

Rank of Patients Perceived Stress Level Based on Sum of Percentage of Occasional

and Always Score (N = 88)

Perceived Stress	Subscale	Percentage	Rank
Are you anxious?	Tension	77.3	1
Have you had many worries?	Worries	77.3	2
Are you afraid for the future?	Worries	77.3	3
Are you feared that you may not manage to attain your goals?	Worries	75	4
Are you mentally exhausted?	Tension	70.4	5
Do you feel frustrated?	Worries	70	6
Do you think that you have raping up problem?	Worries	63.7	8
Have you had any time constrain?	Demands	61.4	9
Do you feel calm?	Tension	60.3	10
Do you think you are hurried man?	Demands	58	11
Are you enjoying your life?	Joy	53.4	12
Do you have problem for rest?	Tension	53.4	13
Do you think that you are in many demands?	Demands	52.3	14
Do you think you have sufficient time for yourself?	Demands	46.5	15
Do you feel you're doing things you really like?	Joy	44.3	16
Do you feel enough energy?	Joy	37.5	17
Do you feel safe and protected?	Joy	34.1	18
Do you think that you are at rest?	Tension	30.7	19
Are you free from anxiety?	Joy	25.9	20

Table 12

Percentage of Used of Each Coping Strategies Regarding Patients With MI (N = 88)

Coping Strategies	Coping Strategies	Never used (0)	Seldom used (1)	Sometimes use (2)	Often used (3)
1. Have you worried about the problem?	EM	38.6	38.6	18.2	4.5
2. Have you hoped that all will be well?	OP	2.3	9.1	50	38.6
3. Have you eaten too much or smoking?	PA	49.1	10.2	18.2	12.5
4. Have you thought out different ways to handle the situation?	CO	1.1	20.5	63.6	14.8
5. Have you thought situation will deteriorate more?	OP	10.2	44.3	42	3.4
6. Have you done physical exercise or laborious work?	PA	9.1	30.7	30.7	29.5
7. Have you sometimes tried to avoid any problem?	EV	11.4	55.7	25	8
8. Have you got mad and let off steam?	EM	28.4	51.1	17	3.4
9. Have you expected the worst that could happen?	FA	5.7	51.1	36.4	6.8
10. Have you tried to put the problem out of your mind and think of something else?	EV	8	42	31.8	18.2
11.Have you discussed about the problems with friends and family members?	SU	4.5	11.4	28.4	55.7

Table 12 (Continued)

Coping Strategies	Coping Strategies	Never used (0)	Seldom used (1)	Sometimes use (2)	Often used (3)
12. Have you accepted the situation because very little could be done?	FA	00	20.5	43.2	36.4
13. Have you justified the problem in many ways?	CO	1.1	37.5	45.5	15.9
14. Have you dreamt at day for happy life?	EV	13.6	38.6	28.4	19.3
15. Have you discussed the problem experience persons such as doctor, nurses?	SU	10.2	27.3	21.6	40.9
16. Have you tried to keep the situation under your control?	CO	2.3	9.1	30.7	58
17. Have you prayed to God for believing the Almighty?	SU	00	1.1	18.2	80.7
18. Have you tried to escaped away from the situation?	EV	14.8	42	35.2	8
19. Have you kept your feelings in yourself?	SE	1.1	10.2	60.2	28.4
20. Have you told to yourself that the problem was arisen by others mistake?	EV	53.4	29.5	14.8	2.3
21. Have you waited to see the future problems?	EV	56.8	27.3	12.5	3.4
22. Have you wanted to be alone to think things out?	SE	29.5	27.3	34.1	9.1
23. Have you wanted to be free because the problem was hopeless?	FA	43.2	36.4	20.5	00

Table 12 (Continued)

