The Effects of the Nursing-Based Intervention Integrating Islamic Relaxation

on Anxiety and Perceived Control in Indonesian Patients with Acute

Myocardial Infarction Admitted in ICCU

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A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of

Doctor Philosophy in Nursing (International Program)

Prince of Songkla University

2012

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Academic Year   2011

ABSTRACT

Individuals with an acute myocardial infarction (AMI) may experience high level of anxiety and low perceived control. Therefore, a nursing intervention with meditative and spiritual relaxation was introduced. This randomized controlled trial aimed to evaluate the effects of the Nursing-Based Intervention Integrating Islamic Relaxation (NBI-IIR) on anxiety and perceived control in AMI patients admitted in the intensive cardiac care unit (ICCU). The 131 subjects with AMI recruited from two main hospitals in Central Java, Indonesia were assigned to either the relaxation group (n=69) or the control group (n=62). Those in the relaxation group received the Nursing-Based Intervention Integrating Islamic Relaxation while those in the control group received routine care. Anxiety assessed by Numerical Rating Scale for anxiety (NRS-Anxiety), was measured at 12 hours after admission as baseline, then at 24 hours, at 48 hours after admission and on discharge from the ICCU. Perceived control was simultaneously measured by the ACQ-15 Indonesian version, except at 24 hours after admission. Non-parametric analyses using Mann-Whitney U, Friedman test, and Wilcoxon matched pair,

signed ranks were conducted to analyze the median scores and differences in median scores within each group and between two groups.

The results revealed that those who received NBI-IIR reported low anxiety (p<.001) at each time point and had high perceived control (p<.01) at 48 hours and on discharge from the ICCU. The effect size indices of perceived anxiety, objective responses to anxiety, and perceived control ranged from .29 to .65 and the powers of the study ranged from .91 to .99. Although both the relaxation and control groups were shown to have significant changes in anxiety level and perceived control over times, the relaxation group had lower anxiety and higher perceived control than those of the control group. Regarding to the objective responses to anxiety (blood pressure, heart rate, and respiratory rate), the relaxation group demonstrated considerable decreases compared to those of the control group.

The study's findings suggest that nurses can apply the NBI-IIR as a holistic spiritual relaxation to reduce anxiety and improve perceived control in Indonesian Muslim patients with AMI admitted in the ICCU.

ACKNOWLEDGEMENT

بِسْمِ ٱللّٰهِ ٱلرَّحْمَـٰنِ ٱلرَّحِيمِ

By the name of Allah SWT, the most compassionate, and the most merciful, praise is to the Lord of the universe who gives the best reward to the God fearing and the great low to the transgressor, and peace and blessing be upon His Messenger Prophet Muhammad SAW, His families, and companions. Alhamdulillaahirabbil'aalamiin. The researcher has completed the thesis by guidance and blessing of Allah SWT.

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CHAPTER 1

INTRODUCTION

Background and Significance of Problem

High level of anxiety in patients with acute myocardial infarction (AMI) is a universal phenomenon, as evident from previous studies in Japan, South Korea, Australia, England, and the United States (De Jong et al., 2004). A study reported that the peak level of anxiety would be within 12 hours after admission and decreased gradually during the second 12 hours after admission. The level of anxiety then remained stable after the 24 hours and then increased again at the 60 hours to 72 hours after admission as the patients prepared discharge from the ICCU to the general ward (An et al., 2004). Another study also reported similar findings in terms of a high anxiety level within two days after admission and on the day of discharge to the wards (Tel & Tel, 2006). The causes of high anxiety in patients with AMI could be from facing the life-threatening nature of the infarction (McKinley, Nagy, Stein-Parbury, Bramwell, & Hudson, 2002), severe chest pain (Moser & Dracup, 1996), and discharge to the wards (Coyle, 2001).

When patients with AMI develop anxiety, it induces vital arousal and several complications and results in increased blood pressure, heart rate, and respiratory rate were reported (Moser et al., 2003a). Within 72 hours after admission, high anxiety also led to several complications, such as recurrent chest pain, acute ischemia, ventricular arrhythmia, congestive heart failure (Huffman, Smith, Blais, Januzzi, & Fricchione, 2008), ventricular fibrillation (Moser et al., 2007), and delayed of

recovery (Munafo & Stevenson, 2001). Consequently, patients with AMI would be administered anxiolytic medications as part of their therapy within 72 hours (Huffman et al., 2006).

Perceived control has been examined in the literature. There is a relationship between anxiety and perceived control in patients with AMI. Previous studies revealed that patients who had a high level of anxiety would have a low level of perceived control (Dracup et al., 2003; Forren, 2008; Moser et al., 2007). Inevitably, frequent complications were occurred in AMI patients who had high level of anxiety and low level of perceived control (Moser et al.), although the latter can be enhanced with psychological and spiritual supports (Ford & Ayers, 2009; Zainuddin, 2009).

There are various interventions to reduce anxiety and its negative impacts of anxiety in patients with AMI, various interventions were reviewed. One of the most common holistic interventions used in patients with AMI is music therapy. An interventional study which compared listening to a music tape for 30 minutes and listening to a tape with advice on how to reduce anxiety during 24 hours after admission in patients with AMI, it was revealed that both interventions produced equal benefits (Lewin, Thompson, & Elton, 2002). Another study also showed that listening to classical music for 20 minutes was better than arranging a quiet-restful environment in reducing anxiety, respiratory, and heart rate immediately; systolic blood pressure did not decrease after listening the music (White, 1999). Bassampour (2006) reported that a proper talking technique was administered for three consecutive days to be more effective in reducing anxiety, blood pressure, heart rate, and respiratory rate in patients with AMI on the third day than guided imagination. In addition, the individualized education with psychosocial support of patients with AMI

was significantly effective in overcoming anxiety on the discharge day when patients were sent from the ICCU to the wards (Tel & Tel, 2006). Based on the evidences, several holistic interventions are useful in reducing anxiety of patients with AMI. However, the role of these interventions in the enhancing patients' perceived control is not prominent and they may not be applicable for patients in different cultural backgrounds particularly in Muslim population.

Integrating holistic interventions related to the patient's cultural backgrounds in clinical practice has received a great deal of attention. In the Muslim culture, there are several modalities related to Islamic relaxation including Zikr and Spiritual Emotional Freedom Technique (SEFT). In Indonesia, Zikr therapy has been used to deal with preoperative anxiety to achieve soothing effect for 25 minutes, based on the patient's own performance (Mardiyono, Angraini, & Sulistyowati, 2009). Similarly, SEFT complete version mainly focuses on both the nurse's and the patient's interaction to reduce anxiety and improve personal control in three rounds lasting approximately 25 minutes. SEFT performance consists of the set up, the tune in, and the tapping and contains the belief elements of deep acceptance, self-hypnosis, and tapping at meridian points (Zainuddin, 2009). The principle of SEFT is inner healing and tapping therapy whereas Zikr emphasizes on meditation. Application of both techniques with the Theory of Human Caring produces an effective meditative state and caring healing in synergized relaxation. Integrating SEFT short version and Zikr may take a short time and result in synergized outcomes. The structured intervention namely the Nursing-Based Intervention Integrating Islamic Relaxation (NBI-IIR) which combined deep acceptance, self-hypnosis, tapping, and Zikr through interactive

relationship between a nurse and a patient was then provided to reduce anxiety and enhance perceived control.

In addition to the perspective of religious practice perspective, the NBI-IIR has also incorporated the perspective of nursing perspective using the key concepts of the Theory of Human Caring in designing this holistic nursing intervention. According to Watson (2001), nurses who possess carative factors can offer transpersonal caring relationship, create caring moment, and result in caring healing for their patients. The NBI-IIR can be expected to offer the benefit to reduce anxiety, balance vital signs, and enhance the patient's sense of control.

Although previous holistic interventions, such as music therapy, talking technique, and individualized education have been used, they may be inappropriate for Muslim patients with AMI who have high anxiety and less self-control from 12 hours after admission and continuing up to discharge to general wards. Most previous studies identified a single measure of outcomes: anxiety or perceived control, a single time point, and the influence of a number of factors in real situation, such as individual attributes and environmental conditions. For the present study, the researcher has developed the NBI-IIR by conducting nurse caring and patient self-hypnosis for 20 minutes and evaluating the effects of the NBI-IIR on anxiety and perceived control in patients with AMI at designed interval time series, from the 12 hours after admission to discharge from the ICCU. It is expected that application of the Nursing-Based Intervention Integrating Islamic Relaxation would be able to help Muslim patients with AMI to reduce anxiety in the intensive care unit and to enhance their perceived control when facing a stressful situation, vulnerability, and life-threatening situation.

Objectives of the Study

The study had four main objectives:

1. To compare the differences in scores of perceived anxiety and objective responses to anxiety (blood pressure, heart rate, and respiratory rate) at 12 hours, 24 hours, 48 hours after admission, and on discharge from the ICCU between the relaxation and control group.

2. To compare the perceived control scores at 12 hours, 48 hours after admission, and on discharge from the ICCU between the relaxation and control group.

3. To compare the differences in scores of perceived anxiety and objective responses to anxiety (blood pressure, heart rate, and respiratory rate) at 12 hours, 24 hours, 48 hours after admission, and on discharge from the ICCU within the relaxation group.

4. To compare the scores of perceived control at the baseline, 48 hours after admission, and on discharge from the ICCU within the relaxation group.

Research Questions

Research questions of the study include:

1. Are there differences in scores of perceived anxiety and objective responses to anxiety (blood pressure, heart rate, and respiratory rate) at 12 hours, 24 hours, 48 hours after admission, and on discharge from the ICCU different between the relaxation group and control group?

2.   Are the perceived-control scores at 12 hours, 48 hours after admission, and on discharge from the ICCU different between the relaxation group and control group?

3.   Are there differences in scores of perceived anxiety and objective responses to anxiety (blood pressure, heart rate, and respiratory rate) at 12 hours, 24 hours, 48 hours after admission, and on discharge from the ICCU different within the relaxation group?

4.   Are the perceived control scores at 12 hours, 48 hours after admission and on discharge from the ICCU different within the relaxation group?

Conceptual Framework

The framework of this study is based on Theory of Human Caring, concept of anxiety, and perceived control as shown in Figure 1. Islamic value is holistic and congruent with holistic care. Islamic value and holistic care are based on the interrelationships of the body, the mind, and the spirit.. The Theory of Human Caring is also holistic and provides the framework for holistic nursing practice.

Theory of Human Caring

Theory of Human Caring consists of four concepts, which are: 1) transpersonal-caring relationship, 2) carative factors, 3) caring healing, and 4) caring moment. The theory was used to guide the intervention of this study.

1. Transpersonal caring relationship

Transpersonal caring relationship encompasses three dimensions: 1) self, 2) phenomenal field, and 3) intersubjectivity to support holistic intervention. Transpersonal caring relationship can be applied into holistic intervention, which composes of biological, psychological, and spiritual interventions (Dossey, Keegan, & Guzzeta, 2005). Self as an integration of mind-body-spirit is valuable in promoting spiritual belief and deep acceptance in holistic intervention. Phenomenal field transcends time, space, and physicality in holistic intervention. Intersubjectivity is an important human-to-human relationship, in which parties, i. e healer and receiver, have an effect on the Nursing-Based Intervention Integrating Islamic Relaxation. In this study, transpersonal caring relationship refers to how the nurse reacts to the patient with AMI and how that is affected by the self-ego of the persons, perception of the situation, and intersubjectivity of the other person (Neil & Tomey, 2006; Watson, 2001). Holistic intervention results in unity, harmony, and a healing process by promoting self-preservation on psychological adaptation, caring relationship, and spirituality for connectedness with God, and physiological status (Hudak, Gallo, & Morton, 1998). The Nursing-Based Intervention Integrating Islamic Relaxation is a combination of caring, spiritual emotional freedom technique, and Zikr and composes of caring, deep acceptance, self-hypnosis, tapping, and Zikr. The procedure of the Nursing-Based Intervention Integrating Islamic Relaxation consists of four steps: the setup, the tune in, the tapping, and Zikr. The Nursing-Based Intervention Integrating Islamic Relaxation may elicit a relaxation response of calmness and mindfulness. A good relationship is initially created when providing the Nursing-Based Intervention Integrating Islamic Relaxation.

2. Carative factors

Carative factors are manifested to produce caring healing which transposed into the clinical caritas processes. Caritas means appreciation or giving special attention to care (Neil & Tomey, 2006; Watson, 2001). Carative factors included in the study consist of 1) faith-hope, 2) helping-trusting, 3) caring relationship and the expression of feelings, 4) transpersonal teaching-learning, and 5) supportive, protective, or corrective mental, and spiritual environments (Neil & Tomey; Watson, 2001). For this study, carative factors compose of knowledge and clinical competence to reduce anxiety and enhance patients' perceived control. The five carative factors and transpersonal caring relationship encompass physical, mind, and spiritual intervention to achieve caring healing in patients with AMI. Application of a transpersonal caring relationship and carative factors can be demonstrated by nurse-patient interaction in the Nursing-Based Intervention Integrating Islamic Relaxation to overcome anxiety and enhance perceived control.

3. Caring healing

Caring healing encompasses physiological, psychological, and spiritual healing. It results in mind-body-spirit consciousness, inner healing, and physical improvement. The concept of mind-body-spirit provides the strongest basis of alternative therapy in holistic care (Saks, 1997). Mind-body-spirit relaxation correlates with psychological neural hormonal and physiological functions (Dossey et al., 2005; Saks). Caring healing through body-mind-spiritual relaxation could reduce anxiety, enhance perceived control, and sooth objective responses to anxiety in patients with AMI.

4. Caring moment

Caring moments occur whenever the nurse stimulates the patient to create a valuable relationship to have a connection with each other at the spiritual level and results in possible healing. The moment transcends time and space to promote possibilities for healing and human connection with deep level of relationship (Watson, 1999; 2001). In addition, nurse-patient interaction can promote self-control, self-healing, comfort, energetic environmental modalities, and physical well-being (Watson & Smith, 2002). Therefore, any caring moment represents as a relationship between nurse and patient that could influence caring healing of the patient on anxiety, objective response, and perceived control as spiritual healing.

Concepts of anxiety and perceived control

Anxiety is a subjective feeling of fear, tension, panic, and unpleasant conditions (Spielberger, Gorsuch, Lushene, Vaag, & Jacobs, 1983). Anxiety is divided into two types: 1) trait anxiety and 2) state anxiety. Of these, the trait could determine the state anxiety (Spielberger et al., as cited by Edelman, 1992).

Anxiety is manifested into subjective feeling and objective response. Anxiety ranges from mild, moderate, severe to panic anxiety (Badger, 1994; Shives, 2005). Objective responses to anxiety acts through a mechanisms of bidirectional interrelationship between psychological attitude and autonomic nervous system; and is influenced by the neuroendocrine and immunology system in its reactions to psychological stimuli (Ader, Cohen, & Felten, 1995; Zeller, McCain, & Swanson, 1996). Anxiety can influence the central nervous system, which activates opioid peptides and receptors (Zeller et al., 1996). The median eminence (ME) of the

hypothalamus stimulates the secretion of CRF (corticotrophin-releasing factor) to promote the pituitary gland to release ACTH (adrenocorticotropic hormone) into the general circulation, such that adrenaline and noradrenaline activate the mechanism of objective response. Adrenaline is secreted to accelerate heart rate, elevate blood pressure, and respiratory rate (Ader et al.).

The next concept is perceived control, which was defined as the individual ability to control in global-specific situation or internal-external event (Jacelon, 2007). Perceived control includes global control to deal with global situation and specific control to deal with specific situation. However, anxiety is obviously associated with specific control rather than global control. Brown, White, Forsyth, and Barlow (2004) conceptualized that perceived control consists of three domains, which focused on ability to control emotion (emotional control), ability to escape or avoid anxiety (threat control), and ability to cope anxiety (stress control).

Perceived control is negatively associated with anxiety. Several studies confirmed that AMI patients with high level of perceived control had low anxiety (Forren, 2008; Moser & Dracup, 1995; Moser et al., 2007; Olatunji, Wolitzky-Taylor, Babson, & Feldner, 2009). According to previous references, several factors are associated with anxiety and perceived control, such as gender (An et al., 2004), marital status (Bennett & Connell, 1998), trait anxiety (Feldner & Hekmat, 2001), anxiolytic drug (Frazier et al., 2002), the environment (Novaes et al., 1999; Scott, 2004), and the severity of AMI (Frazier et al.; Moser & Dracup, 1996).

Overall concepts applied in the study are depicted in the Figure 1. Patients with AMI have high anxiety and low perceived control within 72 hours. The peak of anxiety is at 12 hours after admission and anxiety increases upon discharge from the

ICCU. The anxiety is usually caused by chest pain, life-threatening situations, the environment, and anxiolytic drug. Due to the dynamics of anxiety level in patients with AMI after admission and on discharge from the ICCU, nurse-patient interaction under the human caring concept is essential to reduce these negative effects. Perceived control could moderate the relationship between anxiety and MI complications. The Nursing-Based Intervention Integrating Islamic Relaxation with five carative factors could offer interpersonal caring relationship and create caring moment for psycho-spiritual healing. The mind-body-spirit reactions elucidating bi-directional systematical inter-relationships between the psyche and neural system on anxiety would occur. The Nursing-Based Intervention Integrating Islamic Relaxation was also useful for reducing anxiety and enhancing perceived control in patients with AMI.

Hypotheses

1.　The differences in scores of perceived anxiety and objective responses to anxiety (blood pressure, heart rate, and respiratory rate) at 12 hours, 24 hours, 48 hours after admission, and on discharge from the ICCU in the relaxation group are higher than those of the control group.

2.　The scores of perceived control at 12 hours, 48 hours after admission, and on discharge from the ICCU in the relaxation group are higher than those of the control group.

3.　The differences in scores of perceived anxiety and objective responses to anxiety (blood pressure, heart rate, and respiratory rate) at 48 hours after admission in

the relaxation group are higher than those measured at 12 hour, 24 hours after admission, and on discharge from the ICCU.

4. The scores of perceived control in the relaxation group on discharge from the ICCU are higher than those measured at the baseline and the 48 hours after admission.
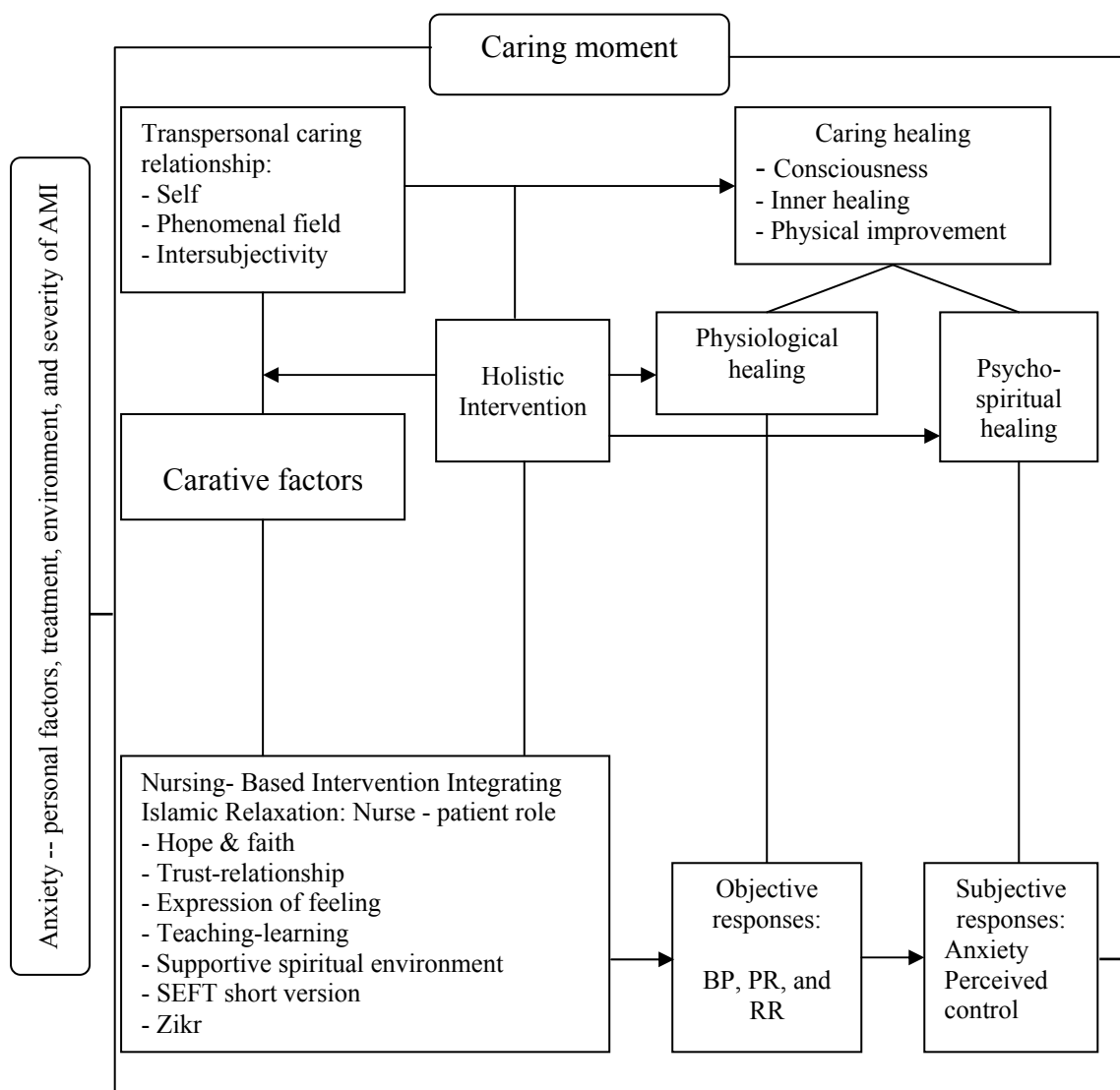
Figure 1

Conceptual Framework of the Nursing-Based Intervention Integrating Islamic

Relaxation on Anxiety and Perceived Control in Patients with AMI

Definition of Terms

The Nursing-Based Intervention Integrating Islamic Relaxation (NBI-IIR) refers to a relaxation technique composing transpersonal caring relationship and the five carative factors of the Theory of Human Caring (Watson, 1988), SEFT short version (Zainuddin, 2009), and Zikr (Mardiyono et al., 2009). The NBI-IIR consists of three phases. The introduction phase composes of transpersonal caring relationship and carative factors: helping-trusting and transpersonal teaching learning. The working phase consists of the set up, the tune in, the relaxation at the meridian points, and remembrance of Allah (God). This phase also contains transpersonal caring relationship and carative factors: loving-kindness and respecting humanistic system, existential spiritual dimensions, and supportive, corrective mental and spiritual environment. The closing phase covers transpersonal caring relationship and carative factors: expression of positive feelings and emotions while deep breathing and evaluation of outcomes in Indonesian Muslim patients with AMI. The NBI-IIR takes 20 minutes per session and was performed four times at 12 hours, 24 hours, 48 hours after admission, and on discharge from the ICCU.

Routine nursing care refers to nursing activities provided by nurses provide on a regular basis such as visit, health education, psychological support, and family support to reduce anxiety in Indonesian Muslim patients with AMI during admission and on discharge from the ICCU.

Anxiety refers to a subjective feeling of tension experienced by patients with AMI after admission and on discharge from the ICCU and objective responses to anxiety, as shown by the patient's objective responses: blood pressure, heart rate, and

respiratory rate. Numerical Rating Scale-Anxiety [NRS-A] adapted from De Jong et al. (2005) was used to measure the subjective anxiety. Objective responses to anxiety: blood pressure, heart rate, and respiratory rate were measured with a digital device.

Perceived control refers to a patient's belief or cognitive competence in his or her ability to control anxiety properly after admission and on discharge from the ICCU. Perceived control consists of controlling three factors including emotional control, threat control, and stress control of anxiety as measured by Anxiety Control Questionnaire [ACQ-15 version] (Brown et al., 2004).

Scope of the Study

The randomized controlled trial, two-group, pre-post test, and repeated measures design was conducted to evaluate the effects of the Nursing-Based Intervention Integrating Islamic Relaxation on subjective response of anxiety, objective responses to anxiety (blood pressure, heart rate, and respiratory rate), and perceived control in Indonesian Muslim patients with AMI admitted in ICCU. 131 subjects recruited from the two-referral hospitals in Central Java, Indonesia during June 2010 to July 2011 were randomly assigned to either the relaxation group (n=69) or the control group (n=62). All variables were measured at 12 hours, 24 hours, 48 hours after admission and on discharge from the ICCU, except at 24 hours on perceived control. The Nursing-Based Intervention Integrating Islamic Relaxation composed of five carative factors of the Human Caring Theory, SEFT short version, and Zikr therapy.

Significance of the Study

The Nursing-Based Intervention Integrating Islamic relaxation was a brief intervention to improve the quality of anxiety management in Muslim patients with AMI admitted in ICCU at the two-referral hospitals in Central Java, Indonesia. It can be useful to guide health providers including nurse, physician, psychiatrist, psychologist, and religious counselor to incorporate the Nursing-Based Intervention Integrating Islamic Relaxation as part of their program to reduce anxiety and enhance perceived control for Muslim patients with AMI in clinical practice.

CHAPTER 2

LITERATURE REVIEW

The literature review of the study includes anxiety and perceived control in patients with AMI, anxiety management by Islamic relaxation and application of the Theory of Human Caring in reducing anxiety and enhancing perceived control. The outline of the review is as follow:

1. Anxiety and perceived control in patients with AMI

    1.1. Concept of anxiety

    1.2. Anxiety in patients with AMI

    1.3. Impact of anxiety in patients with AMI

    1.4. Assessment of anxiety in patients with AMI

    1.5. Concept of perceived control

    1.6. Perceived control in patients with AMI

    1.7. Assessment of perceived control in patients with AMI

    1.8. Relationship of anxiety and perceived control in patients with AMI

    1.9. Factors associated with anxiety and perceived control

2. Holistic Interventions to Reduce Anxiety and Enhance Perceived control in Patients with AMI

3. Islamic Relaxation and its effectiveness

    3.1. Islamic philosophy of relaxation

    3.2. Zikr Therapy

    3.3. Spiritual Emotional Freedom Technique

4. Theory of Human Caring

    4.1. Theoretical view of the Human Caring Theory

    4.2. The Theory of Human Caring in nursing research

Anxiety and Perceived Control in Patients with AMI

This section encompasses concept of anxiety, anxiety in patients with AMI, concept of perceived control, perceived control in patients with AMI, relationship between anxiety and perceived control, factors associated with anxiety and perceived control, and assessments of anxiety and perceived control in patients with AMI.

Concept of anxiety

Anxiety is an unpleasant feeling, which includes fear, tension, panic, and uneasiness (Spielberger et al., 1983). Anxiety can also be described as a feeling of uncertainty, uneasiness, apprehension, or tension with which a person responses to unknown objects or events (Shives, 2005). Two types of anxiety are classified as:

1. Trait anxiety is defined as an individual's characteristics or personal traits in responding to perceived threats in the environment which is predictable, relative persistence, and persists over time (Spielberger et al., 1983). Trait anxiety is associated with heredity, previous experiences, and personal characteristics. Person may encounter, perceive stressful situations as threats, and respond them with an intense elevation of state anxiety. Trait anxiety determines the severity of state anxiety. Having higher trait anxiety, person may encounter higher anxiety.

2. State anxiety is an unpleasant emotion in response to subjective feelings of tension, uneasiness, nervousness, insecurity, tension, worry, and apprehension caused by activation of the autonomic nervous system. State anxiety is an emotional state on the momentary feelings of tension after receiving external stimulation. Appraisal of the stimulation by the CNS then leads to state anxiety (Spielberger et al., 1983).

Upon encountering a stressful situation, a person may have the perception of threat or danger and respond with an intense elevation of state anxiety. The level of trait anxiety determines the severity of state anxiety. Having higher trait anxiety, person may encounter higher anxiety. Anxiety occurs in daily life as a continuum. Previously, anxiety is classified into four levels: mild, moderate, severe, and panic anxiety (Badger, 1994), but is currently categorized from normal to panic (Shives, 2005). Normal anxiety refers to periodic warnings of threats related to uneasiness and apprehension that a person needs in order to take necessary actions to prevent or lessen the threat or its effect. Euphoria is experienced with an exaggerated feeling of well-being that is inappropriate in the specific situation or event. It can lead to mild anxiety (Shives). Mild anxiety is associated with the tension of day-to-day living and leads to alertness and creativity. It is considered as a positive effect, improves learning ability, and increases alertness to feeling and environment. Moderate anxiety is associated with a narrowing perceptual field that a person sees, hears, and grasps his or her situation with low level of attention. Clinical symptoms in moderate anxiety include uneasiness in the stomach, pacing heart rate, increasing respiratory rate, increasing blood pressure, rapid movement, and speeding verbalization. Severe anxiety is associated with significant reduction of perceptual field, disorientation, lack of awareness of environment, lack of processing thought, and inability to explain

clearly. Clinical manifestations in severe anxiety are presented with disturbance of physical and behavioral activities. Panic anxiety is associated with complete loss of control, dread, terror, including disorganization of personality, a frightening or paralyzing experience, and the inability to communicate and do thing properly with a definite direction (Badger; Shives).

The relationships between the psychological and physiological aspects of anxiety has been studied and explained by psychoneuroimmunology (PNI). Anxiety is a psychological problem that correlates with immunological dysfunction. PNI facilitates the mechanisms of bidirectional communication between psychology and the autonomic nervous system; the neuroendocrine and immunological systems in reacting to psychological stimuli (Ader et al., 1995; Zeller et al., 1996). Therefore, psychological stimuli can activate sympathetic neural fibers of the autonomic nervous system, including the secretion of catecholamine and encephalin by the adrenal medulla (Zeller et al.). Through immunomodulation, anxiety also elevates level of cortisol, which is primarily immunosuppressive followed by reduction in the number of leukocyte, T-lymphocyte, monocyte function, and natural killer (NK) cell activity. While these events occur, catecholamine including adrenaline and noradrenaline functions to activate the mechanism of objective response. Adrenaline is released to accelerate heart rate, elevate blood pressure, respiratory rate, and limb temperature (Caine, 2003; Zeller et al.).

Anxiety in patients with AMI

Patients with AMI are commonly reported to have high level of anxiety after admission at 35-52% in different countries, including the UK, Japan, Australia, the

USA, and South Korea (De Jong et al., 2004). Frazier et al. (2002) revealed that 22.8% of patients with AMI had mild anxiety, 24.8 % of them had moderate anxiety, and 21.8 % of patients suffered from severe anxiety. Compared with psychiatric patients, the level of anxiety in patients with AMI was higher with an average anxiety level at 1.7 out of 4 (Moser, 2007). Figure 2 shows that in previous studies, the peak of anxiety in patients with AMI would present during 12 hours after admission. The anxiety level remained stable from 24 hours after admission and increased after 60 hours when the patients were transferred from ICCU to general wards (An et al., 2004). Another study reported that patients with AMI had high anxiety within 48 hours after admission (Zhou, Li, & Zhao, 2004). In addition, anxiety in patients with AMI was significantly high during two days after admission and considerably high on discharge day (Tel & Tel, 2006).

Mean Anxiety Level per STAI
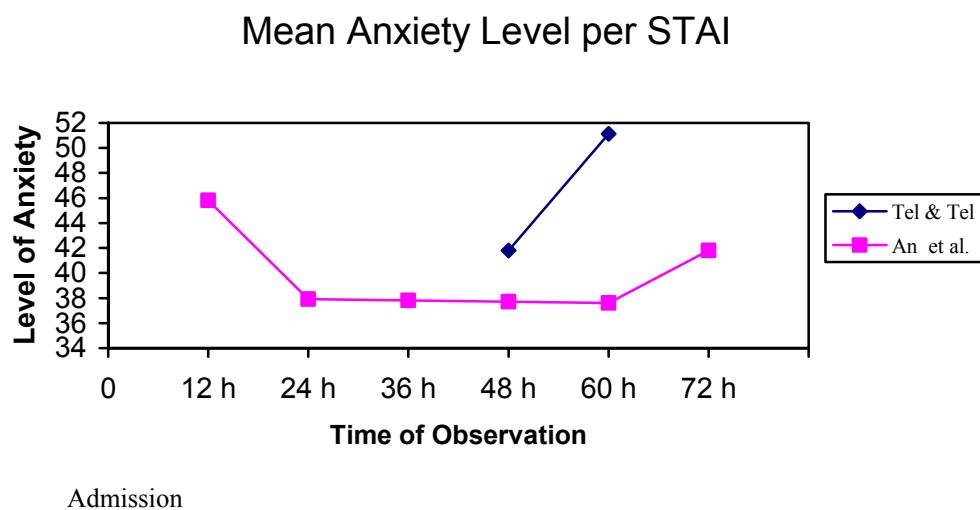
Admission

Figure 2

The Anxiety Level in Patients with AMI from Two Studies: Anxiety after Admission (An et al., 2004) and Anxiety on Transfer Day (Tel & Tel, 2006)

The common etiology of anxiety in patients with AMI includes chest pain, lack of information, sleep disturbance, life-threatening nature of the infarction, and being transferred into a new environment. Anxiety is obviously associated with pain. Moser and Dracup (1996) revealed that patients with AMI had higher anxiety and they suffered more severe chest pain. Other causes of anxiety were lack of information, lack of sleep, and confrontation of life threatening death (McKinley et al., 2002). In addition, patients encountered transfer anxiety when they were transferred from the intensive care unit to a ward without good preparation and proper information (Coyle, 2001).

It can be concluded that in previous studies the peak of anxiety in patients with AMI was at 12 hours after admission, then decreased gradually from then to 24 hours after admission. The level of anxiety then remained stable from 24 to 60 hours after admission, and considerably increased before the patients were transferred to the ward.

Impact of anxiety in patients with AMI

High anxiety in patients with AMI causes cardiac ischemia, plague rupture, and arousal of the sympathetic nervous system to produce catecholamine to activate the mechanism of objective responses, which elevates heart rate and blood pressure. Atherosclerotic plague activation and rupture caused by high anxiety is also manifested with the reduction of CD4 (+) and increase of CD8 (+) (Caine, 2003; Kop, 2003).

In addition, several complications related to high anxiety in patients with AMI could occur during the 72 hours of hospitalization and after discharge, including chest

pain, acute ischemia, ventricular arrhythmia, congestive heart failure (Huffman et al., 2008), ventricular tachycardia, ventricular fibrillation, ischemia/reinfarction, and other similar complications (Moser et al., 2007). Huffman et al. (2008) reported that female AMI patients with high anxiety had to stay for recovery a month longer than male AMI patients. Anxiety was moderately correlated with symptom representation of AMI, such as chest pain, fatigue, and nausea (r=.563, p<.01) (Cherrington, Moser, Lennie, & Kennedy, 2004). The higher anxiety level in patients with AMI, the more anxiolytic medications were required (Huffman et al., 2006). For a long term consequence, high anxiety was also reported to cause cardiac events, such as reinfarction and cardiac death after first year in patients with AMI (Frasure-Smith, Lesprance, & Talajic, 1995).

Assessment of anxiety in patients with AMI

Assessment of anxiety comprises subjective measures and objective measures in patients with AMI by several anxiety instruments.

Subjective response

1. State-Trait Anxiety Inventory (STAI)

The STAI comprises of separate self-report scales for assessing trait and state anxiety. The state anxiety (the S-Anxiety) scale consists of twenty statements with both present and absent items to measure how people feel at a certain moment or a particular time. The S-Anxiety aimed to describe the intensity of person's feeling consists of a 4-point Likert-like scale: 1) not at all, 2) somewhat, 3) moderately so, and 4) very much so. The anxiety-absent items on the S-Anxiety scales include item

1, 2, 5, 8, 10, 11, 15, 16, 19, and 20, thus the scoring weights from 1-4 for the anxiety-absent items are reversed. Similar to the S-anxiety, the trait anxiety (the T-Anxiety) scale composes of twenty statements to assess general feelings of the respondents. The frequency of feelings of anxiety is described on a 4-point Likert-like scale: 1) almost never, 2) sometimes, 3) often, and 4) almost always. The anxiety-absent items on T-Anxiety scales include items: 21, 23, 26, 27, 30, 33, 34, 36, and 39 for which the scoring weights from 1-4 are reversed to 4-1. The total score for the S-Anxiety or T-Anxiety scale ranges from 20 to 80 and indicates three levels of anxiety: low anxiety (20-39), moderate anxiety (40-59), and high anxiety (60-80). The reliability of both scales was tested with The Cronbach's alpha, yielding .90 to .94 for the S-Anxiety scale and .89 to .92 for the T-Anxiety scale in adult aged 19-69 years old (Spielberger et al., 1983).

Both the S-Anxiety and T-Anxiety scales are used to measure anxiety after the admission and on discharge from ICCU in patients with AMI. The S-Anxiety scale is commonly used to measure anxiety in patients with AMI at different time points. For example, anxiety was measured at 48 hours after admission (n=101) (Frazier et al., 2002), within 24 to 48 hours after admission (n=49) (Cherrington et al., 2004) and at the six time points, i.e. at 12 hours, 24 hours, 36 hours, 48 hours, 60 hours, and 72 hours after admission (n=486) (An et al., 2004). The S-anxiety scale was also used before and after intervention with repeated measures design such as in a study by White (1999) who used a scale to measure anxiety level at baseline, immediately after intervention, and an hour after intervention. Anxiety in patients with AMI was also assessed at the baseline and the three days later after the intervention of guided imagery and talking techniques (Bassampour, 2006). In

addition, the S-Anxiety scale was used on the second day after admission and the day when the patients were transferred to the general ward (Tel & Tel, 2006). The T-anxiety scale is often measured at baseline of the study to identify trait anxiety level between groups and to compare trait anxiety level after intervention.

The internal consistency for the S-Anxiety and T-Anxiety scales has been tested in patients with AMI. The Cronbach's alpha reliability for the S-Anxiety scale varied from .87 (White, 1999) to .94 (An et al., 2004; Cherrington et al., 2004; Collins & Rice, 1997; Tel & Tel, 2006). The Cronbach's alpha reliability for the T-Anxiety scale in AMI patients was .91 (Collins & Rice, 1997).

The above studies have shown that the STAI was a valid and reliable instrument to measure anxiety at different time points. However, the frequent use of the S-Anxiety scale may cause negatively responses due to time consumption, burden imposed on the patients and a long questionnaire for patients with AMI. Single item instrument to assess S-Anxiety is suggested (De Jong et al., 2005).

2. Numerical Rating Scale-Anxiety (NRS-A)

The NRS-A is one-item scale consisting of 0 to 10, with "0" meaning no anxiety and "10" meaning the most anxiety. The NRS-A has been used for assessing S-Anxiety within 48 hours after admission in patients with AMI showing low anxiety (3.08; SD=2.62). The relationship between the NRS-A and the S-Anxiety Scale was moderately positive (r=.52, p<.001), which indicated that the NRS-A could replace the S-Anxiety scale. The advantages of the NRS-A included timeliness and easy in assessing anxiety, particularly when researchers have limited time and need to reduce the burden on patients who had to complete many measures. It is suggested that the

NRS-A is a valid anxiety measure for subjective response in patients with AMI (De Jong et al., 2005).

3. Hospital Anxiety and Depression (HAD)

The HAD scale was developed for measuring anxiety and depression in hospitalized patients. It consists of seven items on a 4-point Likert scale for both anxiety and depression. The total score ranged from 4-28. A study showed that the Cronbach's alpha reliability for the HAD of anxiety and depression was .83 and .82, respectively (Bambauer, Locke, Aupont, Mullan, & McLaughlin, 2005). The HAD was used to measure anxiety in patients with AMI at different time points such as within 24 hours after admission as the baseline, on the third day, and at the 6th month after intervention of music tape and advice-relaxation tape (n=294) (Lewin et al., 2002), or at the 6th month after admission (McCulloch, 2007).

Objective measures

Not only the subjective feeling of anxiety, but also various objective responses were assessed. Anxiety was determined by increasing blood pressure, heart rate, respiratory rate, diaphoresis, and shortening breath in patients with AMI (Moser et al., 2003a). Common objective measure for anxiety in patients with AMI includes blood pressure, heart rate, and respiratory rate in intervention studies (Bassampour, 2006; Collins & Rice, 1997). However, changes of these parameters for measuring the effects of intervention on anxiety reduction yield different findings. It has been suggested that some patients' conditions were to be measured and further studies were to be conducted in order to include objective measures in the study of anxiety.

In summary, assessment of anxiety includes subjective and objective response. The common subjective measure of anxiety in patients with AMI is the S-Anxiety scale. Due to the time constraints and subject's burdens when often used, the NRS-A is suggested as it is a valid measure for state anxiety. Assessment of T-Anxiety is necessary to ensure personal characteristics that may affect intervention on anxiety reduction. Vital signs are also used to validate subjective anxiety responses in some circumstances. In this study, the NRS-A and measure of blood pressure, heart rate, and respiratory rate were used for assessing anxiety in patients with AMI for two consecutive days after admission and on discharge from the ICCU.

Perceived Control in Patients with AMI

Concept of perceived control

Perceived control is defined as an individual's ability to control in global-specific situation or internal-external event of life (Jacelon, (2007). Perceived control was derived from the concept of personal control on physical and psychological well-being in nursing (Bowsher & Gerlach, 1990). Personal control consists of direct and proxy control that people act on their own behalf (Bandura, 1997). Perceived control was grouped as both global and specific use, such as disease process and symptom (Jacelon, 2007).