Coping Strategies	Coping Strategies	Never used (0)	Seldom used (1)	Sometimes use (2)	Often used (3)
24. Have you took out your tension on someone else?	EM	62.5	19.3	18.2	00
25. Have you tried to change the situation?	CO	3.4	28.4	48.9	19.3
26. Have you practiced relaxation habits?	PA	28.4	52.3	17	2.3
27. Have you tried to find out the problem in depth?	CO	25	52.3	19.3	3.4
28. Have you slept for a longer period?	EV	45.5	45.5	9.1	00
29. Have you tried to solve the problem at a time?	CO	27.3	60.2	12.5	00
30. Have you tried to keep normal yourself as possible and not let the problem interfere?	OP	2.3	17	51.1	29.5
31. Have you remember how have you solved the previous problem?	SE	2.3	14.8	73	9.1
32. Have you told yourself not to worry because everything would work out fine?	OP	00	9.1	47.7	43.2
33. Have you tried to compromise the matter?	CO	2.3	30.7	51.1	15.9
34. Have you took a drink to make yourself feel better?	PA	100	00	00	00
35. Have you given time to face the problem?	EV	8	43.2	37.5	11.4
36. Have you tried to do any enjoyable activities beyond the problem?	PA	21.6	42	30.7	5.7

Table 12 (Continued)

Coping Strategies	Coping Strategies	Never used (0)	Seldom used (1)	Sometimes use (2)	Often used (3)
37. Have you told yourself that you could handle anything no matter how hard?	SE	19.3	34.1	23.9	22.7
38. Have you worked as per planning?	CO	1.1	28.4	43.2	27.3
39. Have you tried to keep a sense of humor?	OP	47.7	40.9	10.2	1.1
40. Have you tried to away from the problem?	EV	30.7	40.9	23.9	4.5
41. Have you tried to control the emotion?	SE	00	11.4	60.2	28.4
42. Have you discussed with a person who is facing the same problem?	SU	8	44.3	45.5	2.3
43. Have you practiced in your mind what had to be done?	CO	3.4	36.4	42	18.2
44. Have you tried to keep busy?	PA	1.1	30.7	40.9	27.3
45. Have you learnt new things to solve the problem successfully?	CO	8	60.2	31.8	00
46. Have you misbehaved that not happened before?	EM	47.7	38.6	12.5	1.1
47. Have you thought about the good things in your life?	OP	3.4	37.5	46.6	12.5
48. Have you overlooked the problem?	EV	15.9	55.7	23.9	4.5

Table 12 (Continued)

Coping Strategies	Coping Strategies	Never used (0)	Seldom used (1)	Sometimes use (2)	Often used (3)
49. Have you compared with other people who are in the same problem?	OP	20.5	59.1	18.2	2.3
50. Have you thought positively?	OP	17	61.4	17	4.5
51. Have you thought guilty yourself in that situation?	EM	56.8	25	18.2	00
52. Have you tried to do the work by yourself?	SE	4.5	12.5	39.8	43.2
53. Have you taken medicine for removal of anxiety?	PA	85.2	12.5	1.1	1.1
54. Have you tried to see the good side of the problem?	OP	27.3	55.7	17	00
55. Have you thought that the problem is not important?	EV	27.3	53.4	14.8	4.5
56. Have you overlooked the company or others?	EV	21.6	44.3	25	9.1
57. Have you tried to promote yourself to face the problem?	SE	00	36.4	42	21.6
58. Have you hoped that the problem will be overcome?	EV	1.1	9.1	42	47.7
59. Have you depended to others?	SU	8	1.8	53.4	23.9
60. Have you thought that your luck in bad?	FA	6.8	11.4	65.9	15.9

CO = Confrontive coping,   EV = Evasive coping,   OP = Optimistic coping,

FA = Fatalistic coping,   EM = Emotive coping,   PA = Palliative coping,

SU = Supportant coping,   SE = Self-reliant coping

Table 13

Mean and Standard Deviation (SD) of Each Coping Strategies Regarding Patients

With MI (N = 88)