Furthermore, perceived control was derived from Theory of Emotional Disorder, self-control theory, and expectancies for internal versus external control. Lazarus and Folkman (1984) also mentioned that control expectancy which consisted of general and specific control. General control refers to the belief in an individual's

ability to control the expected outcomes. Situational control refers to the belief in the ability to control a specific situation. On the other hand, Self-control Theory composes of self-control as process of regulating cognition. Self-control refers to cognitive and self-awareness in controlling emotional and physiological responses (Rosenbaum, 1980). For expectancies, perceived control was initially refined for its domains associated with a specific event. Perceived control consists primarily of two factors: the external event factors and the internal emotional reaction factors. These factors had been used for predicting level of perceived control in clinical patients and non-clinical patients (Rapee, Craske, Brown, & Barlow, 1996). Furthermore, another study as a follow-up to Rapee and colleagues (Rapee et al., 1996) reported that the factors of perceived control to be inconsistent with the previous study. Psychometric analysis of Anxiety Control Questionnaire produced three factors: internal locus of anxiety control, a sense of helplessness over internal stress and emotional reaction, and a sense of helplessness over external events (Zebb & Moore, 1999). Later, a study conducted by Brown et al. (2004) conceptualized perceived control consisting of a higher-order dimension and three lower-order factors of perceived control: emotional control, threat control, and stress control.

The emotional control was originally generated from the internal emotional reaction factor (Rapee et al., 1996). It reflects the patient's ability to effectively control emotions in relation to burdens, anxiety, and difficulty (Brown et al., 2004). However, threat control was extracted from the external event factors (Rapee et al., 1996). Dimension of threat control refers to the belief in the ability to escape or avoid the frightening events (Brown et al., 2004). The external frightening events included a new environment and loneliness in critical situation. In addition, the stress control was

represented by both the external event factors and the internal emotional reaction factors (Rapee et al., 1996). Dimension of stress control reflects coping mechanism and regulation of patients' emotion in stressful situations (Brown et al., 2004). The stress control is used to cope and manage both psychological and environmental stressor.

In summary, perceived control is one's belief or cognitive competence to control, manage, and cope with anxiety. It consists of controlling three factors: emotional control, threat control, and stress control. Perceived control was evaluated in this study as an outcome of the intervention.

Perceived control in patients with AMI

Most of the patients with AMI with low level of perceived control would have high level of anxiety during a life-threatening period (Forren, 2008; Moser et al., 2007). Depression and lack of social support caused low perceived control when these patients felt anxious on cardiac and death threatening event (Moser et al.). Moser and Dracup reported (1995) that the mean score of perceived control was 20.6 ± 5.4, below 21 score categorized as low perceived control in the 6 month after cardiac events. The percentage of patients with the low level of perceived control accounted for 52% of all patients and the high level at 48% (n=176). Similar findings were also reported in other studies. For example, a study with large sample size (n=536) reported that mean score of perceived control within 72 hours after admission was 18 ± 5; however, less than half of patients with AMI had low perceived control (41%), with the score of below 16 being classified as the low level (Moser et al., 2007).

Dracup et al. (2003) also reported that the mean score of perceived control was 11.3, the 11-point cut-off score for the low level of perceived control. Patients with AMI had the low level of perceived control at 41% and the high level at 59%. Because perceived control was not a trait personality characteristics, it could change depend on coping response of severity of AMI (Moser & Dracup, 1995).

Perceived control and anxiety in patients with AMI indicate a reciprocal relationship. Patients with AMI with high perceived control showed significantly low anxiety after a 6-minute walk distance (t=-8.17, p<.001) (Dracup et al., 2003) and 6 months after cardiac events (Dracup et al., 1995). Perceived control and anxiety could predict ischemic and dysrhythmic complications (Moser et al., 2007) and recovery in patients with AMI (Moser & Dracup, 1995).

In summary, perceived control in patients with AMI positively contributes to the reduction in anxiety. Patients with high-perceived control have the low level of anxiety. It suggests that nursing intervention to help patients gain self-perceived control is essential for anxiety management.

Assessments of perceived control in patients with AMI

The assessment of perceived control includes as follows:

1. Control Attitudes Scale (CAS)

The CAS was commonly used to evaluate perceived control in patients with AMI. The subscale of the CAS included predictive and interpretative control that is relevant to the modified CAS. The CAS consists of four items, as follow: 1) regarding your heart problems, how much control do you feel?, 2) do you feel your family member could take the right steps if you were to have a heart attack?, 3) regarding

your heart problems, how helpless do you feel?, 4) regarding your heart problems, how helpless do you think your family member feels? The four items of the CAS had a 7-point Likert scale according to the degree of agreement or disagreement with given statements. In a previous study, the Chronbach's alpha for the CAS was originally .89 (n=325) and .77 in patients with AMI (n=176). Perceived control was measured by the CAS to identify association with psychosocial recovery in patients with AMI (Moser & Dracup, 1995). The CAS was also used to measure relationship between perceived control and in-hospital complications of patients with AMI. The Cronbach's alpha for the CAS was consistently high .89 (n=536) (Moser et al., 2007).

In addition, a 5-person cardiovascular expert panel consisting of both nurses and physicians modified the CAS based on wordings of the questionnaires to reflect the context of heart failure The modified CAS composed of four items: 1) how much control do you feel over your life?, 2) how helpless do you feel related to your cardiac illness?, 3) how much concern do you have about your health?, 4) how anxious do you feel the possibility of having a sudden or unexpected cardiac emergency? The questionnaires were scored as a 5-point Likert-like scale from 1 (none) to 5 (very much). Total score ranged from 4 to 20 and the higher score indicated the higher level of perceived control. The Cronbach's alpha for the modified CAS was .77 (Dracup et al., 2003).

2. Anxiety Control Questionnaire (ACQ)

The ACQ was a measure for assessing the perceived control. It originally consisted of 30 items, divided into two subscales with 16 items falling into the external event factors (labeled events) and 14 items falling into the internal emotional reaction factors (labeled reactions). The scale of each item in the ACQ ranged from 0

to 5: 0 means strongly disagree, 1 means moderate disagree, 2 means slightly disagree, 3 means slightly agree, 4 means moderate agree, and 5 means strongly agree. The total score of the ACQ ranged from 30 to 150. The reliability of the ACQ was tested in patients and healthy people. In students (n=236), the Chronbach's alpha for the ACQ was .89 for overall items, and .84 for the internal emotional reaction subscale, and .82 for the external event subscale. Similarly, test-retest reliability of the ACQ was conducted in patients with anxiety (n=250). The Chronbach's alpha for the ACQ was .87 for overall items, and .80 for the internal emotional reaction subscale, and .83 for the external event subscale (Rapee et al., 1996).

In addition, the ACQ with 30 items was defined by psychometric analysis in students (n=316). The result showed three factors: an internal locus of anxiety control, a sense of helplessness over internal stress and emotional events, and a sense of helplessness over external reactions. The Chronbach's alpha for the ACQ was .87, and those three factors were .78, .78, and .79, respectively (Zebb & Moore, 1999).

To test the model of perceived control and predict the dimension of anxious arousal and depression, replication study in large samples was conducted for assessing perceived control by using the ACQ-30 version in both clinic and non-clinic anxiety disorder patients (n=1,550). The Exploratory Factor Analysis was conducted using the remaining 15 items (the ACQ-15 version) and presented three factors: emotional control, threat control, and stress control. From Confirmatory Factor Analysis, the factor inter correlations of emotional control with threat control, and stress control were moderate, .51 to .63 (p<.001). The Cronbach's alpha for the ACQ-15 version was .84, and for the three factors (n=700) at .73, .73, and .71, respectively (Brown et al., 2004).

3. Generalized Perceived Control (GPC)

The GPC composed of three factors: personal control, personal responsibility, and perceived others' control and consisted of eight items. It was responded on a 5-point Likert-like scale ranging from 1 (very much) to 5 (not at all). The total score ranged from 8 to 40. The GPC was mainly used to evaluate general control and has been used to identify relationship between perceived control and emotional well-being in the elderly (Kunzmann, Little, & Smith, 2002). The GPC may not be appropriate to be used to assess perceived control as specific control in patients with AMI.

4. Personal and Interpersonal Agency Scale (PIAS)

The PIAS was employed for patterning among emotional support, physical health, and psychological well-being in adults. Personal agency scale consisted of 8 items and interpersonal agency scale comprised 5 items in, which a 4-point Likert-like scale ranged from 1 (never) to 4 (often). The Cronbach's alpha and split half reliability for the personal agency were .78 and .73, respectively. The Cronbach's alpha and split half reliability for the interpersonal agency were .76 and .70, respectively. This instrument has been used to assess relationship between perceived control emotional support, physical health, and psychological well-being in adults, but was not used to evaluate perceived control in patients with AMI (Smith et al., 2000).

5. Recovery Locus of Control (RLOC)

The RLOC consisted of 9 items, 5 of which were internal control and the other 4 items were external control to others. Answers included strongly agree and disagree. The Cronbach's alpha for the RLOC was .77. This instrument was used to identify perceived control: internal control and external control and recovery. A previous study revealed that relationship between perceived control and anxiety (r=-.24,

p<.05). Perceived control significantly predicted recovery in patients with stroke at the first month (r=.32, p<.05). The RLOC may not be effective in identifying perceived control as specific control for anxiety in patients with AMI (Johnston, Morrison, Macwalter, & Partridge, 1999).

From the reviews, the CAS and the modified CAS are commonly used for measuring perceived control in patients with AMI; however, these instruments are used to assess global control. The ACQ-30 version has been revised into the ACQ-15 version consisting of three factors: emotional control, threat control, and stress control to respond to a specific control after evaluation of the latent structure of the ACQ. The ACQ-15 version was used to measure perceived control in patients with AMI.

Relationships of Anxiety and Perceived Control in Patients with AMI

Anxiety is negatively associated with perceived control among patients with AMI (Johnston et al., 1999; Ong, Bergeman, & Bisconti, 2005). A significant negative relationship was found between anxiety and perceived control (r= -.24, p<.05) (Johnston et al.). Patients with AMI and high perceived control had significantly lower anxiety level than those with low perceived control at 72 hours across different cultures including in Japan, Korea, Australia, the UK, and the USA (Forren, 2008). Furthermore, patients with AMI and high level of perceived control had significantly lower anxiety (5.3$\pm$ 3.8) than those with low perceived control (8.6$\pm$4.9) (p<.002) at 6 months after the infarction (Moser & Dracup, 1995). Anxiety and perceived control could predict both ischemic, dysrhythmic complications (Moser et al., 2007) and psychological recovery in patients with AMI (Moser & Dracup).

Factors Associated with Anxiety and Perceived Control

Several factors are associated with anxiety and perceived control including personal factors, health and treatment, and environment. Personal factors associated with anxiety and perceived control include gender, marital status, trait anxiety, marital status, and experience of anxiety, the details of which are as follows:

1. Personal factors

    1.1 Gender

Gender is associated with anxiety in patients with AMI. Previous studies reported that females had higher anxiety than males when assessed within 72 hours after admission in Australia, South Korea, Japan, the UK, and the USA (p=.005) (An et al., 2004; Moser, 2007). The females under 60 years of age had higher anxiety than those above the age of 60 years (Moser et al., 2003b). Females had significantly higher anxiety early acute myocardial infarction than males, and females with low income had higher anxiety than those with high income (Kim et al., 2000).

Gender also affects on perceived control. Conventionally, males are characterized to have more perceived control and independence. Zebb and Moore (2003) revealed that males had higher perceived control than females (p<.03).

    1.2 Trait anxiety

Trait anxiety is associated with state anxiety and perceived control. The higher the level of T-anxiety, the higher likelihood of developing S-anxiety in a threatening situation (Spielberger et al., 1983). Trait anxiety (T-anxiety) was found to be a predictor of the level of state anxiety (S-anxiety) (r=.64, p<.01) (Feldner & Hekmat, 2001).

T-anxiety and perceived control are similar to one another in term of personal characteristics that deal with uneasy, anxious, and threatening situations. However, T-anxiety was negatively associated with perceived control (r= -.56, p<.01) (Feldner & Hekmat, 2001).

1.3 Marital status

Marital status is also associated with anxiety in patients with AMI. Single patients with AMI suffered higher anxiety in the critical period than married patients (Bennett & Connell, 1998). Single males had higher level of anxiety than married males. However, another study showed that married females had higher level of anxiety than single and widowed females (Kim et al., 2000).

2. Illness and treatment factors including severity of AMI and treatment are associated with anxiety as follows:

2.1 Past experience of hospitalization

Individual stress experiences influence state anxiety when one psychologically perceives a specific situation as dangerous or threatening (Spielberger et al., 1983). Patients who have more experiences of heart attack, life threatening, and chest pain are likely to have less anxiety than those experiencing such things for the first time. It can be assumed that patients with AMI who are admitted to the ICCU for the first time may have higher anxiety than those who have been previously admitted to the ICCU.

2.2 Severity of AMI

The severity of AMI is associated with anxiety. Firstly, chest pain indicates severity of the patient's AMI. Patients with high level of chest pain (M=7.9, SD=2.4) would also have high level of anxiety (6.2$\pm$ 2.6) (Moser & Dracup, 1996).

The severity of the AMI itself is classified by the Killip classification system into four levels: Killip class I (no clinical signs of heart failure), Killip class II (crackles, S3 gallop, and elevated jugular venous pressure), Killip class III (pulmonary edema), and Killip class IV (cardiogenic shock-hypotension-systolic <90 mmHg, oliguria, cyanosis, and sweating) (Wikipedia, 2010). At admission, patient with Killip class I (72%) and Killip class II (23%) would have low level of anxiety (M=37.2, SD=12.4) (Frazier et al., 2002).

2.3 Anxiolytic drug

Anxiolytic drugs are commonly administered to reduce moderate and high anxiety. Benzodiazepine is the most common anxiolytic drugs to reduce anxiety. Anxiolytic drugs for AMI patients included Lorazepam (Ativan), Diazepam (Valium), Chlordiazepoxide hydrochloride (Lybrium), Midazolam hydrochloride (Versed), Alprazolam (Xanax), Temazepam (Restoril), and Dephenhidramine hydrochloride (Benadryl) (Frazier et al., 2002). The usual dose of Lorazepam is 2–4 mg and diazepam is 2-10 mg i.v., administered for 2 to 4 times daily depending upon severity of symptoms (Long, 2009). Lorazepam 4 mg i.v. could be substituted for Diazepam 10 i.v. (Cock & Schapira, 2002).

3. Environmental factors and family support are associated with anxiety:

3.1 Environment

The ICU environment affects on anxiety. The unfamiliar environment was found to contribute to anxiety in patients with AMI (Scott, 2004). Equipments, the noise, and alarms of machine in the ICU caused anxiety in the patients. In addition, patients in the ICCU were found to frequently lack of control over themselves and anxious to face the heart attack and the ICU environment (Novaes et al., 1999).

3.2 Family support

Patients admitted in ICU face stress, lack of communication, and dependency, so family members must function as caregivers and surrogate decision makers. A visit to the patients by family members creates positive impact on the patients as it provides them with psychological, cultural, and spiritual support (Barclay, 2007). Psychological and family supports were significant factors for reducing for patients in the ICU (Moser et al., 2003a).

In summary, the level of trait anxiety, female, single, anxiolytic drug, the ICU environment, severity of AMI, and family support are found to be associated with the level of state anxiety. The level of trait anxiety, male, and the ICU environment affects on perceived control. Gender, marital status, number of admission, anxiolytic drug and trait anxiety were controlled in this study.

Holistic Intervention to Reduce Anxiety and Enhance Perceived Control in Patients with AMI

Holistic nursing is a nursing practice in healing the whole person as human being that has interconnectedness of the physical, psychological, social, cultural, and spiritual aspects (American Holistic Nurses Association, 2009). The significant viewpoints of holism in holistic nursing include: 1) holism of interrelationships of bio-psycho-social-cultural-spiritual dimensions of patients and 2) holism of unitary whole in mutual process between patients and environments (Dossey et al., 2005). Holistic nursing is a specialty that is based on a body of knowledge, evidence-based research, sophisticated skill, defined standard of practice, a diversity of modalities,

and a philosophy of living and being to guide holistic nurses to care for patients as holistic persons who are composed of physical, psychological, social, cultural, and spiritual dimensions (AHNA, 2010). Holistic nurses facilitate unity, harmony, and the healing process by promoting self-preservation on psychological adaptation, physiological status, transpersonal caring relationship, and spirituality for connectedness with God as basic needs of critically ill patients (Hudak et al., 1998). Under the concept of nurse-patient relationship in holistic approach, in therapeutic nursing, it is imperative to provide culturally appropriated nursing therapeutic intervention in order to achieve the optimal outcomes.

Several holistic interventions have been applied on anxiety and perceived control in patients with AMI. The most common holistic intervention to reduce anxiety is music therapy. A comparative study reported that playing music tape and advice with relaxation tape for 30 minutes could decrease anxiety in patients with AMI. Single evaluation of anxiety by the HAD was taken within the 24 hours after admission and found that both music tape (n=129) and the advice with relaxation tape (n=114) produced an equal benefit to reduce anxiety (Lewin et al., 2002). Another study revealed that providing music therapy for 20 minutes was more effective to reduce state anxiety, respiratory rate, and heart rate at an immediate evaluation (F 2,42=12.65, p<.001) and an hour after the intervention in patients with AMI (F 2,42=10.77, p<.001) than the quiet restful environment, while systolic blood pressure did not decrease after the intervention (White, 1999). In addition, the modified Islamic relaxation, SEFT is applicable to short-term reduction of anxiety in adults. Nurses commonly administer Islamic relaxation lasting 20 to 30 minutes. The common evaluations of the study outcomes are anxiety and vital signs at a single time

point. Repeated measure is required for ensuring anxiety reduction, accounting for subjective feeling and objective responses.

Other types of holistic interventions included talking technique and guided imagery. A study showed that patients with AMI who received both techniques had significantly lower level of anxiety and objective responses i.e. lower blood pressure, heart rate, and respiratory rate than those of the control group. However, the talking technique was more effective in reducing anxiety than the guided imagery (Bassampour, 2006). In addition, individualized education with psychosocial support in the relaxation group was considerably effective in reducing transfer anxiety on discharge day compared with the control group (Tel & Tel, 2006). These interventions were found to be effective in reducing anxiety in patients with AMI.

Holistic nursing interventions including psychological support, education, and monitoring coping methods can enhance perceived control as well. First of all, high level of psychological support was found to have positive effects on perceived control (Ford & Ayers, 2009). Secondly, education could be instilled for perceived control in patients with AMI (n=279) (Donovan, Hartenbach, & Method, 2005). Thirdly, counseling was found to be very helpful in reframing an acute cardiac event from an out of control crisis to a chronic condition that was controllable by appropriate interventions in patients with AMI (Moser et al., 2007). Fourthly, coping self-statement, praying, and hoping were the coping strategies most commonly used for enhancing perceived control (n=195) (Haythornthwaite, Menefee, Heinberg, & Clark, 1998). The last, SEFT composing of deep acceptance, self-hypnosis, and tapping at meridian points was effective to instill personal control in adults (Zainuddin, 2009).

It can be concluded that music therapy for 20-30 minutes is effective in reducing anxiety, but may not work in enhancing perceived control. Meanwhile SEFT is effective in reducing anxiety and able to enhance perceived control, it requires assessing objective responses to anxiety. This study measured on perceived anxiety, objective responses to anxiety, and perceived control in patients with AMI.

Islamic Relaxation and its Effectiveness

Islamic philosophy of relaxation

Islamic relaxation is based on the holy Qur'an and the Hadits i.e. guidance in daily life. In the holy Qur'an, Allah (God) says," When I am sick, Allah (God) will cure me" (the Qur'an Ash Shura 16: 80) and "Truly no one despairs of Allah's soothing mercy, except those who have no faith" (the Qur'an Al Yusuf 12: 87). The holy Qur'an Ar Ra'du Chapter 13 verse 28 reveals that "Those who believe and whose hearts find satisfaction in the remembrance of Allah, for without doubt in the remembrance of Allah do hearts find satisfaction" (Departemen Agama Republik Indonesia [Ministry of Religion Republic Indonesia], 2005, p. 252). Surah Al Imron chapter 3 verse 191 reveals that "Those who remember Allâh by standing, sitting, and lying down on their sides…" Surah Al A'raf Chapter 7 verse 205 mentions that "And remember of Allah in your soul with humility and in reverence, and without loudness in words in the mornings and evenings" (Departemen Agama Republik Indonesia [Ministry of Religion Republic Indonesia], 2005, p. 176).

Islamic relaxation refers to the use of the original and modified Islamic relaxation, which soothes and relaxes the individual to calm his or her psychological

status. The original Islamic relaxation includes religious relaxation (Purwanto & Zulaekah, 2007), and Zikr therapy (Mardiyono et al., 2009). The modified Islamic relaxation consists of spiritual emotional freedom technique (Zainuddin, 2009). Islamic relaxation can be performed twice a day in the early morning and late afternoon by lying down. Due to the limited number of studies in patients with AMI, Islamic relaxations in various populations and their effectiveness are hereby reviewed.

Zikr therapy

Zikr is remembrance of Allah (God) everyday whenever it is convenient to perform either in the morning or the evening (Syed, 2003). Zikr results in peaceful body-mind-spirit to promote one's optimal harmonization enhancing psychological, social, spiritual, and physical health (Abdel-Khalek & Lester, 2007; Syed, 2003).

Zikr therapy is the remembrance of Allah (God), and requires one to sit or lie comfortably, with eyes closed, and practice the remembrance of Allah (God) through recitation of "Subhanallah, alhamdulillah, allahu akbar" meaning "Glorious is Allah, praise to Allah, Allah is the greatest" for 20 to 30 minutes (Mardiyono et al., 2009; Purwanto & Zulaekah, 2007; Sitepu, 2009)**.**

Zikr therapy could reduce psychological problems. A previous study showed that religious relaxation with daily Zikr for 20 minutes everyday for one month reduced students' insomnia (Purwanto & Zulaekah, 2007). Zikr therapy for 25 minutes also reduced preoperative anxiety (Mardiyono et al.), while Zikr therapy for 30 minutes was shown to relieve postoperative pain at 6-8 hours (t=5.29, p<.01) and 24-30 hours (t=7.79, p<.01) in Muslim patients (Sitepu, 2009).

Spiritual Emotional Freedom Technique (SEFT)

The SEFT is the modified Islamic relaxation consisting of deep acceptance, self-hypnosis, and meridian therapy. SEFT can be divided into the short version and the complete version. The short version consists of three steps: 1) the setup, 2) the tune in, and 3) the basic tapping. The complete version consists of four steps: 1) the setup, 2) the tune in, 3) the complete tapping including the basic tapping and 4) the nine gamut procedures. The tapping at the meridian points includes peak head, medial eyebrow, side eye, under eye, under nose, chin, collarbone, under arm, and costal bone under nipple, and the nine gamut procedures as shown in Table 1. The tapping functions to release blockage at meridian points, in particular psychological tension as anxiety. As mentioned, deep acceptance, one of the basic tenets of Islam, is used for coping, when Muslims face a certain fact, weakness, and problem (Zainuddin, 2009).

In addition, the SEFT is performed for less than 20 minutes. Before starting and after performing the SEFT, the problem, such as anxiety is measured by the Intensity Meter to assess the changes of the level of problem or performance. The Intensity Meter is a numerical rating scale ranging from 0 to 10 cm and the highest score indicates the worst problem or the best performance. The SEFT was found to be an effective Islamic relaxation to reduce subjective response to anxiety, to enhance personal control (Zainuddin, 2009), and alleviate cancer pain (Hakam, 2009). SEFT is faster to achieve outcomes than Zikr therapy (Zainuddin).

Zikr is effective in reducing anxiety by promoting meditative state. SEFT is also effective in reducing anxiety and enhance perceived control. Integration of the short version of SEFT and Zikr may reduce subjective and objective responses to anxiety as well as enhance perceived control in Muslim patients with AMI.

Table 1

Procedure of Spiritual Emotional Freedom Technique

Steps	Activities
The setup	Rubbing sore spot at the chest or tapping at the karate chop point, the base of baby finger 7 times with at least two fingers: pointed and middle fingers while healer is leading person who states self-hypnosis three times by statement: *Oh God (Allah), even though, I have this ………………….* *I deeply and completely accept myself and I firmly rely on Allah* *for curative …………….*
The tune in	Placing body and opening hands, assessing the problems, and focusing on the problem. Person states self-hypnosis three times: *Oh God (Allah), I deeply and completely accept (ikhlas) and I* *firmly surrender (tawakal) for you.*
Tapping (short version)	Healer taps at the meridian points: top of head, medial eyebrow, side eye, and under eye, under nose, chin, collarbone, under arm, and under nipple 7 times, while person repeats the word self-hypnosis three times, "*Oh God (Allah), I deeply and completely accept (ikhlas) and I firmly surrender (tawakal)*" Person takes deep breathing 3 times, and closes with tank to God (say: Alhamdulillah).
Tapping and the 9 gamut procedure (Complete version)	Tapping at the baseline of the meridian points and continuing at the base of thumb, index finger, middle finger, little finger, karate chop, wrist point inside, wrist point offside, and the gamut point between little finger and ring finger, while the person receiving the therapy performs the following 9 procedures: 1) close the eyes; 2) open the eyes; 3) look hard down left while holding the head steady; 4) look hard down right while holding the head steady; 5) roll eyes in a circle, clockwise, with the nose as the center; 6) roll eyes in a circle, counter-clockwise, with the nose as the center, 7) hum a happy song for a few seconds; 8) count from one to five; 9) hum a happy song again for a few seconds. For reinforcement, tapping from the top of head, medial eyebrow, side eye, and under eye, under nose, chin, collarbone, under arm, under nipple, the base of thumb nail, index finger nail, middle finger nail, ring finger nail, karate chop, wrist point inside, and wrist point offside 7 times, while person repeats the self-hypnotic words three times, "*Oh God (Allah), I deeply and completely accept (ikhlas) and I firmly surrender (tawakal)*" Then, person takes deep breathing 3 times, and closes with tanking to God (say: Alhamdulillah)

Theory of Human Caring

Theoretical view of Human Caring Theory

The Theory of Human Caring is a middle theory. It was developed with a novel structure of the caring-healing paradigmatic matrix consisting of four metaparadigm concepts: person, environment, health, and nursing. Person is a unity of mind-body-spirit consisting of the intellectual inclination, spirit, inner self, and essence of a person. Environment refers to the universal or cosmic level of existence or quantum physics and holographic views of the universe. Health refers to unity, balance, and harmony within the mind, body, and spirit. Illness is the subjective turmoil or disharmony with a person's inner/spirit or within the spheres of the person. Nursing is a human science discipline and an art, and an academic-clinical profession. The focus of Human Caring Theory is caring for people as holistic persons. Human being is not an object and can not be separated from oneself, others, nature, and the universe (Watson, 2001).

The Theory of Human Caring consists of four concepts: transpersonal caring relationship, carative factors, caring healing, and caring moment. Transpersonal caring relationship composes of three factors: self, phenomenal field, and intersubjectivity. Self is the transpersonal mind-body-spirit unity, an embodied self, and an embodied spirit. Phenomenal field is the totality of human experience in the world. Intersubjectivity refers to the state of affecting or being affected by others. The centrality of human caring is on the transpersonal caring relationship and caring healing for those who care and those for whom care is being given.

Carative factors refers to an aspect of nursing in which potential therapeutic healing processes exists in both the one providing care and the one for whom care is being given. There are ten carative factors, namely: 1) performing a humanistic-altruistic system of values, 2) enabling and sustaining faith-hope, 3) being sensitive to self and others, 4) developing a helping-trusting, caring relationship, 5) promoting and accepting the expression of positive and negative feelings and emotions, 6) engaging in creative, individualized problem solving caring process, 7) promoting transpersonal teaching-learning, 8) attending to supportive, protective, or corrective mental, physical, societal, and spiritual environment, 9) assisting with gratification of basic human needs while preserving human dignity and wholeness, and 10) allowing for and being open to existential phenomenological-spiritual dimensions of caring, and healing (Watson, 1999).

Caring healing refers to a recovery process that is manifested within a field of consciousness existing through time, space, and physicality. Consciousness is energy that can be used for healing. The one caring and the one being cared for are interconnected. Caring healing process refers to the connection among the one caring, the other human beings, and the higher energy of the universe (Watson, 2001). Caring healing could be transformed into physiological, psychological, and spiritual healing. It is manifested into self-control, self-healing, comfort, energetic environmental modalities, and physical well-being (Watson & Smith, 2002). Caring healing in the study focused on subjective and objective responses to anxiety and perceived control in Muslim patients with AMI admitted in ICCU.

Caring moment refers to the moment of coming together to provide and receive care, making decision on the characteristics of the relationship, and the things

that are performed at each moment. Caring moment is a moment when the nurse and the patient come together to achieve a valuable relationship in clinical settings. Caring moment could promote caring healing on anxiety and perceived control as a personal factor. Therefore, caring moment and caring healing are unidimensional aspects (Watson, 2001). Caring moment was a moment when the nurse and the patient gained a valuable relationship to perform the NBI-IIR. Caring moment also promoted caring healing when the patient performed the NBI-IIR resulting in cognitive structure, meditative moment, and relaxation on anxiety and perceived control.

Theory of Human Caring in nursing research

The Theory of Human Caring has been applied in many studies, including both descriptive and experimental studies in patients with AMI. Previous studies focused on caring behaviors and caring practices in various populations. For the studies of caring behaviors, a measure with 63 items of caring behaviors was developed based on carative factors in patients with AMI (n=22) (Cronin & Harrison, 1988). The Theory of Human Caring was used as a theoretical framework in the descriptive study of caring practices in reducing anxiety. Mardiyono, Songwathana, and Naka (2005) reported that the level of caring practices based on the seven carative factors in reducing anxiety was moderate as perceived by surgical nurses (n=70) and patients (n=70) in Central Java, Indonesia. The caring practices composed of the seven carative factors and transpersonal caring relationship to achieve caring healing. The findings of the study revealed that nurses' perception of caring practices in reducing anxiety was higher than patients' perception of the caring practices. Some of the carative factors including 1) human-faith-hope and sensitivity, 2) helping-trusting,

caring relationship, 3) teaching-learning process, 4) supportive, protective, or corrective mental, physical, societal, and spiritual environment, 5) basic human needs, 6) expression of feeling, and 7) existential phenomenological-spiritual dimensions of caring and healing, were caring practices with moderate effectiveness in reducing anxiety. The outcome of preoperative anxiety measured by VAS was 3.8 (SD=1.7). Nurse could apply caring practices based on carative factors and transpersonal caring relationship of the Human Caring Theory in hospitalized patients.

For the caring practices, the Theory of Human Caring has been applied for intervention studies in patients with cancer and hypertension. Smith, Kemp, Hemphill, and Vojir (2002) reported that Swedish massage technique, based on the Theory of Human Caring and Roger's Science of Human Unitary, could reduce anxiety when applied to cancer patients (n=41). The study used Swedish massage as a caring intervention to produce high-frequencies field vibration to achieve field integrity and harmony. Swedish massage lasting 15-30 minutes per session was performed three times a week at eight months, and anxiety was measured by the S-Anxiety scale at baseline and 30 minutes after intervention. The results showed that the mean scores of anxiety in patients who received Swedish massage decreased considerably from 40.0 (SD=12.7) to 35.5 (SD=10.6).

The Watson Caring Model based on the ten carative factors was applied in a study on quality of life and blood pressure control in hypertensive patients in Turkey (n=52). Six nurse researchers were trained to provide the Watson Caring Model in twice-weekly sessions for a total of 15 hours when they made home visits to the patients. Then, the six nurses administered the model once a week by home visits for three months. The activities of the six nurses included sustaining a helping-trusting,

authentic caring relationship, developing the capacity of problem solving about hypertension, teaching about hypertension, self-health for diet, and medicine. The nurses were also supportive of the expression of positive and negative feelings. In the one-group quasi-experimental design, the model had been performed to balance blood pressure and improve quality of life assessed by Rolls Royce Model (42 items, eight subscales, and a 5-point Likert-like scale). Data analysis with independent t-test shows that quality of life increased significantly (t=18.158, p<.01). While both systolic and diastolic blood pressure in patients with hypertension also decreased significantly for three months (systolic: t=4.83, p<.001); diastolic: t=3.51, p=.001) at pre and post evaluation (Erci et al., 2003). The current study also attempted to apply the Human Caring Theory by applying transpersonal-caring relationship and five carative factors including faith-hope, helping-trusting, caring relationship and the expression of feelings, transpersonal teaching learning, and supportive, protective, or corrective mental, and spiritual environment (Watson, 1988) into the NBI-IIR, which also composed of SEFT short version and Zikr therapy, which was expected to reduce anxiety and enhance perceived control in patients with AMI. The transpersonal-caring relationship and five carative factors were involved in introduction, working, closing phase as integrated with SEFT short version and Zikr therapy.

In conclusion, nursing interventions based on transpersonal caring relationship and carative factors of the Theory of Human Caring produced positive outcomes in reducing anxiety in hospitalized patients, cancer patients, and balancing blood pressure in patients with hypertension. Therefore, this study applied transpersonal-caring relationship and five carative factors to develop the NBI-IIR to reduce

perceived anxiety, objective responses to anxiety (blood pressure, heart rate, respiratory rate) and perceived control in patients with AMI.

Summary of Literature Review

To summarize the literature review, it was found that patients with AMI suffer from anxiety due to lack of perceived control. Anxiety level peaks at 12 hours, then remains stable on the second day after admission and increased again on the day of discharge. In order to reduce anxiety, perceived control should be studied as it has a negative relationship with anxiety. Various holistic interventions in patients with AMI including music therapy, talking technique, and guided imagery have been applied to reduce anxiety. However, these interventions take time and patients interact in a passive manner. Holistic intervention with active nurse-patient interaction is required to reduce anxiety and enhance perceived control. The Nursing-Based Intervention Integrating Islamic Relaxation is the integration of SEFT, Zikr therapy, and the Theory of Human Caring. Anxiety and perceived control in patients with AMI can be assessed by both subjective and objective measures. Several instruments are used to assess anxiety, but only some are applicable for patients with AMI during the critical and discharge phases. The NRS-A is then selected to assess anxiety and validate by objective measures e.g. blood pressure, heart rate, and respiratory rate. The ACQ-15 version is selected for measuring perceived control.

CHAPTER 3

RESEARCH METHODOLOGY

This chapter presents research methodology including research design, variables, setting, population, sample, instrumentation, intervention, ethical issues, data collection procedure, and data analysis. This study is a randomized controlled trial design and the researcher controlled and managed threats to internal, external, statistical, and constructed validity.

Research Design

A randomized controlled trial, two-group, pre-post test, and repeated measures design was conducted to compare the effects of the NBI-IIR on anxiety and perceived control in Indonesian Muslim patients with AMI admitted from 12 hours after admission to discharge from the ICCU. Perceived anxiety and objective responses to anxiety (blood pressure, heart rate, respiratory rate) and perceived control were measured on two consecutive days and on discharge day as shown in Figure 3.

Group	Variable	12 hours			24 hours			48 hours			Discharge		
		T1		T2	T3		T4	T5		T6	T7		T8
Relaxation	Anxiety	A1	X	A2	A3	X	A4	A5	X	A6	A7	X	A8
	ACQ	C1								C2			C3
	T-Anxiety	T											
Control	Anxiety	A1		A2	A3		A4	A5		A6	A7		A8
	ACQ	C1								C2			C3
	T-Anxiety	T											

Note. T1- 8 = Time 1 – 8; A1 - 8 = NRS-Anxiety, blood pressure, heart rate, and respiratory rate; C1 - 3 = Self-report of perceived control by the Anxiety Control Questionnaire (ACQ); T = Self-report of trait anxiety by the T-Anxiety Scale; X = Intervention of the Nursing-Based Intervention Integrating Islamic Relaxation

Figure 3

Research Design of the Nursing-Based Intervention Integrating Islamic Relaxation on Anxiety and Perceived Control

Variables

The study variables consisted of independent, dependent, and controlled variables. The independent variable of this study was the Nursing-Based Intervention Integrating Islamic Relaxation. The dependent variables included perceived anxiety, objective responses to anxiety (blood pressure, heart rate, respiratory rate), and perceived control. The possible confounding variables included gender, marital status, number of admission, anxiolytic drug, and trait anxiety. These variables were controlled by randomization, because they might affect on the intervention process and the study outcomes. The potential confounding variables, such as age, education, occupation, length of stay, and symptoms were treated as covariates in the subsequent statistical analyses, which helped to increase the internal validity.

Research Settings

Two referral hospitals for cardiovascular patients in Central Java, Indonesia, were intentionally selected for the study. The two hospitals had similar equipments and nursing intervention procedures in the ICCU. The first hospital had 4 beds and the second hospital had 12 beds available for cardiovascular patients. The nurse-to-patient ratio was 1:3 at both hospitals. One cardiologist was working for the first hospital and five cardiologists were working at the second hospital. The environmental settings of the ICCU were also similar, and patients were connected to a central monitor that automatically reported the heart rate, respiratory rate, ECG, oxygen saturation and blood pressure. The beds were arranged with curtained separation and some patients in the second hospital were placed in single rooms.

The procedure of admitting patients with AMI in the ICCU included ECG monitoring, intravenous line preparation, and oxygen therapy as well as cardiac biomarker examination. Patients would be connected with electro cardiovascular monitor, while an infusion line would be inserted for thrombolytic therapy and, if necessary, oxygen therapy would be administered as well. Examination of cardiac biomarkers included Troponin I, CKMB as well as blood examination. Standard care of patients with STEMI consisted of administration of streptokinase via intravenous line, followed by infusion therapy and low molecular weight heparin for five consecutive days. Administration of anxiolytic drug was optional. Secondary prevention strategies included beta-blocker, angiotensin concerting enzyme (ACE) inhibitor, aspirin and the administration of cholesterol-lowering drugs. Cardiac biomarkers were also checked again three days later. After completing thrombolytic

therapy for five consecutive days, patients with AMI who demonstrated stable hemodynamic status would be eligible for discharge into general ward. Average length of stay of patients with AMI was 5 days in the ICCU. The discharge procedure in the two hospitals were similar.

Population and Sample

Population

The target population in this study was Muslim patients with AMI who were admitted in the ICCU at the two study hospitals in Central Java, Indonesia. The potential subjects at the first referral hospital from June to December 2010 included 37 Muslim patients with AMI, while at the second referral hospitals 161 Muslim patients with AMI were present from January to July 2011. Therefore, 198 potential subjects were available from both hospitals combined, 67 of whom did not enroll in the study.

Sample size

The study was a hypothesized-tested study, using the repeated measures statistics. In this regard, the power analysis was used to determine the sample size needed to ascertain the desired power in order to ensure the validity of statistical conclusion. To reduce the risk for Type II error, the standard power of .80 was used in this study. The level of significance was used to determine whether the findings reject or accept Hypothesis. The minimal level of significance (α) was set at .05 to reduce the risk for a Type I error. Effect size is a statistical expression of the magnitude of

the relationship among variables. The larger the effect size index is the stronger relationship among variables and the higher ability to detect at statistical significance with small sample size (Polit & Beck, 2008). The sample size was initially calculated based on a *priory* power analysis of this study with the power of .80, medium effect size index (f=.25), the level of significance at α=.05, u=1 and the minimum sample size was determined at 64 per group (Cohen, 1988, p. 384, Table 8.4.4).

The desired sample size were 64 subjects each group. However, the eligible subjects at the first referral hospital and the second referral hospital were limited. Therefore, a *post hoc* power analysis was conducted and a decision was made when the number of subjects exceeded 131 that the relaxation group would include 69 subjects and the control group would include 62 subjects. The findings revealed that the effect size indices of each variable ranged from .29 to .65 and yielded powers ranging from .91 to .99. The effect size indices were calculated from pooled standard deviation, maximum-minimum mean deference of anxiety, MAP, heart rate, respiratory rate, and maximum-minimum mean of perceived control to determine power of the study as shown in Appendix H.

Sampling technique

The inclusion criteria were adults with AMI who were 1) age 30 years-old or older, 2) diagnosed of AMI by cardiologist, 3) Muslim patients who do not usually practice Zikr or SEFT on a regular basis, 4) alert and able to communicate verbally, 5) showing presence of anxiety with a score at least 3 of 10 as assessed by the NRS-A, 6) having a stable clinical condition. Data of subjects who were dropped out, passed

away, incomplete data, delayed recovery being admitted longer than 8 days in the ICCU were handled in the intention to treat analysis.

The researcher recruited eligible subjects who met the criteria for randomization. The eligible subjects were assigned randomly by using the minimized randomization software version 2.01 (Zeller, 1997). After collecting data at baseline, data on gender, marital status, number of admission, anxiolytic drug, and trait anxiety were entered into the minimized randomization program version 2.01 to determine the placement of the subjects. The minimized randomization software helped to balance the effect of potentially confounding variables in randomized controlled trials (Punthmatharith, 2002; Zeller, Good, Anderson, & Zeller, 1997). Therefore, the threat to internal validity decreased.

Controlling confounding variables through this randomization program to assign the subjects into either the relaxation or control group helped increase the internal validity of the study findings.

Instrumentation

The study instruments consisted of 1) experimental instrument and 2) instruments for data collection. In order to ensure the construct validity of the study variables, details are hereby given on the development, implementation, and measurement of the study instruments. Instruments developed in the English language were translated using the back translation technique, followed by content validation and testing their reliability. Details of the instrumentation process are as follow:

Experimental instrument

The Nursing-Based Intervention Integrating Islamic Relaxation (NBI-IIR) was an integrated Islamic relaxation, which combined the short version of SEFT (Zainuddin, 2009), Zikr therapy (Mardiyono et al., 2009; Purwanto & Zulaekah, 2007), transpersonal-caring relationship, and carative factors from the Theory of Human Caring (Watson, 2001). The NBI-IIR mainly consisted of transpersonal-caring relationship, five carative factors, deep acceptance, self-hypnosis, tapping, and Zikr. The five carative factors included faith-hope, helping-trusting, caring relationship and the expression of feelings, transpersonal teaching learning, and supportive, protective, or corrective mental, and spiritual environment (Watson). Caring moment was a moment when nurse and patient developed a valuable relationship to perform the NBI-IIR. Caring moment is also associated with environment in ICCU. Caring moment potentially promoted caring healing when patient performed the NBI-IIR resulting in cognitive structure, meditative moment, reduction of anxiety, and enhancement of perceived control.