Coping Strategies	Mean	SD
Confrontive Coping		
1. Have you thought out different ways to handle the situation?	1.92	.63
2. Have you justified the problem in many ways?	1.76	.73
3. Have you tried to keep the situation under your control?	2.44	.76
4. Have you tried to change the situation?	1.85	.80
5. Have you tried to find out the problem in depth?	1.01	.77
6. Have you tried to solve the problem at a time?	.85	.62
7. Have you tried to compromise the matter?	1.81	.73
8. Have you worked as per planning?	1.97	.78
9. Have you practiced in your mind what had to be done?	1.75	.79
10. Have you learnt new things to solve the problem successfully?	1.24	.59
Evasive Coping		
1. Have you sometimes tried to avoid any problem?	1.30	.78
2. Have you tried to put the problem out of your mind and think of something else?	1.60	.88
3. Have you dreamt at day for happy life?	1.53	.96
4. Have you tried to escaped away from the situation?	1.36	.83
5. Have you told to yourself that the problem was arise by others mistake?	.66	.82

Table 13 (Continued)

Coping Strategies	Mean	SD
6. Have you waited to see the future problems?	.63	.84
7. Have you slept for a longer period?	.64	.65
8. Have you given time to face the problem?	1.52	.80
9. Have you tried to away from the problem?	1.02	.86
10. Have you overlooked the problem?	1.17	.75
11. Have you thought that the problem is not important?	.97	.78
12. Have you overlooked the company or others?	1.22	.89
13. Have you hoped that the problem will be overcome?	2.36	.70
Optimistic Coping		
1. Have you hoped that all will be well?	2.25	.72
2. Have you thought situation will deteriorate more?	1.39	.72
3. Have you tried to keep normal yourself as possible and not let the problem interfere?	2.11	.75
4. Have you told yourself not to worry because everything would work out fine?	2.34	.64
5. Have you tried to keep a sense of humor?	.65	.71
6. Have you thought about the good things in your life?	1.68	.74
7. Have you compared with other people who are in the same problem	1.02	.69
8. Have you thought positively?	1.09	.72
9. Have you tried to see the good side of the problem?	.90	.66

Table 13 (Continued)

Coping Strategies	Mean	SD
Fatalistic Coping		
1. Have you expected the worst that could happen?	1.44	.71
2. Have you thought about the good things in your life?	2.16	.74
3. Have you wanted to be free because the problem was hopeless?	.77	.77
4. Have you thought that your luck in bad?	1.91	.74
Emotive Coping		
1. Have you worried about the problem?	.89	.86
2. Have you got mad and let off steam?	.95	.77
3. Have you took out your tension on someone else?	.56	.79
4. Have you misbehaved that not happened before?	67	.74
5. Have you thought guilty yourself in that situation?	.61	.78
Palliative Coping		
1. Have you eaten too much or smoking?	.84	1.12
2. Have you done physical exercise or laborious work?	1.81	.97
3. Have you practiced relaxation habits?	.93	.74
4. Have you took a drink to make yourself feel better?	.00	.00
5. Have you tried to do any enjoyable activities beyond the problem?	1.20	.85
6. Have you tried yourself to be busy?	1.94	.79
7. Have you taken medicine for removal of anxiety?	.18	.49

Table 13 (Continued)

Coping Strategies	Mean	SD
Supportant Coping		
1. Have you discussed about the problems with friends and family members?	2.35	.86
2. Have you discussed the problem with experience persons such as doctor, nurses?	1.93	1.05
3. Have you prayed to God for believing the Almighty?	2.80	.43
4. Have you discussed with a person who is facing the same problem?	1.42	.67
5. Have you depended on others?	1.93	.84
Self-reliant Coping		
1. Have you kept your feelings in yourself?	2.16	.64
2. Have you wanted to be alone to think things out?	1.23	.98
3. Have you remembered how have you solved the previous problem?	1.90	.57
4. Have you told yourself that you could handle anything no matter how hard?	.66	.82
5. Have you tried to control the emotion?	2.17	61
6. Have you tried to do the work by yourself?	2.22	.84
7. Have you tried to promote yourself to face the problem?	1.85	.75

Table 14

Rank of Used Coping Strategies Based on sum of Percentage of Often and Sometimes

Used Score (N = 88)

Coping Strategies	Strategies	Percentages	Rank
Have you prayed to God for believing the Almighty?	SU	98.9	1
Have you told yourself not to worry because everything would work out fine?	OP	90.9	2
Have you hoped that the problem will be overcome?	EV	89.7	3
Have you tried to keep the situation under your control?	CO	88.7	4
Have you hoped that all will be well?	OP	88.6	5
Have you kept your feelings in yourself?	SE	88.6	6
Have you tried to control the emotion?	SE	88.6	7
Have you discussed about the problems with friends and family members?	SU	84.1	8
Have you tried to do the work by yourself?	SE	83	9
Have you remembered how have you solved the previous problem?	SE	82.1	10
Have you thought that your luck in bad?	FA	81.18	11
Have you tried to keep normal yourself as possible and not let the problem interfere?	OP	80.6	12
Have you accepted the situation because very little could be done?	FA	79.6	13

Table 14 (Continued)

Coping Strategies	Strategies	Percentages	Rank
Have you thought out different ways to handle the situat	CO	78.4	14
Have you depended on others?	SU	77.3	15
Have you work as per planning?	CO	70.5	16
Have you tried to change the situation?	CO	68.2	17
Have you tried to keep busy?	PA	68.2	18
Have you tried to compromise the matter?	CO	67	19
Have you tried to promote yourself to face the problem?	SE	63.6	20
Have you discussed the problem with experience persons such as doctor, nurses?	SU	62.5	21
Have you justified the problem in many ways?	CO	61.4	22
Have you done physical exercise or laborious work?	PA	60.2	23
Have you practiced in your mind what had to be done?	CO	60.2	24
Have you thought about the good things in your life?	OP	59.1	25
Have you tried to put the problem out of your mind and think of something else?	EV	50	26
Have you given time to face the problem?	EV	48.9	27
Have you discussed with a person who is facing the same problem?	SU	47.8	28
Have you dreamt at day for happy life?	EV	47.7	29
Have you told yourself that you could handle anything no matter how hard?	SE	46.6	30
Have you thought situation will deteriorate more?	OP	45.4	31

Table 14 (Continued)

Coping Strategies	Strategies	Percentages	Rank
Have you expected the worst that could happen?	FA	43.2	32
Have you tried to escaped away from the situation?	EV	43.2	33
Have you wanted to be alone to think things out?	SE	43.2	34
Have you tried to do any enjoyable activities beyond the problem?	PA	36.4	35
Have you overlooked the company or others?	EV	34.1	36
Have you sometimes tried to avoid any problem?	EV	33	37
Have you learnt new things to solve the problem successfully?	CO	31.8	38
Have you eaten too much or smoking?	PA	30.7	39
Have you tried to away from the problem?	EV	28.4	40
Have you overlooked the problem?	EV	28.4	41
Have you worried about the problem?	EM	22.7	42
Have you tried to find out the problem in depth?	CO	22.7	43
Have you thought positively?	OP	21.5	44
Have you wanted to be free because the problem was hopeless?	FA	20.5	45
Have you compared with other people who are in the same problem?	OP	20.5	46
Have you got mad and let off steam?	EM	20.4	47

Table 14 (Continued)

Coping Strategies	Strategies	Percentages	Rank
Have you practice relaxation habits?	PA	19.3	48
Have you thought that the problem is not important?	EV	19.3	49
Have you took out your tension on someone else?	EM	18.2	50
Have you thought guilty yourself in that situation?	EM	18.2	51
Have you told to yourself that the problem was arise by others mistake?	EV	17.1	52
Have you tried to see the good side of the problem?	OP	17	53
Have you waited to see the future problems?	EV	15.9	54
Have you misbehaved that not happened before?	EM	13.6	55
Have you tried to solve the problem at a time?	CO	12.5	56
Have you tried to keep a sense of humor?	OP	11.3	57
Have you slept for a longer period?	EV	9.1	58
Have you taken medicine for removal of anxiety?	PA	2.2	59
Have you took a drink to make yourself feel better?	PA	00	60

APPENDIX D

Questionnaires

Introduction

      The instruments are divided into three parts. Part 1 comprised of Demographic Data Form and Health Related Questionnaire (DDF&HRQ), part 2 comprised of Perceived Stress Measuring Scale (PSMS), and part 3 comprised of Coping Scale (CS) that MI patient used during stressful situation.