The Nursing-Based Intervention Integrating Islamic Relaxation consisted of the following three phases as follows:

1. Introduction phase

    The introduction phase consisted of transpersonal caring relationship, carative factors: helping-trusting and transpersonal teaching learning, and caring moment. The nurse built the trustful relationship and explained the procedure of the NBI-IIR to the patient. The nurse and the patient then developed a valuable

relationship to achieve the nurse-patient connection for possible healing. Patient preparation included lying down, closing the eyes, and opening the hands.

The activities of introduction phases were:

a. Developing the trust relationship to the patient by greeting and asking about patient's progress.

b. Showing the nurse's willingness to care for patients.

c. Explaining the steps of the Nursing-Based Intervention Integrating Islamic Relaxation to the patients and what the patient had to do by stating the self-hypnotic phrase "Even though, I have this anxiety, I deeply and completely accept myself what Allah desires to me" and Zikr or remembrance of Allah (God).

d. Preparing the patient to lie down, instructing the patient to close the eyes and supine the hands.

2. Working phase

The working phase comprised the set up, the tune in, the tapping at the meridian points, and Zikr. The set up composed of building transpersonal caring relationship and carative factors: loving-kindness and respecting humanistic system. The set up included tapping at the karate chop point and self-hypnosis for anxiety. The tune in consisted of developing the transpersonal caring relationship and carative factors: existential spiritual dimensions by praying for recovery. The tune in also included paying attention to and assessing anxiety. The tapping consisted of transpersonal caring relationship and carative factors: supportive, corrective mental and spiritual environment. The tapping procedure also comprised of tapping at meridian points: the top of head, medial eyebrow, side eye, and under eye, under nose, chin, collarbone, and under arm, while simultaneously stating the self-hypnotic

phrase to decrease anxiety. Zikr therapy comprised transpersonal-caring relationship and carative factors: existential spiritual dimensions. The Zikr or remembrance of Allah (God) was provided by reciting "Subhanallah wabihamdihi". Caring moment occurred when nurse-patient interaction to promote caring healing through mind body spirit and environment was conducive to promote caring healing.

The activities of the set up, the tune in, the tapping at the meridian points, and Zikr were implemented as follows:

Set up. The nurse started saying "Bismillahirohmanirokhim" and caring for the patient with respect, tapping at the karate chop point as shown in Figure 4. Meanwhile, the nurse then led the patient to state self-hypnosis, "Even though, I have this anxiety, I deeply and completely accept myself what Allah desires to me."

Tune in. The nurse assessed the patient's anxiety, focusing on anxiety and deep acceptance. The nurse put a hand on the patient's shoulder and encouraged the patient to pray for recovery of her/his disease. The nurse made him self or her self be sensitive to the patient's feeling of anxiety. The nurse then encouraged the patient to be self-confident in dealing with anxiety.

Tapping. The nurse gave full attention on the patient and made him/her calm by putting the nurse's hand on the patient's shoulder, then started tapping at the center of the head, eyebrow, side eye, under eye, under nose, chin, collarbone, and under arm point as seen in Figure 4. At the same time, the nurse encouraged and facilitated the patient to state self-hypnosis, "Even though, I have this anxiety, I deeply and completely accept myself what Allah desires to me." The short version of SEFT was performed for three rounds taking for approximately 8 minutes.

Zikr. The nurse managed a calm and quiet environment, then facilitated the patient to perform Zikr mainly by remembrance of Allah with reciting "Subhanallah wa bihamdihi" for 12 minutes.

3. Closing phase

The closing phase composed of transpersonal-caring relationship and carative factors: expression of positive feelings and emotions. Closing phase also included breathing relaxation and assessment of anxiety and vital signs.

The activities of closing phase were performed systematically as follows:

a. Allowing the patient end Zikr and open eyes

b. Taking deep breathing and thank to Allah (God) by saying "Alhamdulillah" three times.

c. Encouraging the patient to expresses her/his feeling.

d. Cheering up the patient before leaving.

The Nursing-Based Intervention Integrating Islamic Relaxation took approximately 20 minutes and was performed for four times at 12 hours, 24 hours, 48 hours after admission, and on discharge from the ICCU (Appendix A). The NBI-IIR was also performed daily on the days following discharge from the ICCU. The researcher provided the protocol of the NBI-IIR to be performed in the general ward or at home. The nurse-patient interaction helped to create transpersonal caring relationships with one another, managed environment in the ICCU to achieve at spiritual level, and promoted possible healing through mind-body-spirit i.e. psychological, physiological, and spiritual healing.
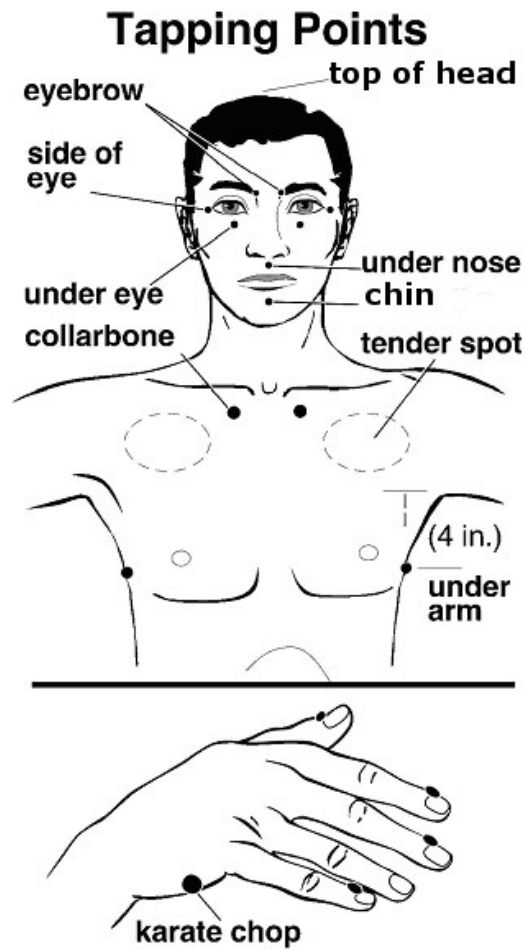
Figure 4

Meridian Points of SEFT Short Version Adopted from Intuitive Therapy Solutions

(Stuart, 2007)

Instruments for data collection

The instruments used in this study included 1) background data and 2) dependent variables data as follows:

    1. Demographic Data Questionnaire (DDQ)

The Demographic Data Questionnaire consisted of two sections. The first section included age, gender, education, occupation, marital status, and number

of admission. The second section comprised of current symptoms, anxiolytic drug, and length of stay in ICCU (Appendix B).

2. Trait Anxiety Scale (T-Anxiety Scale)

The T-Anxiety scale, developed by Spielberger, Gorsuch, Lushene, Vaag, and Jacobs (1983) consisted of 20 items aimed to measure trait anxiety as individual characteristics or to assess stable individual characteristics in anxiety-proneness in term of how the subject perceived stressful situations. The T-Anxiety scale is a 4-point Likert-like scale which measured with the score of 1 = almost never, 2 = sometimes, 3 = often, and 4 = almost always. Eleven items on the T-Anxiety scale measured the presence of anxiety, with the rating of 4 indicating the presence of high anxiety. Nine items on the T-Anxiety scale, i.e. item no. 1, 3, 6, 7, 10, 13, 14, 16, and 19, measured the absence of anxiety with the rating of 4 indicating the absence of anxiety, thus the scoring weights for the nine items were reversed from 1, 2, 3, 4 to 4, 3, 2, 1, respectively. The total scores of the T-Anxiety Scale were classified into three levels, 20-39 = low anxiety, 40-59 = moderate anxiety, and 60-80 = high anxiety.

3. Numerical Rating Scale-Anxiety (NRS-A)

The NRS, adopted from De Jong, An, McKinley, Garvin, Hall, and Moser (2005), was used to measure anxiety before and after the intervention. The scale consisted of 10 horizontal lines, in which 0 referred to no anxiety and 10 referred to the highest level of anxiety (Appendix C). Subjects rated their own level of anxiety by making a vertical mark across at the point that represented their anxiety level.

4. Objective Measure Form (OMF)

The OMF was used for recording objective measures i.e. blood pressure, heart rate, and respiratory rate before and after intervention of the Nursing-Based Intervention Integrating Islamic Relaxation (Appendix D). The digital dynamic equipments for measuring blood pressure, heart rate, and respiratory rate was calibrated monthly by the technician. Blood pressure was presented by Mean Arterial Pressure (MAP), calculated with the following formula:

MAP = [Systolic Pressure + (2*Diastolic Pressure)] / 3.

5. Anxiety Control Questionnaire (the ACQ-15 Indonesian version)

The ACQ originally consisted of 30 items, divided into two subscales: 16 items on the external event factors (labeled events) and 14 items on the internal emotional reaction factors (labeled reactions). The scale of each item in the ACQ ranged from 0 to 5: 0 means strongly disagree, 1 means moderate disagree, 2 means slightly disagree, 3 means slightly agree, 4 means moderate agree, and 5 means strongly agree. The ACQ was a measure for assessing the perceived control. The total score of the ACQ ranged from 30 to 150. Brown, White, Forsyth, and Barlow (2004) reanalyzed the ACQ and developed the ACQ-15 questionnaire. The scale consisted of 15 items, each rated on a 6-point Likert-like scale. The responses range from 0 to 5, 0 means strongly disagree and 5 means strongly agree (Appendix E). The scoring weights for the eleven items of the ACQ-15 Indonesian version including item no. 1, 2, 3, 4, 7, 8, 9, 11, 12, 14, and 15 were reversed from 0, 1, 2, 3, 4, 5 to 5, 4, 3, 2, 1, 0, respectively. The total score ranged from 0 to 75 and could be classified into three levels: 0-25 = low anxiety control, 26-50 = moderate anxiety control, and 51-75 = high anxiety control.

Translation of instruments and intervention guideline

The guideline of intervention program, the Demographic Data Questionnaire, the Trait Anxiety Scale, the ACQ-15 version, and the Objective Measure Form were translated with back-translation from the English language in three phases. First of all, the first bilingual translator translated the ACQ-15 from English to Indonesian. Secondly, the second bilingual translator independently translated the Indonesian version back into English version. Thirdly, the original questionnaire and the English back translated questionnaire were evaluated by an English expert for discrepancies (Carlson, 2000; World Health Organization, 2006). The researcher revised the Indonesian version based on the experts' suggestions.

Validity and reliability

Validity. Five experts evaluated the content validity of the Nursing-Based Intervention Integrating Islamic Relaxation. They included an expert in caring concept, psychiatric nursing, critical care nursing, relaxation with SEFT, and Zikr. The experts validated the accuracy, language, and cultural appropriateness of the T-Anxiety Scale, the NRS-anxiety, and the ACQ-15, and the Nursing-Based Intervention Integrating Islamic Relaxation. The researcher then revised the Nursing-Based Intervention Integrating Islamic Relaxation based on the comments and suggestions of the experts. For the introduction and closing phases, measurements of anxiety, blood pressure, heart rate, and respiratory rate were excluded from the procedure of the Nursing-Based Intervention Integrating Islamic Relaxation. In the working phase, the researcher would start tapping at meridian points while the subject stated "bismilahirohmanirohiim". Tapping under the nipple was omitted given in

consideration of the bottoms of ECG monitor. The researcher conducted a pilot study to ensure the feasibility of the Nursing-Based Intervention Integrating Islamic Relaxation in clinical settings.

Reliability. The reliability of the questionnaires was reported in the previous studies. The Cronbach's alpha coefficient for the T-Anxiety Scale was .91 (Collins & Rice, 1997). The reliability of the T-Anxiety Scale Indonesian version in patients with AMI was .81. The reliability of the ACQ-15 version for domains of stress control, emotional control, and threat control was .73, .73, and .71, respectively (Brown et al., 2004). The ACQ-15 Indonesian version in patients with AMI was tested with the Cronbach's alpha yielded the values of.81 in the pilot phase and .76 in the completed study at 12 hours after admission, .82 at the 48 hours, and .80 on discharge from the ICCU.

Stability of the NRS-anxiety tested and re-tested in with 20 patients with AMI. The NRS-anxiety was administered twice 15 minutes apart and correlational coefficient for the NRS-A was .99. The correlation coefficients of the NRS-A were .96 at the 12 hours, .94 at the 24 hours, .93 at the 48 hours after admission, and .95 on discharge from the ICCU.

Ethical Consideration

Human right protection was sought from the Institutional Review Board (IRB), Faculty of Nursing, Prince of Songkla University, Thailand, and Hospital Institutional Research Board (HIRB) of the two-referral hospitals in Central Java and University of Gajah Mada, Jogjakarta, Indonesia. Permission was also obtained from

the head nurses before recruiting the subjects. Information was provided to the patient

through the informed consent form (Appendix F). If the patient agreed to participate

in this study, then written consent would be obtained. There were two proxy informed

consents signed by caregivers instead of the verbal agreement of subjects. The

patients were informed that they had the right to withdraw from the study at any time

without disadvantages. If the patient developed any physiological problems, such as

shortness of breath and chest pain during the intervention and data collection, the

activities would be discontinued and proper assistance would be sought. The patients'

information was kept confidential and anonymity was maintained. All of the collected

data were used only for this study.

Routine Care

Subjects in both the relaxation and control group received the same routine

care from the nurses in the units. The routine nursing care for the ICCU patients with

AMI included visit, providing health education, psychological support, and family

support by allowing the family to accompany or visit the patients at the lunchtime and

in the evening.

Data Collection Procedure

Data collection procedures were divided into two phases: preparation phase

and intervention phase. Preparation phase included seeking permission from the head

nurses, recruitment of research assistants, and recruitment of the subjects. Intervention phase incorporated the experimental protocol.

Preparation phase

1. After obtaining permission from the directors of the hospital and the head nurses, the researcher recruited research assistants who were earning the Bachelor of Nursing degree at each hospital. A technical meeting with the research assistants was held to explain the research study, the subject recruitment, and the process of data collection (what and when to collect, and how to record the data).

2. Three research assistants worked at the first hospital and three research assistants worked at the second hospital, mostly on data collection. The researcher explained to the research assistants how to administer the Demographic Data Questionnaire, the T-Anxiety Scale, the ACQ-15 Indonesian version, collect anxiety data, and measure blood pressure, heart rate, and respiratory rate at time points in the relaxation and control group.

3. A pilot study was conducted with 20 subjects who had the same characteristics as the actual study samples to ensure the administration of the Nursing-Based Intervention Integrating Islamic Relaxation, check face validity and analyze internal validity of the NRS-anxiety, the T-anxiety scale Indonesian version, and the ACQ-15 Indonesian version. Before and after the intervention, data on anxiety, blood pressure, heart rate, respiratory rate, and perceived control were monitored. The Nursing-Based Intervention Integrating Islamic Relaxation program was then revised as necessary. Subjects preferred to state Zikr or remembrance of Allah "Subhanallah wa bihamdihi" to "Subhanallah…" Short version of SEFT took 8 minutes to

administer and Zikr commonly took for 12 minutes. The Nursing-Based Intervention Integrating Islamic Relaxation required 20 minutes per session.

Intervention phase

Figure 5 described data collection in the relaxation group at 12 hours. The research assistants delivered the Demographic Data Questionnaire, T-Anxiety, and the ACQ-15 version and measured the anxiety level of AMI patients by the NRS-A and recorded the blood pressure, heart rate, and respiratory rate at the baseline or 12 hours after admission. The researcher performed the Nursing-Based Intervention Integrating Islamic Relaxation program for 20 minutes to subjects in the relaxation group. Then, the research assistants assessed anxiety, blood pressure, heart rate, and respiratory rate posttest at 12 hours, pre-post test at 24 hours, pre-post test at 48 hours and pre-post test on discharge from the ICCU. In particular, the ACQ-15 Indonesian version was collected posttest at 48 hours and posttest on discharge from the ICCU.

In the control group, similar data collection procedures were performed. Research assistants collected data on blood pressure, heart rate, and respiratory rate at 12 hours, 24 hours, and 48 hours after admission and upon discharge from the ICCU to lessen the threat of experimenter bias.

Data Analysis

Data screening and cleaning

Data were screened for completeness and accuracy. Coding was prepared for demographic information on group, gender, education, occupation, marital status,

symptoms, and anxiolytic drug before entering the data into the SPSS program. Data on anxiety level, blood pressure, heart rate, respiratory rate and perceived control were entered daily at each time point. The data were initially checked for missing values, out-of-range data, and data accuracy with descriptive statistics.

Preliminary data analysis

Univariate assumptions of dependent variable data were analyzed for normality and homogeneity of variance. Sub-variables were created for pretest and posttest scores on anxiety, blood pressure, heart rate, and respiratory rate. Histogram, skewness, and kurtosis, stem and leaf plot, normal probability plot for main and sub variables in each group were performed to test for normality. For skewness and kurtosis statistics, some data showed skewness and kurtosis with magnitudes of greater than 2. Transformation of the skewed data was performed by square root for moderately skewed data or converting the scale from normal to log-10 data that were substantially different from normal in order to achieve normality (Tabachnick & Fidell, 2001). As most of the transformed data did not meet normality assumption, non-parametric statistics were then used for statistical analysis.

Descriptive analysis

Descriptive statistics were used to analyze demographic variable. Age, T-Anxiety score, and all dependent variables were analyzed for mean and standard deviation. The categorical data were presented by frequency and percentage including categorical age categories, gender, educational level, occupation, marital status, number of admission, symptoms, anxiolytic drug, and length of stay in ICCU.

Inferential data analysis

Non-parametric test included the Mann-Whitney U test, Repeated measures Friedman test, and Wilcoxon matched pair, signed rank test. The hypotheses were tested as follows:

Test of Hypothesis 1. Mann Whitney U test was used to compare the differences in medians of perceived anxiety and objective responses to anxiety (MAP, heart rate, and respiratory rate) at 12 hours, 24 hours, 48 hours after admission, and on discharge from the ICCU between the relaxation group and the control group.

Test of Hypothesis 2. Mann Whitney U test was used to compare the median scores of perceived control at the 12 hours, 48 hours after admission, and on discharge from the ICCU between the relaxation and control group.

Test of Hypothesis 3. Repeated measures Friedman test was used for testing the differences in medians of perceived anxiety and objective responses to anxiety (MAP, heart rate, and respiratory rate) at 12 hours, 24 hours, 48 hours after admission, and on discharge from the ICCU within the relaxation and control group. Wilcoxon matched pair, signed rank test was also used to compare the medians of perceived anxiety and objective responses to anxiety (MAP, heart rate, and respiratory rate) at pre test and post test (T1-T8) in the relaxation or control group.

Test of Hypothesis 4. Repeated measures Friedman test was used to analyze the median scores of perceived control at the 12 hours after admission /baseline, 48 hours and on discharge from the ICCU within the relaxation group and the control group. Wilcoxon matched pair, signed rank test was used to compare the median scores of perceived control at the baseline, 48 hours after admission, and on discharge from the ICCU in the relaxation or control group.