Part 1:

Demographic Data Form and Health Related Questionnaire (DDF&HRQ)

      Code No: Date

A. Demographic Data Form

1. Age …………………….years

2. Gender: ☐ 1. Male   ☐ 2. Female

3. Residence area

    ☐ 1. Rural   ☐ 2. Urban

4. Educational background

    ☐ 1. No formal education   ☐ 2. Primary education   ☐ 3. High school

    ☐ 4. College   ☐ 5. University   ☐ 6. Other

5. Religion

    ☐ 1. Islam   ☐ 2. Hindus

    ☐ 3. Christian   ☐ 4. Buddhism   ☐ 5. Others

6. Occupation

☐ 1. Farmer ☐ 2. Government employee ☐ 3. Private

☐ 4. Business person ☐ 5. Retired person ☐ 6. Housewife

☐ 7. Other (specify)………………………………………

7. Earned income per month (In Bangladeshi TK)

☐ 1. None ☐ 2. < 5000 ☐ 3. 5,000 –7,000

☐ 4. 7,000- 10,000 ☐ 5. > 10,000 Taka

8. Think about income

☐ 1. Enough ☐ 2. Fair ☐ 3 Not enough

9. Way of treatment payment

☐ 1. Total hospital pay ☐ 2. Partial hospital pay ☐ 3. Total self paid

10. How many family members live in your household?...............persons

☐ 1. 1 To 2 ☐ 2. 3 to 5 ☐ 3. 6 to 10 ☐ 4. > 10

11. Are you get any family support?

☐ 1. No ☐ 2. Yes

If yes give details……………………………………………………………..

B. Health Related Questionnaire

1. Functional class of heart failure (researcher fill this item)

☐ 1. Class I ☐ 2. Class II ☐ 3. Class III ☐ 4. Class IV

2. What are the common sign and symptom affect on your health (due to MI)

☐ 1. Chest pain ☐ 1. Yes ☐ 2. No (☐ daily ☐ weekly ☐ monthly)

☐ 2. Dyspnea ☐ 1. Yes ☐ 2. No (☐ daily ☐ weekly ☐ monthly)

☐ 3. Palpitation ☐ 1. Yes ☐ 2. No (☐ daily ☐ weekly ☐ monthly)

4. Distress ☐ 1. Yes ☐ 2. No (☐ daily ☐ weekly ☐ monthly)

5. Fatigue ☐ 1. Yes ☐ 2. No (☐ daily ☐ weekly ☐ monthly)

6. PND (Paroxysmal noctural dyspnea)

☐ 1. Yes ☐ 2. No (☐ daily ☐ weekly ☐ monthly)

7. Other ☐ 1. Yes ☐ 2. No (☐ daily ☐ weekly ☐ monthly)

3. Do you have any other additional chronic illness? ☐ 1. No ☐ 2. Yes

4. How long have you been on MI …………..years, ………months, …….days

☐ 1. 1 month to 3 month ☐ 2. 4 month to 6 month

☐ 3. 7 month to 11 month ☐ 4. 1 year to 2 years ☐ 5. > 2 years

5. How often have you been readmitted due to MI?

☐ 1. First time ☐ 2. Second ☐ 3. Third ☐ 4. Fourth time ☐ 5.> 4th

6. You have any family history of MI

☐ 1. No ☐ 2. Yes

7. Have you had knowledge on your MI?

☐ 1. No ☐ 2 Yes

8. How many distances of treatment facility/hospital from your residence? ....KM,

9. Do you take drugs therapy regularly?

☐ 1. No ☐ 2. Yes

If yes give details (name and dose)…………………………………………

10. Do you have any experience about stressful event in your life?

☐ 1. NO ☐ 2. Yes

If yes, give details (about stress level, stressful situation and possible causes of stress)

1……………………………………………………………………………..