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                    ┌─────────────────────────┐
                    │  T-Anxiety Scale, NRS-  │
                    │    A, ACQ, BP, HR, RR   │
                    └─────────────────────────┘
```

                              Time 1

| NBI-IIR | Baseline | Routine care |

                              Time 2

| NRS-A, BP, HR, RR | ← 12 hours → | NRS-A, BP, HR, RR |

                              Time 3

| NRS-A, BP, HR, RR | ← 24 hours → | NRS-A, BP, HR, RR |

| NBI-IIR | | Routine care |

                              Time 4

| NRS-A, BP, HR, RR | ← 24 hours → | NRS-A, BP, HR, RR |

                              Time 5

| NRS-A, BP, HR, RR | ← 48 hours → | NRS-A, BP, HR, RR |

| NBI-IIR | | Routine care |

                              Time 6

| NRS-A, ACQ, BP, HR, RR | ← 48 hours → | NRS-A, ACQ, BP, HR, RR |

                              Time 7

| NRS-A, BP, HR, RR | ← Discharge → | NRS, BP, HR, RR |

| NBI-IIR | | Routine care |

                              Time 8

| NRS-A, ACQ, BP, HR, RR | ← Discharge → | NRS-A, ACQ, BP, HR, RR |
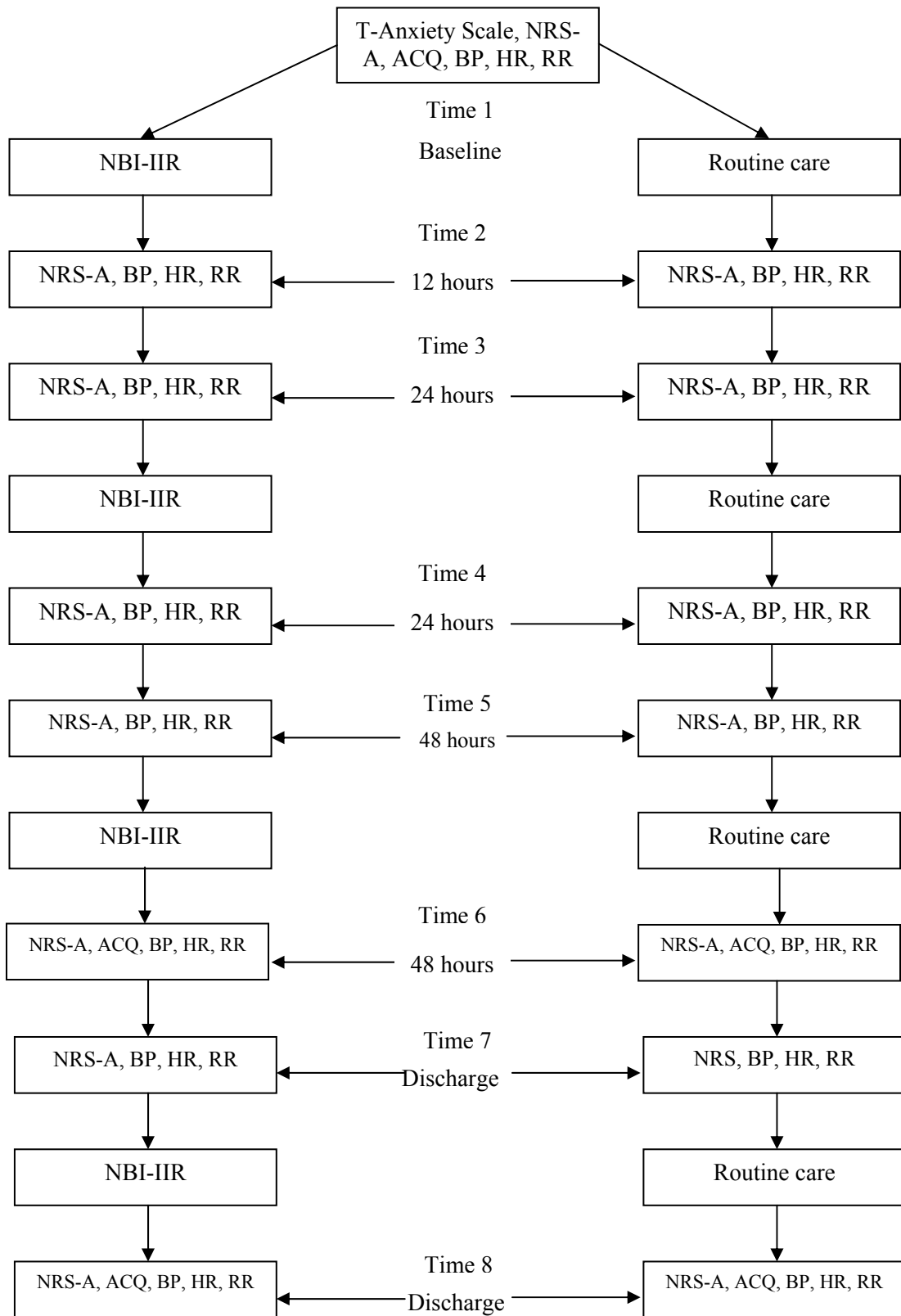
Figure 5

Data Collection in the Relaxation and Control Group

Controlling Threats to Validity

This study was a randomized controlled trial, two-group, pre-post test, and repeated measures designs using the intention-to-treat analysis to lessen the threats to internal validity. The possible confounding variables, gender, marital status, number of admission, anxiolytic drug, and trait anxiety were controlled by the minimized randomization program version 2.01 (Zeller, 1997). Even though the data had non-normal distribution and non-parametric statistical analyses were conducted, the powers of the study ranged .91 to .99 as well as the effect size indices of anxiety and perceived control ranged from .29 to .65. The findings were statistically significant.

This study may encounter a significant attrition rate at 16% mainly caused by drop out, death (T7-T8), and excluded data on discharge from the ICCU. Thus, the researcher attempted to follow up the subjects who stayed in the ICCU. Missing data were handled by median imputation and method of last-observation-carried-forward (LOCF) imputation (Unnebrink & Windeler, 2001). The researcher attempted to handle missing values by median imputation on anxiety, objective responses to anxiety, and perceived control for the subject having incomplete data. The last-observation-carried-forward (LOCF) imputation method was used for subjects who dropped out or died. The scores for anxiety and objective responses to anxiety at T7 and T8 were imputed from those at T5 and T6, while the scores of perceived control at T8 were imputed from those at T6. To achieve the intention-to-treat (ITT) principle, subjects were enrolled at randomization and all data were accounted for the intention-to-treat analysis (n=131). This study was a modified ITT.

The study might have threat of history bias. This threat occurred due to the NBI-IIR was performed for 20 minutes in patients with AMI and the data on anxiety were collected by the research assistants at pre test and post test time points from T1 to T8. The ACQ-15 Indonesian version was self-reported by subjects at the 12 hours, 24 hours, and on discharge day. Randomized assignment and research assistants for data collection might have to lessen this threat.

As the study might encounter threat of imitation of treatment, the researcher informed the research assistants and nursing staffs not to teach the subjects or discuss about the Nursing-Based Intervention Integrating Islamic Relaxation in the control group. Even though most subjects stayed in the same large ward, subjects in the control group were placed next to subjects in the relaxation group with cloth separation. The researcher also requested the subjects in the relaxation group not to share the information of the Nursing–Based Intervention Integrating Islamic Relaxation to subjects in the control group.

CHAPTER 4

RESULT AND DISCUSSION

This chapter presents of the results of the study and discussion. The results are divided into two sections: demographic characteristics and studied variables. Discussion is then focused on major findings from studied variables and the original hypotheses of the study.

Results

Demographic characteristics

The process of randomization of the study subjects is presented in Figure 6. There was a 16% attrition of the subjects due to dropping out and incomplete data. Some subjects dropped out after the third day because they reported feeling well and asked for early discharge from the ICCU, while a few others passed away. Subjects who were admitted to the ICCU for more than 8 days and those with incomplete data were subsequently excluded. One subject followed the Nursing-Based Intervention Integrating Islamic Relaxation, but did not complete the perceived control questionnaire (T6, T8). To maintain intention to treat principle, data from subjects enrolled to randomization were analyzed.

Demographic characteristics of this study are summarized in Table 2. The subjects' age ranged from 34 to 80 years old (Mean = 58.3 years, SD=9.61 years). More than half of the subjects were in the productive age (34-59 years). 71.8% of the subjects were male with AMI and more than a half of the subjects (58%) completed

the senior high school. Occupations of the subjects varied and included the retired/unemployed (38.2%), followed by employees and entrepreneurs (19.8% and 19.1%, respectively). Almost all subjects were married (95.4%) and firstly admitted in the ICCU due to AMI attack (93.9%). For anxiety medication taken at the time of survey, only 37.4% of the subjects were administered with Alprazollam 0.5 mg. The symptoms developed at initial assessment were mainly chest pain with prodromal symptoms, such as dyspnea, and fatigue and few subjects indicated severe AMI with prodromal symptoms and abdominal pain. More than half of the subjects were admitted in the ICCU for 5 days. Using chi-square test for categorical variables, no significant differences were found on age, gender, education, occupation, marital status, admission, anxiolytic drug, symptoms, and length of stay in the ICCU between the relaxation and control group (p>.05).

Trait anxiety

The trait anxiety was collected at baseline. The scores of trait anxiety in the relaxation group ranged from 30 to 63 and the scores in the control group similarly ranged from 32 to 64. The median scores were 44 in the relaxation group and 45 in the control group, so the levels of trait anxiety in both groups were classified at moderate level. As collected at baseline or before the implementation of the Nursing-Based Intervention Integrating Islamic Relaxation, no significant differences of the trait anxiety scores were found between the relaxation and control group (p>.05). It can be concluded that there was no potential confounding variable of trait anxiety in this study.

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                    ┌─────────────────────┐
                    │   Eligible subjects  │
                    │      (n=131)         │
                    └─────────────────────┘
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| Relaxation group T1-T6 (n=69) | Control group T1-T6 (n=62) |

| Discharge the 3rd day (n=4) Death (n=1) | | Discharge the 3rd day (n=1) Death (n=1) |

| Relaxation group T7-T8 (n=64) | Control group T7-T8 (n=60) |

| Admit >8 days (n=7) Incomplete (n=2) | | Admit >8 days (n=4) Miss (n=1) |

| Original (n=55) Intention to treat analysis (n=69) | Original (n=55) Intention to treat analysis (n=62) |
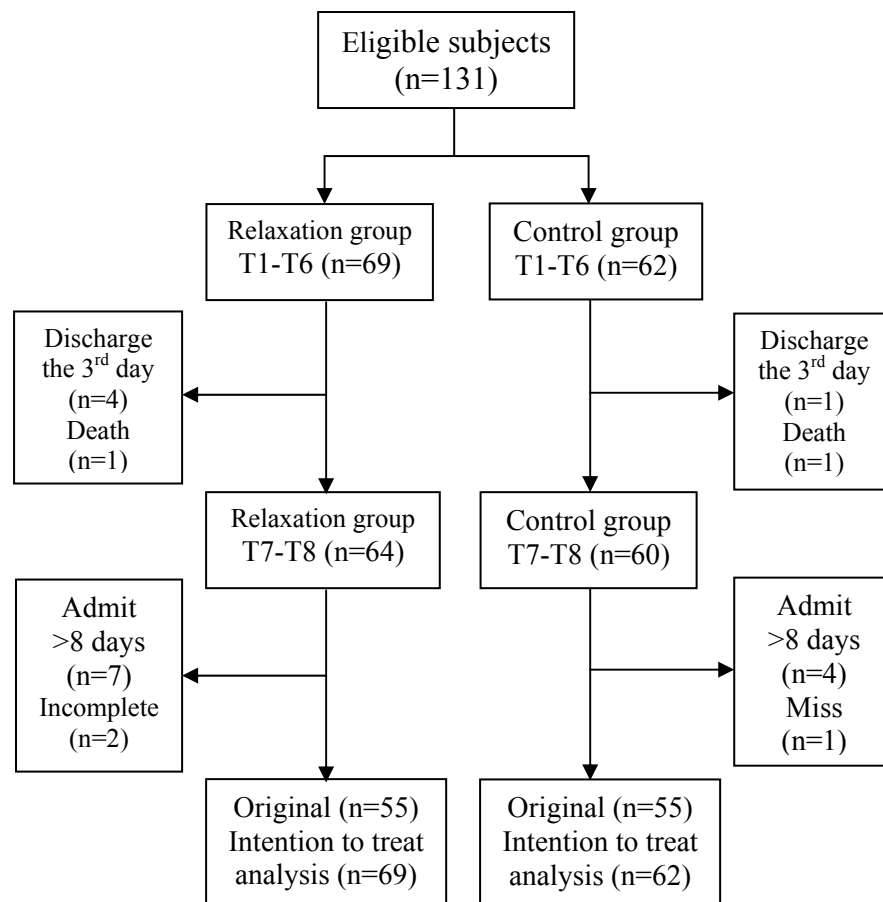
Figure 6

Flow Diagram of the Progress through the Phases of Randomized Trial of the

Relaxation and Control Group

Table 2

Frequency, Percentage, Mean, and SD of the Subjects' Characteristics

Variables	Relaxation group n=69		Control group n=62		Total	%	χ^2	p
	n	%	n	%				
Age (M=58.3, SD=9.61)								
34-59 years old	35	50.7	39	62.9	74	56.5	1.97	.16
60-80 years old	34	49.3	23	37.1	57	43.5		

Table 2 (continued)

Variable	Relaxation group n=69		Control group n=62		Total	%	χ^2	p
	n	%	n	%				
Gender								
Male	48	69.6	46	74.2	94	71.8	.35	.56
Female	21	30.4	16	25.8	37	28.2		
Education								
Elementary	4	5.8	4	6.5	8	6.1	2.49	.65
Junior high school	5	7.2	3	4.8	8	6.1		
Senior high school	36	52.2	40	64.5	76	58.0		
Bachelor	20	29.0	12	19.4	32	24.4		
Master	4	5.8	3	4.8	7	5.3		
Occupation								
Retired/unemployee	29	42.0	21	33.9	50	38.2	6.83	.34
Employee	12	17.4	14	22.6	26	19.8		
Entrepreneurship	12	17.4	13	21.0	25	19.1		
Farmer	10	14.5	4	6.5	14	10.7		
Teacher/lecturer	2	2.9	6	9.7	8	6.1		
Police/soldier	4	5.8	4	6.5	8	6.1		
Marital status								
Married	66	95.7	59	95.2	125	95.4	.02	.89
Widow/widower	3	4.3	3	4.8	6	4.6		
Admission								
First	65	94.2	58	93.5	123	93.9	.02	.88
Second	4	5.8	4	6.5	8	6.1		
Anxiolytic drug								
No drug	43	62.3	39	62.9	82	62.6	.01	.95
Alprazollam 0.5 mg	26	37.7	23	27.1	49	37.4		
Symptom								
Chest pain	2	2.9	2	3.2	4	3.1	.24	.99
Chest pain & dyspnea	22	31.9	21	33.9	43	32.8		
Chest pain & fatigue	25	36.2	20	32.3	45	34.4		
Chest pain, dyspnea, & fatigue	17	24.6	16	25.8	33	25.2		
Chest pain, dyspnea, fatigue & abd. pain	3	4.3	3	4.8	6	4.6		
Length of stay in ICCU (M=5.64, SD=1.39)								
3-4 days	4	5.8	1	1.6	5	3.8	1.75	.42
5-6 days	57	82.6	55	88.7	112	85.5		
> 6 days	8	11.6	6	9.7	14	10.7		

Table 3

Comparison of the Median Scores and the Differences in Medians of Anxiety, MAP, Heart Rate, Respiratory Rate, and Perceived Control

between Relaxation and Control Group

Variable		12 hours				24 hours				48 hours				Discharge from the ICCU			
		relaxation (n=69)		control (n=62)		relaxation (n=69)		control (n=62)		relaxation (n=69)		control (n=62)		relaxation (n=69)		control (n=62)	
		T1	T2	T1	T2	T3	T4	T3	T4	T5	T6	T5	T6	T7	T8	T7	T8
Anxiety	Median	5.2	5.0	5.2	5.0	5.0	4.7	5.0	4.8	4.5	4.3	4.7	4.7	4.00	3.7	4.5	4.3
	DMdn	.20		.10		.20		.20		.20		.15		.20		.20	
MAP	Median	97.0	93.7	96.0	96.2	97.3	94.0	94.3	95.3	95.7	93.7	93.5	93.7	96.0	94.3	95.3	96.0
	DMdn	4.33		2.17		3.33		3.17		2.00		2.67		2.00		2.67	
HR	Median	84	81	82.5	82	83	78	80	79	82	79	80	79	82	79	81	80
	DMdn	3.0		3.0		4.0		4.0		3.0		3.5		3.0		2.0	
RR	Median	21	20	21	21	21	20	20	20	20	19	20	20	20	19	20	20
	DMdn	1		1		2		1		1		1		1		1	
ACQ	Median	39		39						41		39		44		42	

Note. DMdn= Difference in median

Studied Variables

Anxiety

The median scores of anxiety at each time point are reported in Table 3. Comparisons of anxiety and objective responses to anxiety between groups were described in the following section. Mann-Whitney U test was conducted to evaluate Hypothesis 1, which stated that the differences in medians of anxiety level at 12 hours, 24 hours, 48 hours after admission, and on discharge from the ICCU in the relaxation group are higher than those of the control group. The findings of the test were significant. As expected the differences in medians of anxiety in the relaxation group were higher than those of the control group at 12 hours after admission (U=1131, p<.05), 24 hours (U=1115, p<.01), 48 hours (U=575, p<.001), and on discharge (U=571, p<.001) as shown in Table 4. Although the findings were statistically significant, the differences in medians of anxiety ranged from .10 to .20.

Table 4

Comparison of the Differences in Medians of Anxiety at 12 hours, 24 hours, 48 hours after Admission and on Discharge between the Relaxation and Control Group

	Relaxation group			Control group			Mann-Whitney U test
Anxiety	n=69			n=62			
	DMdn	MR	SR	DMdn	MR	SR	
12 hours	.20	74.22	5121	.10	56.85	3525	1572**
24 hours	.20	71.91	4962	.20	59.42	3684	1731*
48 hours	.20	82.88	5719	.15	47.21	2927	974***
Discharge	.20	83.07	5731	.10	47.01	2914	961***

Note. DMdn = Difference in median; MR = Mean rank; SR = Sum of rank
 * p<.05; ** p<.01; *** p<.001

Figure 7 shows the median scores of anxiety at each time point between the relaxation and control group. These findings may reflect that the Nursing-Based Intervention Integrating Islamic Relaxation performed over 12 hours, 24 hours, 48 hours after admission, and on discharge was significantly effective in reducing anxiety in patients with AMI. Therefore, Hypothesis 1 was supported with regard to anxiety level.
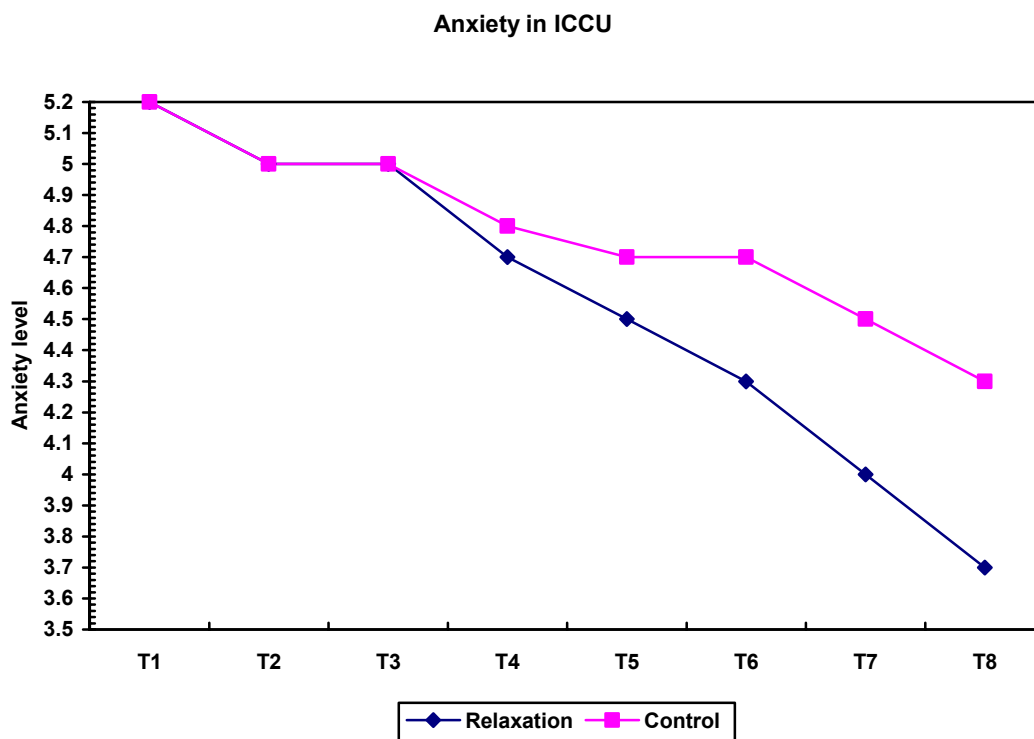
Anxiety in ICCU

Figure 7

The Median Scores of Anxiety at the 12 hours, 24 hours, 48 hours after Admission, and on Discharge from the ICCU between the Relaxation and Control Group

Objective responses to anxiety, i.e. blood pressure, heart rate, and respiratory rate, were also measured and presented as follow:

Blood pressure

Blood pressure was presented by Mean Arterial Pressure (MAP) in Table 3. Mann-Whitney U test was performed to evaluate the Hypothesis 1, which stated that the median differences of blood pressure at 12 hours, 24 hours, and 48 hours after admission, and on discharge from the ICCU in the relaxation group would be higher than those of the control group. The median difference of MAP at 12 hours after admission in the relaxation group was significantly higher than that of the control group. However, the median difference on discharge from the ICCU in the relaxation group was also significantly lower than that of the control group (p<.05). Therefore, the Hypothesis was only partly supported with regard to objective responses to anxiety.

Table 5

Comparison of the Differences in Medians of MAP at the 12 hours, 24 hours, 48 hours after Admission, and Discharge between the Relaxation and Control Group

MAP	Relaxation group n=69			Control group n=62			Mann-Whitney U test
	DMdn	MR	SR	DMdn	MR	SR	
MAP 12 h	4.33	76.67	5290	2.17	54.13	3356	1.40 E3**
MAP 24 h	3.33	65.04	4487	3.17	67.07	4158	2.07 E3
MAP 48 h	2.00	62.52	4314	2.67	69.87	4332	1.90 E3
MAP discharge	2.00	59.28	4090	2.67	73.48	4555	1.68 E3*

Note. DMdn = Difference in median; MR = Mean rank; SR = Sum of rank
*p < .05. ** p < .01.

Heart rate

The median scores of heart rate are reported in Table 3. Mann-Whitney U test was conducted to evaluate the Hypothesis that the differences in medians of heart rate at the 12 hours, 24 hours, 48 hours after admission, and on discharge from the ICCU in the relaxation group would be higher than those of the control group. Table 6 shows that the differences in medians of heart rate at 48 hours after admission in the relaxation group was statistically lower than that in the control group, (U=1.61E3, p<.05), but the differences in medians at other time points in the relaxation group were not significantly different from the control group. The Hypothesis was not supported with regard to heart rate.

Table 6

Comparison of the Differences in Medians of Heart Rate at 12 hours, 24 hours, 48 hours after Admission, and on Discharge between the Relaxation and Control Group

HR	Relaxation group n=69			Control group n=62			Mann-Whitney U test
	DMdn	MR	SR	DMdn	MR	SR	
HR 12 hour	3.0	66.63	4597	3.0	65.30	4048	2.09 E3
HR 24 hour	4.0	66.20	4567	3.0	65.78	4078	2.13 E3
HR 48 hour	3.0	58.33	4024	3.5	74.54	4621	1.61 E3*
HR discharge	3.0	69.66	4806	2.0	61.93	3839	1.88 E3

Note. DMdn = Difference in median; MR = Mean rank; SR = Sum of rank
* *p* < .05

Respiratory rate

Table 3 reports the medians of respiratory rate. Mann-Whitney U test was conducted to evaluate Hypothesis 1, which stated that the differences in medians of respiratory rate at 12 hours, 24 hours, 48 hours after admission, and on discharge from the ICCU in the relaxation group are higher than those of the control group. The results of the test were significant at 12 hours and 24 hours after admission, (U=1.74E3, p<.05), (U=1.45E3, p<.01, respectively). Table 7 shows that the differences in medians of respiratory rate at 48 hours after admission and on discharge from the ICCU in the relaxation group were similar to those in the control group. Therefore, Hypothesis 1 with regard to respiratory rate was only partly supported.

Table 7

Comparison of the Differences in Medians of Respiratory Rate at 12 hours, 24 hours, 48 hours after Admission, and on Discharge from the ICCU between the Relaxation and Control Group

Respiratory rate	Relaxation group			Control group			Mann-Whitney U test
	n=69			n=62			
	DMdn	MR	SR	DMdn	MR	SR	
RR 12 hours	1	71.67	4945	1	59.69	3701	1.74E3*
RR 24 hours	2	75.96	5241	1	54.92	3405	1.45E3*
RR 48 hours	1	66.19	4567	1	65.79	4079	2.12E3
RR discharge	1	64.89	4477	1	67.23	4168	2.06E3

Note. DMdn = Difference in median; MR = Mean rank; SR = Sum of rank
*p < .05

Perceived control

Table 3 shows the median scores of perceived control at each time point. Mann-Whitney U test was conducted to evaluate Hypothesis 2, which stated that the median scores of perceived control at 12 hours, 48 hours after admission, and on discharge from the ICCU in the relaxation group would be higher than those of the control group. Table 8 shows that the findings were significant at 48 hours after admission (U=1543, p<.01) and on discharge from the ICCU (U=1243, p<.001). Figure 8 also shows the median scores on perceived control in the relaxation and control group. Therefore, Hypothesis 2 was supported with regard to perceived control.
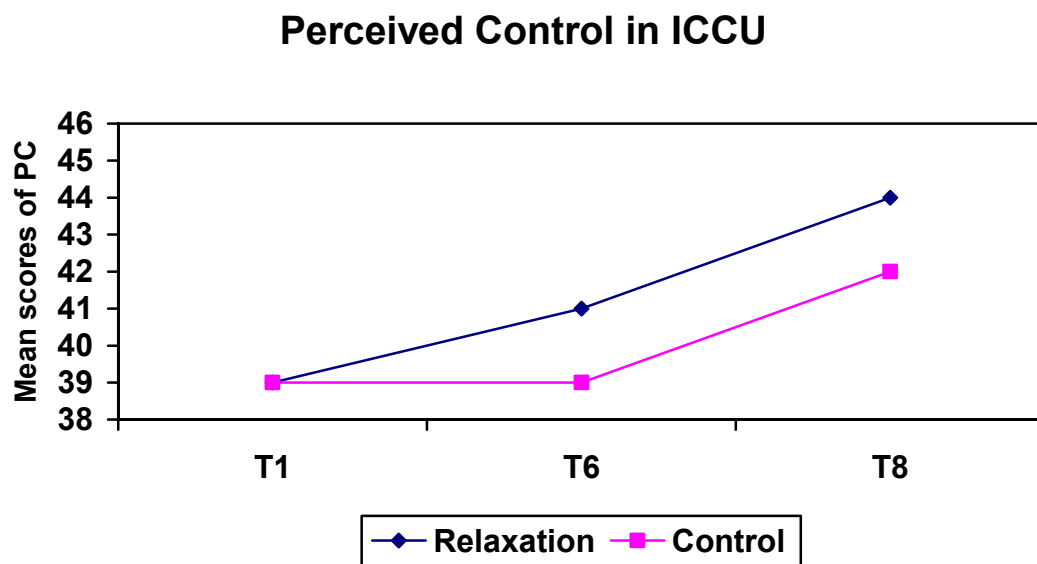
Figure 8

The Median Scores of Perceived Control at the Baseline, 48 hours after Admission

and on Discharge from the ICCU between the Relaxation and Control Group

Table 8

Comparison of the Medians of Perceived Control at the Baseline, 48 hours after Admission, and Discharge from the ICCU between the Relaxation and Control Group

| | Relaxation group | | | Control group | | | Mann-Whitney U test |
| | n=69 | | | n=62 | | | |
	Mdn	MR	SR	Mdn	MR	SR	
T1	39	66.59	4594	39	65.35	4051	2098
T6	41	74.63	5149	39	56.40	3496	1543**
T8	44	78.98	5449	42	51.56	3196	1243***

Note. DMdn = Difference in median; MR = Mean rank; SR = Sum of rank
**$p < .01$. ***$p < .001$

Anxiety

Comparisons of anxiety and objective responses to anxiety within group were presented in the following section. Friedman test was conducted to evaluate the differences in medians of anxiety among time points within the relaxation and control group. There was a significant difference in the relaxation group, ($\chi^2_{(3)}$ = 29.34, p<.001) as shown in Table 9.

Table 9

Comparison of the Differences in Medians of Anxiety at 12 hours, 24 hours, 48 hours after Admission, and on Discharge within the Relaxation and Control Group

Group	df	χ^2	P
Relaxation	3	29.34	.00***
Control	3	.72	.87

*** $p < .001$

Two follow-up pairwise comparisons were conducted by using Wilcoxon matched pair, signed rank test to evaluate Hypothesis 3, which stated that the differences in medians of anxiety at 48 hours after admission in the relaxation group would be higher than those measured at 12 hour, 24 hours after admission, and on discharge from the ICCU. The findings indicated a significant difference, but the difference in medians at 48 hours after admission was similar to that on discharge from the ICCU as shown in Table 10. Therefore, Hypothesis 3 was partly supported with regard to anxiety.

Table 10

Comparison of the Differences in Medians of Anxiety at 12 hours, 24 hours, 48 hours after Admission, and on Discharge from the ICCU in the Relaxation Group

Anxiety		Relaxation group			Wilcoxon signed ranks test
		n=69			
		DMdn	MR	SR	
Anxiety 12h – 24h	12 hours	.20	31.71	1078	-.98
	24 hours	.20	30.11	813	
Anxiety 12h –48h	12 hours	.20	30.85	401	-2.50*
	48 hours	.20	24.34	925	
Anxiety 12h –Discharge	12 hours	.20	30.38	486	-2.59*
	Discharge	.20	27.75	1110	
Anxiety 24h – 48h	24 hours	.20	16.00	160	-4.24***
	48 hours	.20	25.58	921	
Anxiety 24h–Discharge	24 hours	.20	12.43	87	-4.54***
	Discharge	.20	22.76	774	
Anxiety 48h –Discharge	48 hours	.20	18.96	227	-0.73
	Discharge	.20	15.02	300	

Note. DMdn = Difference in median; MR = Mean rank; SR = Sum of rank
*$p < .05$. ***$p < .001$

Blood pressure