2…………………………………………………………………………….

Part II

Perceived Stress Measuring Scale (PSMS)

This instrument contains 20 items questionnaire. There are four possible responses to each of the items: 1 to 4. 1 = Almost never, 2 = Sometimes, 3 = Often, and 4 = usually. This questionnaire asks you about your feelings, thoughts and activities. Please try to respond to each item separately in your mind from each other item. Chose your answers thoughtfully, and make your answers as true for you as you feel you should. Please answer every item. There are no rights or wrong answers, so choose the most accurate answer and mark it with X.

	Items	Never (1)	Sometimes (2)	Occasional (3)	Always (4)
1	Do you think that you are at rest?	1	2	3	4
2	Do you think that you are in many demands?	1	2	3	4
3	Do you think that you cannot do so many things?	1	2	3	4
4	Do you feel you're doing things you really like?	1	2	3	4
5	Are you feared that you may not manage to attain your goals?	1	2	3	4
6	Do you feel calm?	1	2	3	4
7	Do you feel frustrated?	1	2	3	4
8	Do you feel enough energy?	1	2	3	4
9	Are you anxious?	1	2	3	4
10	Do you think that you have raping up problem?	1	2	3	4
11	Do you think you are hurried man?	1	2	3	4
12	Do you feel safe and protected?	1	2	3	4

Perceived Stress Measuring Scale (PSMS) (Continued)

	Items	Never (1)	Sometimes (2)	Occasional (3)	Always (4)
13	Have you had many worries?	1	2	3	4
14	Are you enjoying your life?	1	2	3	4
15	Are you afraid for the future?	1	2	3	4
16	Are you free from anxiety?	1	2	3	4
17	Are you mentally exhausted?	1	2	3	4
18	Do you have problem for rest?	1	2	3	4
19	Do you think you have sufficient time for yourself?	1	2	3	4
20	Have you had any time constrain	1	2	3	4

Part III

Coping Scale (CS)

Instruction: Please circle a number to show how often you have used that method to cope with the stress listed above. The meaning of the number is 0 = never used, 1 = seldom used, 2 = sometimes used, 3 = often used. There is no right or wrong answer. You mark only the method you use.

	Coping Strategies	Coping Strategies	Never used	Seldom used	Sometimes used	Often used
1	Have you worried about the problem?	EM	0	1	2	3
2	Have you hoped that all will be well?	OP	0	1	2	3
3	Have you eaten too much or smoking?	PA	0	1	2	3
4	Have you thought out different ways to handle the situation?	CO	0	1	2	3
5	Have you thought situation will deteriorate more?	OP	0	1	2	3
6	Have you done physical exercise or laborious work?	PA	0	1	2	3
7	Have you sometimes tried to avoid any problem?	EV	0	1	2	3
8	Have you got mad and let off steam?	EM	0	1	2	3
9	Have you expected the worst that could happen?	FA	0	1	2	3
10	Have you tried to put the problem out of your mind and think of something else?	EV	0	1	2	3
11	Have you discussed about the problems with friends and family members?	SU	0	1	2	3
12	Have you accepted the situation because very little could be done?	FA	0	1	2	3

Coping Scale (Continued)

	Coping Strategies	Coping Strategies	Never used	Seldom used	Sometimes used	Often used
13	Have you justified the problem in many ways?	CO	0	1	2	3
14	Have you dreamt at day for happy life?	EV	0	1	2	3
15	Have you discussed the problem experience persons such as doctor, nurses?	SU	0	1	2	3
16	Have you tried to keep the situation under your control?	CO	0	1	2	3
17	Have you prayed to God for believing the Almighty?	SU	0	1	2	3
18	Have you tried to escaped away from the situation?	EV	0	1	2	3
19	Have you kept your feelings in yourself?	SE	0	1	2	3
20	Have you told to yourself that the problem was arise by others mistake?	EV	0	1	2	3
21	Have you waited to see the future problems?	EV	0	1	2	3
22	Have you wanted to be alone to think things out?	SE	0	1	2	3
23	Have you wanted to be free because the problem was hopeless?	FA	0	1	2	3
24	Have you took out your tension on someone else?	EM	0	1	2	3
25	Have you tried to change the situation?	CO	0	1	2	3
26	Have you practice relaxation habits?	PA	0	1	2	3
27	Have you tried to find out the problem in depth?	CO	0	1	2	3
28	Have you slept for a longer period?	EV	0	1	2	3
29	Have you tried to solve the problem at a time?	CO	0	1	2	3
30	Have you tried to keep normal yourself as possible and not let the problem interfere?	OP	0	1	2	3
31	Have you remembered how have you solved the previous problem?	SE	0	1	2	3

Coping Scale (Continued)

	Coping Strategies	Coping Strategies	Never used	Seldom used	Sometimes used	Often used
32	Have you told yourself not to worry because everything would work out fine?	OP	0	1	2	3
33	Have you tried to compromise the matter?	CO	0	1	2	3
34	Have you took a drink to make yourself feel better?	PA	0		2	3
35	Have you given time to face the problem?	EV	0	1	2	3
36	Have you tried to do any enjoyable activities beyond the problem?	PA	0	1	2	3
37	Have you told yourself that you could handle anything no matter how hard?	SE	0	1	2	3
38	Have you worked as per planning?	CO	0	1	2	3
39	Have you tried to keep a sense of humor?	OP	0	1	2	3
40	Have you tried to away from the problem?	EV	0	1	2	3
41	Have you tried to control the emotion?	SE	0	1	2	3
42	Have you discussed with a person who is facing the same problem?	SU	0	1	2	3
43	Have you practiced in your mind what had to be done?	CO	0	1	2	3
44	Have you tried to keep busy?	PA	0	1	2	3
45	Have you learnt new things to solve the problem successfully?	CO	0	1	2	3
46	Have you misbehaved that not happened before?	EM	0	1	2	3
47	Have you thought about the good things in your life?	OP	0	1	2	3
48	Have you overlooked the problem?	EV	0	1	2	3
49	Have you compared with other people who are in the same problem?	OP	0	1	2	3

Coping Scale (Continued)

	Coping Strategies	Coping Strategies	Never used	Seldom used	Sometimes used	Often used
50	Have you thought positively?	OP	0	1	2	3
51	Have you thought guilty yourself in that situation?	EM	0	1	2	3
52	Have you tried to do the work by yourself?	SE	0	1	2	3
53	Have you taken medicine for removal of anxiety?	PA	0	1	2	3
54	Have you tried to see the good side of the problem?	OP	0	1	2	3
55	Have you thought that the problem is not important?	EV	0	1	2	3
56	Have you overlooked the company or others?	EV	0	1	2	3
57	Have you tried to promote yourself to face the problem?	SE	0	1	2	3
58	Have you hoped that the problem will be overcome?	EV	0	1	2	3
59	Have you dependent to others?	SU	0	1	2	3
60	Have you thought that your luck in bad?	FA	0	1	2	3

CO = Confrontive coping,   EV = Evasive coping,   OP = Optimistic coping,

FA = Fatalistic coping,   EM = Emotive coping,   PA = Palliative coping,

SU = Supportant coping,   SE   = Self-reliant coping

VITAE

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Educational Attainment

Degree	Name of Institution	Year of Graduation
Master of Nursing Science	Prince of Songkla University, Thailand	2010
Bachelor of Nursing Science	College of Nursing, Dhaka, Bangladesh	2004
Diploma in Orthopedic Nursing	Nursing Institute Barisal, Barisal Bangladesh	1992
Diploma in Nursing	Nursing Institute Barisal, Barisal Bangladesh	1991

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