Friedman test was conducted to evaluate the differences in medians of blood pressure among 12 hours, 24 hours, 48 hours after admission, and on discharge from the ICCU within the relaxation group and the control group. Table 11 reports that the result in the relaxation group was significant difference ($\chi^2_{(3)}$=28.18, p<.001).

Table 11

Analysis of the Differences in Medians on MAP at 12 hours, 24 hours, 48 hours after Admission, and Discharge from the ICCU within the Relaxation and Control Group

Group	df	χ^2	p
Relaxation	3	28.18	.00***
Control	3	3.66	.30

***p < .001

Wilcoxon matched pair, signed rank test was conducted to evaluate Hypothesis that the differences in medians of blood pressure at 48 hours after admission in the relaxation group are higher than those measured at 12 hour, 24 hours after admission, and on discharge from the ICCU. The findings were significant, except the finding on discharge from the ICCU as presented in Table 12. However, the differences in medians of blood pressure at 48 hours after admission in the relaxation group were lower than those measured at 12 hour, 24 hours after admission, and on discharge from the ICCU. The findings did not support the Hypothesis 3.

Table 12

Comparison of the Differences in Medians of MAP at 12 hours, 24 hours, 48 hours after Admission, and on Discharge from the ICCU in the Relaxation Group

MAP		Relaxation group n=69			Wilcoxon signed ranks test
		DMdn	MR	SR	
MAP 12h – 24h	12 hours	4.33	41.04	1723	-3.37**
	24 hours	3.33	23.94	622	
MAP 12h – 48h	12 hours	4.33	41.10	1931	-4.64***
	48 hours	2.00	19.74	414	
MAP 12h – discharge	12 hours	4.33	39.09	1876	-4.93***
	Discharge	2.00	18.58	334	
MAP 24h – 48h	24 hours	3.33	34.34	1648	-3.19**
	48 hours	2.00	33.13	629	
MAP 24h – discharge	24 hours	3.33	34.35	1511	-2.60**
	Discharge	2.00	31.80	699	
MAP 48h – discharge	48 hours	2.00	34.95	1083	-0.35
	Discharge	2.00	33.18	1194	

Note. DMdn = Difference in median; MR = Mean rank; SR = Sum of rank
**$p < .01$. ***$p < .001$

Heart rate

Friedman test revealed that the differences in medians of heart rate at 12 hours, 24 hours, 48 hours after admission, and on discharge from the ICCU in the relaxation group were significant difference, $\chi^2_{(3)}=32.00$, p<.001 and those of the control group were also obviously different, $\chi^2_{(3)}=33.71$, p<.001 as given in Table 13.

Table 13

Analysis of the Differences in Medians of Heart Rate at 12 hours, 24 hours, 48 hours

after Admission, and on Discharge from the ICCU within the Relaxation and Control

Group

Group	df	χ^2	p
Relaxation	3	32.00	.00***
Control	3	33.71	.00***

***$p < .001$

Wilcoxon matched pair, signed rank test was conducted to evaluate Hypothesis 3, which stated that the differences in medians of heart rate at 48 hours after admission in the relaxation group was higher than those of the 12 hours, 24 hours after admission and discharge from the ICCU. Table 14 shows that the differences in medians of heart rate at 48 hours after admission in the relaxation group was lower than those of the 12 hours, 24 hours after admission. The heart rate at 48 hour in the control group was higher than those of the 12 hours and on discharge from the ICCU. Therefore, Hypothesis 3 of heart rate was not supported.

Table 14

Comparison of the Differences in Medians of Heart Rate at 12 hours, 24 hours, 48 hours after Admission, and on Discharge from the ICCU within the Relaxation and Control Group

Heart rate	Relaxation group n=69			Wilcoxon signed ranks test	Control group n=62			Wilcoxon signed ranks test
	DMdn	MR	SR		DMdn	MR	SR	
HR 12 h –	3.0	32.41	745	-1.81	3.0	22.85	388	-2.76**
24 h	4.0	31.76	1270		4.0	28.27	989	
HR 12 h –	3.0	28.14	1013	-2.35*	3.0	24.53	466	-2.05*
48 h	3.0	26.22	472		3.5	27.64	912	
HR 12 h –	3.0	30.73	1075	-2.23*	3.0	24.18	749	-3.03**
discharge	3.0	24.79	520		2.0	18.50	240	
HR 24 h –	4.0	31.16	1402	-4.26***	4.0	26.70	721	-0.55
48 h	3.0	23.77	309		3.5	25.21	605	
HR 24 h –	4.0	31.30	1533	-4.58***	4.0	29.96	1348	-4.51***
discharge	3.0	26.95	296		2.0	22.55	248	
HR 48 h –	3.0	28.69	774	-0.78	3.5	28.58	1257	-4.13***
discharge	3.0	24.14	603		2.0	25.68	282	

Note. DMdn = Difference in median; MR = Mean rank; SR = Sum of rank
*p < .05. **p < .01. ***p < .001

Respiratory rate

A repeated measure Friedman test determined that the differences in medians of respiratory rate among 12 hours, 24 hours, 48 hours after admission, and on discharge from the ICCU in the relaxation group were significant difference, $\chi^2_{(3)}=$ 11.49, p<.01. There was no statistic difference of those in the control group as given in Table 15.

Table 15

Analysis of the Differences in Medians of Respiratory Rate at 12 hours, 24 hours, 48 hours after Admission, and on Discharge from the ICCU within Groups

Group	df	χ^2	p
Relaxation	3	11.49	.01**
Control	3	3.72	.35

**p < .01

Wilcoxon signed ranks-test revealed in Table 16 that the differences in medians of respiratory rate at 48 hours after admission in the relaxation group were significantly higher than those on discharge from the ICCU. However, the difference in median respiratory rate was similar to those at 12 and 24 hours after admission. Therefore, Hypothesis 3 was only partly supported with regard to respiratory rate.

Table 16

Comparison of the Differences in Medians of Respiratory Rate at 12 hours, 24 hours, 48 hours after Admission, and on Discharge in the Relaxation Group

Respiratory rate		Relaxation group n=69			Wilcoxon signed ranks test
		DMdn	MR	SR	
RR 12h – 24h	12 hours	1	20.83	312	-1.15
	24 hours	2	19.48	467	
RR 12h – 48h	12 hours	1	26.02	624	-0.39
	48 hours	1	22.98	551	
RR 12h – discharge	12 hours	1	22.04	551	-2.34*
	Discharge	1	16.36	229	
RR 24h – 48h	24 hours	2	24.47	734	-1.57
	48 hours	1	24.56	442	
RR 24h – discharge	24 hours	2	22.71	749	-3.48*
	Discharge	1	19.65	196	
RR 48h – Discharge	48 hours	1	24.04	625	-1.96*
	Discharge	1	18.88	321	

Note. DMdn = Difference in median; MR = Mean rank; SR = Sum of rank
*p < .05

Table 17 shows that Friedman test revealed the median scores of perceived control at time point within group were statistically different in the relaxation group, $U=95.27$, p.<001 as well as in the control group, $U=86.77$, p<.001.

Table 17

Analysis of the Median Scores of Perceived Control at 12 hours, 48 hours after Admission, and on Discharge from the ICCU within the Relaxation and Control Group

Group	df	χ^2	p
Relaxation	2	95.27	.00***
Control	2	86.77	.00***

***$p < .001$

Table 18 presents further pair analysis in each group. Wilcoxon matched pair, signed rank test was conducted to evaluate Hypothesis 4, which stated that the median scores of perceived control on discharge from the ICCU in the relaxation group were significantly higher than the median scores at 12 hours and 48 hour after admission. The findings were significant, p<.001. Therefore, Hypothesis 4 was supported, and the pattern in the relaxation group was similar to that in the control group.

Table 18

Comparison of the Median Scores of Perceived Control at 12 hours, 48 hours, and

Discharge from the ICCU within the Relaxation and Control Group

Perceived control	Relaxation group			Wilcoxon signed ranks test	Control group			Wilcoxon signed ranks test
	n=69				n=62			
	Mdn	MR	SR		Mdn	MR	SR	
T1 –	39	17.17	103	-6.33***	39	3.00	6	-2.43*
T6	41	34.09	1977		39	6.67	60	
T1 –	39	10.00	30	-6.88***	39	36.65	73	-5.95***
T8	44	34.64	2181		42	28.20	1523	
T6 –	41	30.08	180	-5.68***	39	42.52	127	-5.42***
T8	44	32.20	1835		42	27.16	1412	

Note. DMdn = Difference in median; MR = Mean rank; SR = Sum of rank
p < .05. ***p* < .001

Discussion

The main findings of the study are discussed on anxiety and perceived control in Indonesian patients with AMI after administration of the Nursing-Based Intervention Integrating Islamic Relaxation. The discussion also compares the findings with results of the previous studies.

Anxiety

Hypothesis 1 stated that the differences in medians of anxiety, blood pressure, heart rate, and respiratory rate at 12 hours, 24 hours, 48 hours after admission, and on discharge from the ICCU in the relaxation group would be higher than those of the control group. The Hypothesis was supported as shown in Table 4. Focusing on subjective response, the Nursing-Based Intervention Integrating Islamic Relaxation

reduced anxiety at each time point in the relaxation group and the differences in medians of anxiety in the relaxation group were significantly higher than those of the control group. The results can be explained by Figure 7, which shows that the median score of anxiety on discharge day in the relaxation group was significantly lower, by more than half of the fifth day, than those of the 12 hours after admission. The differences in medians of anxiety between pre test and posttest in the relaxation and control group were also significantly different. Table 9 shows that the differences in medians of anxiety over time points in the relaxation group were significantly different ($p<.001$). The findings of this study also determined that the differences in medians of anxiety level at 48 hours after admission and on discharge from the ICCU in the relaxation group were significantly higher that those of the 12 hours and 24 hours after admission ($p<.001$) as shown in Table 10. Hypothesis 3 of anxiety in the relaxation group was thus supported.

The findings of the study reflects that the NBI-IIR was effective in reducing the peak level of anxiety within 12 hours and decreased anxiety steeply from 24 hours to discharge from the ICCU in patients with AMI. Based on conceptual framework of this study, Figure 1 describes that the intervention composing of transpersonal caring relationship, five carative factors, self-hypnosis with deep acceptance, tapping at meridian points and Zikr produced caring healing.

The NBI-IIR was performed after developing an interactive relationship between the nurse and the patient within a short time period, followed by self-hypnosis with deep acceptance to the lessen feeling of tension or threats, tapping to release blockage at meridian points, and Zikr to promote meditative status in order to reduce anxiety. In addition, the NBI-IIR had been administered at 12 hours, 24 hours,

48 hours after admission, then daily on the following days upon discharge from the ICCU. It may also significantly reduce anxiety in patients with AMI during hospitalization in the ICCU, have an effect on objective responses, and significantly improve perceived control from 48 hours after admission to discharge from the ICCU.

Another reason of reduction in anxiety could be the administration of anxiolytic drug. Less than half of subjects received a mild anxiolytic dose with Alprazollam 0.5 mg, once per day in the evening. The drug might have affected on patients' anxiety, which was shown to reduce steadily from 12 hours after admission to discharge from the ICCU. On the other hands, more than half of patients without anxiolytic drug exhibited anxiety at time points between the relaxation and control group. Thus, the NBI-IIR may work to reduce anxiety in patients with AMI during hospitalization in ICCU.

The findings on anxiety between groups in Muslim patients with AMI were statistically significant. The effect size indices of perceived anxiety and objective responses to anxiety ranged from .29 to .36 and the powers of the study ranged from .91 to .99. The NBI-IIR is considered as a short simple spirituality holistic relaxation that is culturally appropriate in Muslim patients with AMI, although it can also be performed in wards and rehabilitation units. The administration of the NBI-IIR also resulted in the differences in medians of anxiety at admission and on discharge ranging from 0.5 to 2.0, which may be meaningful for patients with AMI in ICCU. Nurses, regardless of their belief systems, are allowed to perform the NBI-IIR to Muslim patients with AMI.

This study supports previous studies which applied guided imagery and talking technique for patients with MI within three consecutive days after admission

(Bassampour, 2006), applied progressive muscle relaxation and guided imagery in patients after AMI (Collins & Rice, 1997), and provided music therapy in patients with AMI for three consecutive days (White, 1992; 1999). All of the mentioned previous studies performed the relaxations for three consecutive days. However, this study had provided the NBI-IIR through four to ten consecutive days on discharge from the ICCU. The number of studies reporting relaxation in patients with AMI during hospitalization for ICCU is limited. Relaxation intervention was shown to considerably decrease anxiety, heart rate, and respiratory rate during the three consecutive days of intervention (Bassampour, 2006; Collins & Rice, 1997; White, 1992; 1999). On the other hand, the findings of this study also opposed a previous study which showed that providing advice tape, relaxation tape, or music tape did not reduce anxiety during 24 hours after admission in patients with AMI (Lewin et al., 2002).

The NBI-IIR did not only affect subjective response of anxiety, but also the objective responses to anxiety including blood pressure, heart rate, and respiratory rate. Hypothesis 3 stated that the differences in scores of blood pressure, heart rate, and respiratory rate within the relaxation group at 48 hours after admission would be higher than those measured at 12 hour, 24 hours after admission, and on discharge from the ICCU. The reduction of anxiety in this study was manifested by balancing blood pressure, heart rate, and respiratory rate after administration of the NBI-IIR. Once anxiety in patients with AMI decreased, objective responses to anxiety were also affected. Hypothesis 3 was partly supported by the findings on objective responses to anxiety as presented by significant differences in the differences in medians of blood pressure ($p < .01$) at 12 hours after admission and respiratory rate

(p<.05) at 12 hours and 24 hours between the relaxation and control as shown in Table 5 and 7. Even though the findings of this study determined that the differences in medians of MAP over time points in the relaxation group were significant difference (p<.001, Table 11), the differences in medians of MAP at 48 hours and on discharge from the ICCU in the relaxation were lower than those of 24 hours and 12 hours after admission (Table 12). The findings of this study did not support the Hypothesis 3 on reduction of MAP. This could be caused by vascular arousal in acute phase that anxiety induced vital arousal to increase dramatically blood pressure in patients with AMI (Moser et al., 2003a). In general, however, the findings support the previous studies that used guided imagery and talking technique in patients with AMI to reduce significantly blood pressure in the third day after admission (Bassampour, 2006) and applied application of progressive muscle relaxation and guided imagery interventions in post AMI patients for 12 weeks in order to reduce blood pressure with pre- and post-intervention comparisons (Collins & Rice, 1997).

Regarding to the reduction of heart rate and respiratory rate, the findings of this study revealed that the differences in medians of heart rate and respiratory rate among four-time points in the relaxation group were significantly different as presented in Table 13 and 15. Hypothesis 3 was not supported by the findings of the study with regard to heart rate reduction. Even though the differences in medians of heart rate in the relaxation group over time points were significant difference (p<.001, Table 13), the differences in medians of heart rate in the relaxation group at 48 hours after admission was significantly lower than those of the 12 hours, 24 hours after admission and similar to those on discharge from the ICCU as shown in Table 14. Patients with AMI had a significant reduction in anxiety scores at 24 hours after

admission and the heart rate decreased slightly from the 48 hours after admission to discharge from the ICCU. The NBI-IIR had a slight effect on reducing the heart rate. The enhancement of perceived control 2 days after the admission might also have influenced lower reduction of heart rate in AMI patients.

The findings with regard to respiratory rate in the relaxation group also partly supported Hypothesis 3. Table 15 reports that the differences in medians of respiratory rate over time points after admission in the relaxation group were significantly different (p<.001). It is consistent with the findings in Table 16 that the differences in medians of respiratory rate in the relaxation group at 48 hours after admission was higher than those on discharge from the ICCU (p<.05); however, the difference was also lower than that at 24 hours after admission.

The NBI-IIR affected on both perceived anxiety and objective response to anxiety (respiratory rate). The subjects might respond positive to the Islamic Relaxation and decrease the level of anxiety each time point, which was also reflected in the overall outcomes on discharge day. However, other objective responses to anxiety (blood pressure and heart rate) might not change significantly. Some scores of blood pressure and heart rate in the control group were higher than those of the relaxation group. This finding supports similar previous studies on reduction of heart rate and respiratory rate reduction in AMI patients by administration of guided imagery and talking technique intervention for three consecutive days after admission in patients with AMI after administration of guided imagery and talking technique (Bassampour, 2006), 20 minutes of music therapy (White, 1992; 1999), and progressive muscle relaxation and guided imagery intervention in post-AMI patients for 12 weeks (Collins & Rice, 1997).

Figure 1 demonstrates that the intervention composing of transpersonal caring relationship, five carative factors, tapping at meridian points and Zikr produced caring healing on objective responses to anxiety by reducing blood pressure, heart rate, and respiratory rate. Objective responses to anxiety act through a mechanisms of bidirectional interrelationship between psychological attitude and autonomic nervous system; and are influenced by the neuroendocrine and immunology system in its reactions of psychological stimuli. Anxiety can influence the central nervous system, which activates opioid peptides and receptors (Ader, 1996). The median eminence (ME) of the hypothalamus stimulates the secretion of CRF (corticotrophin-releasing factor) which include the pituitary gland to release ACTH (adrenocorticotropic hormone) into the general circulation, which in turn stimulates the synthesis of adrenaline and noradrenaline, which affect the objective responses. Adrenaline acts by accelerating the heart rate, elevating blood pressure, and raising the respiratory rate (Ader et al., 1995).

The pattern of anxiety in this study tended to decrease gradually from 12 hours after admission up to discharge from the ICCU, as presented in Figure 7. Most of the patients (95.5%) were admitted to the ICCU for the first time and their anxiety might be gradually reduced. This is different from previous studies which showed that the level of anxiety decreased significantly from 12 hours to 48 hours, then remained stable, and elevated during preparation for discharge to the general wards as shown in Figure 2 (An et al., 2004; Tel & Tel, 2006). The anxiety level in patients with AMI at discharge in this study contrasted with those from previous studies as shown in Figure 2 (An et al., 2004; Tel & Tel, 2006). Administration of the NBI-IIR might have reduced anxiety and enhanced perception of control during hospitalization in the

ICCU among patients with AMI from 12 hours after admission to discharge from ICCU.

In this study, state anxiety was measured by Numerical Rating Scale-Anxiety, which is a 10 horizontal line with the score of 0 referring to the absence anxiety and 10 referring to the highest level of anxiety (Appendix C) which was adopted from a previous study (De Jong et al., 2005). The advantages of the numerical rating include the speed and ease in assessing anxiety, which lessened the burden on the patients particularly in repeated measurements, and the higher likelihood of accurately measuring anxiety as a visual analog scale. The Numerical Rating Scale-Anxiety is also a valid anxiety measure for subjective response in patients with AMI. The Numerical Rating Scale-Anxiety has been used for assessing state anxiety within 48 hours after admission in patients with AMI (De Jong et al., 2005). However, other studies also measured state anxiety with the State Trait Anxiety Inquiry (Bassampour, 2006; Collins & Rice, 1997; Tel & Tel, 2006; White, 1992) and Hospital Anxiety Depression Scale (Aghakhani, 2011).

Perceived control

Hypothesis 2 stated that the median scores of perceived control at 48 hours after admission and on discharge from the ICCU in the relaxation group would be higher than those of the control group. The findings of this study supported the mentioned Hypothesis, as shown in Table 8 and Figure 8. The median scores of perceived control between group were significantly different at 48 hours after admission (T6) and on discharge from the ICCU (T8), (p<.01 and p<.001, respectively).

Hypothesis 4 stated that the median scores of perceived control on discharge from the ICCU in the relaxation group would be higher than that measured at the baseline and at 48 hours after admission. The median scores of perceived control within in the relaxation group were also significantly different (p<.001) as shown in Table 17. The findings of this study supported the hypothesis and showed that the median scores of perceived control on discharge from the ICCU in the relaxation group was significantly higher than that of the baseline (p<.001) and 48 hour after admission (p<.001) as shown in Table 18. The findings show that patients with AMI enhanced the level of perceived control and significantly reduced anxiety level, starting at 48 hours after admission (Figure 7). On discharge day, patients with AMI would have completed the thrombolytic therapy, be allowed to walk for exercise, and demonstrated good conditions. The recovery process might affect on the enhancement of perceived control that could moderate to reduce the level of anxiety. In addition, patients with AMI might be happy to be discharged from the ICCU without prodromal symptoms, such chest pain, dyspnoea, and fatigue as they experienced before admission and thrombolytic drugs.

This can be explained that the NBI-IIR was significantly effective in enhancing perception of control in patients with AMI from baseline to 48 hours after admission and on discharge from the ICCU. The result revealed that the improvement of perceived control had an effect in reduction of anxiety from admission to discharge from the ICCU. The findings of the study were consistent with a study by Forren and colleagues (2008). The findings determined that AMI patients with high level of perceived control had significantly lower level of anxiety than those of low level of perceived control within 72 hours after admission across different cultures among

eastern and western countries, including in Japan, Korea, Australia, the UK, and the USA. Conceptual framework of this study in Figure 1 demonstrates that the NBI-IIR, which consisted of transpersonal caring relationship, carative factors, self-hypnosis with deep acceptance, tapping, and Zikr resulted in caring healing, particularly inner healing on psycho-spiritual healing. The effect of caring healing was shown by improving perceived control in patients with AMI during hospitalization in the ICCU. In addition, the NBI-IIR also promoted ability of specific control. Perceived control is conceptualized into three domains, which focused on the ability to control emotion (emotional control), ability to escape or avoid anxiety (threat control), and ability to cope with anxiety (stress control) as defined by Brown and colleagues (Brown et al., 2004). The findings support a previous study, which showed that spiritual well-being could enhance perceived control in patients with heart failure (Vollman, LaMontagne, & Wallston, 2009).

Similar to previous studies, the findings of this study showed that the NBI-IIR was effective in enhancing perceived control and promoted to relax patients with anxiety reduction, and sooth the blood pressure, heart rate, and respiratory rate. The NBI-IIR as spiritual and religious technique could improve spiritual well-being in terms of enabling active coping and enhancing perceived control, and soothing vital signs in patients with AMI. The finding of this study supports a previous study which revealed that anxiety reduction in patients with AMI had a positive effect on the enhancement of perceived control (Johnston et al., 1999) and spiritual well-being in patients with heart failure (Vollman et al., 2009). The finding of this study was also consistent with a study by Forren and colleagues which showed that patients with AMI developed high perceived control and had low anxiety at 72 hours after

admission in five countries: Japan, Korea, Australia, the UK, and the USA (Forren, 2008). For long-outcome, patients with MI with high level of perceived control were less anxious, less depressed, and had better psychosocial adjustment at 6 months post AMI than those with low level of perceived control (Moser & Dracup, 1995).

This study might have encountered threats to internal validity, although the researcher attempted to control these threats. Even though the transformed data were non-normal distribution and non-parametric statistics were then employed in statistical analysis, the findings of the main outcomes were statistically significant and the powers of the study ranged from .91 to .99. The study had a considerable attrition at 16%, the researcher then obtained intention to treat principle by including the subjects enrolled in randomization into the intention to treat analysis (n=131). These threats to internal validity had been managed to lessen the possibility of biased estimates of treatment effects. The NBI-IIR is considered as a spiritually holistic relaxation that is appropriate for Muslim patients with AMI.

The overall findings of this study demonstrated reduction in anxiety and enhancement in perceived control after administration of the NBI-IIR in patients with AMI from 12 hours after admission to discharge from the ICCU. The reduction in anxiety was reflected by balancing and reducing objective responses to anxiety including blood pressure, heart rate, and respiratory rate, meanwhile the improvement in perceived control had a significant effect on reduction of anxiety level. The NBI-IIR is a simple relaxation technique that is considerably applicable for nurses and hospitalized patients. Hazard to subjects was not found in this study. The NBI-IIR can be performed by nurses, regardless of their belief system and cultural backgrounds. By performing the NBI-IIR, the nurses can develop transpersonal caring relationship

with patients, as well as create caring moment resulting in caring healing for the patients. The NBI-IIR integrated both relaxation and meditative components. As reported in the concept of meridian energy and meditation, the NBI-IIR was performed to harmonize the meridian energy in order to reduce anxiety and restore patients' perceived control. The results of this study were consistent with previous studies and the NBI-IIR would be accepted for patients with AMI in the ICCU. The subjects were recruited and assigned randomly into two groups, which adequately represented patients with AMI.

It can be concluded that the findings on anxiety and perceived control were statistically significant. Administration of the NBI-IIR in patients with AMI decreased anxiety and enhanced perceived control as measured during the first two days after admission and on discharge from the ICCU in the relaxation group as compared with those who received routine care in the control group. Physiological measures also indicated in anxiety reduction and calmness. Perceived control moderated anxiety level in patients with AMI. Even though this study might encounter threats to internal validity, including imitation of intervention, a considerable attrition rate, history bias, the findings of intention to treat analysis were statistically significant. The application of the NBI-IIR should be considered as a clinical significance.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

This chapter composes of conclusions and recommendations. A randomized controlled trial, two group, pre-post test, and repeated measures design was conducted to evaluate the effects of the Nursing-Based Intervention Integrating Islamic Relaxation on anxiety and perceived control in Indonesian patients with AMI in ICCU. The conclusions of the findings address research questions and the recommendations comprise of the development of nursing theory, nursing research, nursing practice in ICCU.

Conclusions of the Study

The randomized control trial study was conducted in 131 Indonesian Muslim subjects with AMI in the ICCU who were recruited and randomized to either the relaxation group or the control group by using the Minimization program version 2.01. The findings showed that the NBI-IIR demonstrated positive effects on both anxiety and objective responses to anxiety in Muslim patients with AMI admitted in the ICCU. Addressing the research questions on anxiety and perceived control, the findings can be concluded as follows:

The differences in medians of anxiety level at 12 hours, 24 hours, 48 hours after admission, and on discharge from the ICCU in the relaxation group were significantly higher than those of the control group. Hypothesis of anxiety as a subjective response was supported by the study and there were significant changes in

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objective responses to anxiety (blood pressure and respiratory rate). The differences in blood pressure levels, converted into MAP, at 12 hours after admission in the relaxation group were higher than those in the control group, but on discharge from the ICCU, the levels in the relaxation group became lower than those of the control group. The differences in medians of heart rate at 48 hours after admission in the relaxation group were significantly lower than those of the control group. The differences in medians of respiratory rate at 12 hours and 24 hours after admission in the relaxation group were higher than those of the control group, but were not significantly different at other time points. The findings on objective responses partly supported the hypotheses of the study.

In the relaxation group alone, the reduction of anxiety and objective responses to anxiety at 48 hours after admission in the relaxation group was higher than those of other time points. The difference in median anxiety level at 48 hours after admission was significantly higher than those at 12 hours and 24 hours after admission, but was similar to the level at discharge from the ICCU. The difference in median MAP at 48 hours after admission was significantly lower than those at 12 hours and 24 hours after admission, and similar to the level at discharge from ICCU. The difference in median heart rate at 48 hours after admission was significantly lower than those at 12 hours and 24 hours after admission, and at discharge from ICCU. The difference in median respiratory rate at 48 hours after admission was significantly higher than that at discharge from the ICCU, but was similar to those at 12 hours and 24 hours after admission. The NBI-IIR was significantly effective in reducing anxiety in patients with AMI at 12 hours, 24 hours, and 48 hours after admission and on discharge from the ICCU. However, objective responses to anxiety

(blood pressure, heart rate, respiratory rate) only partly supported the study hypotheses.

The median scores of perceived control at the 48 hours after admission and on discharge from the ICCU in the relaxation group were significantly higher than those of the control group. In the relaxation group, the median scores of perceived control on discharge from the ICCU in the relaxation group were significantly higher than those of the baseline and the 48 hours after admission. Meanwhile, anxiety in patients with AMI did not elevate on the day of discharge. The NBI-IIR was found to enhance perception of control in patients with AMI from the baseline to 48 hours after admission and on discharge from the ICCU.

Even though threats to internal validity might have been present in this study, the researcher attempted to overcome the threats by randomized control trial, statistical analysis, and intention-to-treat analysis. The major findings of the study were statistically significant, thus translation of the NBI-IIR from research to practice should be considered as a clinically significant intervention in the ICCU, which incorporated the patients' spiritual background and a holistic approach into clinical practice.

Recommendations of the Study

The findings of the study contribute to nursing theory, nursing research, and nursing practice in intensive cardiovascular care unit.

Nursing theory

The NBI-IIR functions as an innovative intervention and a spiritual intervention for patients with AMI with due consideration for the patients' cultural background, and consists of the Theory of Human Caring, SEFT and Zikr therapy. The NBI-IIR promotes caring healing that involves the patient as oneself to integrate the mind-body-spirit to promote spiritual healing and deep acceptance in dealing with psychological status. Nurse-patient interaction promotes a caring moment in which the patient develops self-control and experiences self-healing, relaxation, comfort, and results in caring healing for the patient. The NBI-IIR also applies caring factors that are central of caring practices to produce caring healing on anxiety reduction and improvement of perceived control. In this study, caring healing focused on psychological healing which helped to reduce anxiety and promotes physiological healing, and balanced blood pressure, heart rate, and respiratory rate.

Nursing research

Integrating holistic interventions related to patient's cultural backgrounds in critical nursing has received great attention, particularly in patients living with cardiovascular diseases. This study found that the NBI-IIR effectively enhanced perceived control, reduced anxiety and balanced blood pressure, heart rate and respiratory rate in patients with AMI at 12 hours, 24 hours, and 48 hours after admission and on discharge from the ICCU. This study also addressed the limitations of study and identified knowledge gaps for future research. This study suggests that the NBI-IIR is essential for enhancing perceived control and cognitive coping strategy on admission and discharge from ICCU.

Further research on conducting the NBI-IIR twice a day to achieve a good outcome is advised. A prospective interventional study is advised in patients with AMI from emergency department, ICCU, and general ward before discharge from hospital, as these patients are likely to have encountered psychological stress from life-threatening situation. Further studies on the NBI-IIR is needed in order to evaluate the common psychological problems such as anxiety, depression, pain and post traumatic stress disorder in patients with AMI. Evaluation of physiological outcomes of this study including oxygen consumption during administration of the NBI-IIR, cardiac events, and complication during hospitalization is also recommended. Replication study is encouraged in other settings and populations to test the applicability of the NBI-IIR. Further research is warranted to identify clinically significant changes in anxiety level and the appropriateness of relaxation and meditative events in other populations. Furthermore, greater understanding of the antecedent and moderating effects on anxiety are also warranted, as well as the impact of interventions applied in the acute care setting and their long-term outcomes.

Nursing practices

The findings of the study contribute to understanding potential interventions to address anxiety in patients with AMI. The NBI-IIR appears to be a spiritual intervention promoting perceived control. Therefore, the NBI-IIR can help enhance a nurse's competency in caring for Muslim patients with AMI by respecting the patients' belief and deem the belief to be a positive component that can be adapted effectively to nursing practice. The use of the NBI-IIR effectively reduced anxiety and objective responses to anxiety (blood pressure, heart rate, and respiratory rate) at

12 hours, 24 hours, and 48 hours after admission and on discharge from the ICCU. The NBI-IIR was also shown to enhance perceived control from 12 hours after admission through discharge from the ICCU. In ICCU, the NBI-IIR can be performed daily for patients with AMI from 12 hours after admission until the day that the patients are discharged from ICCU to general ward.

Strength and Limitation

The study produces benefits for patients with AMI. Obviously, the NBI-IIR is a non-invasive intervention and can be applied by nurses for 20 minutes to help patients dealing with anxiety and incorporate the patients' cultural or religious practice into clinical nursing. The NBI-IIR is not only useful in dealing with anxiety, but also addressing spiritual concern during a period of life crisis and high vulnerability. There is flexibility for nurses, regardless of nurses' religion or belief system who may apply the NBI-IIR, because the guideline is designed to be used by both the health staff and the patients based on their Islamic values or spiritual belief system.

In spite of the strengths, threats to interval validity might have been present in this study, including attrition, history bias, and imitation of intervention, the researcher performed intention-to-treat analysis and the powers of the study ranged from .91 to .99. The findings were statistically significant and translation of the NBI-IIR should be considered for clinical significance. The study could be generalized in patients with AMI and should be replicated for generality in different settings and population.

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APPENDICES

Appendix A

Guideline of the Nursing-Based Intervention Integrating Islamic Relaxation

Phase	Researcher's Activities	Patient's activities

Introduction	The researcher do the followings:
	  Explain that he performed the Nursing-Based Intervention Integrating Islamic Relaxation and what the patient do
	  Showing to care for the patient.
	  Prepare patient to lay down, close eyes, and supine hands.
		The patient responds the followings:
		  Listen and respond to the researcher
		  Put attention and follow procedure the Nursing-Based Intervention Integrating Islamic Relaxation
		
		  lay down comfortably, close eyes, and supine hands

Working	The set up : The researcher starts saying "Bismillahirohmanirokhim" and caring the patient with respect The researcher start treating patients with respect by tapping at the karate chop point.	The patient states "Bismillahirohmanirokhim" and self-hypnosis 3 times: Even though, I have anxiety I deeply and completely accept myself what Allah desires to me.

	The tune in: The researcher do
	  Put his hand on patient's shoulder and encourage patients to express about how he/she feels and pray for recovery
	  Make him be sensitive to patients' feeling of anxiety.
	  Encourage patient to be self-confident in dealing with anxiety.
		Patient express his/her feeling and prayer for recovery

	The relaxation : The researcher
	  Give full attention and make patient Calm by putting the researcher 's hand on patient' shoulder, then start tapping at :
	  central head point 7 times
	  eyebrow point 7 times
	  side eye point 7 times
	  under eye 7 times
	  under nose point 7 times
	  chin point 7 times
	  collarbone point 7 times
	  4 inch under arm point 7 times
		Patient states self-hypnosis 3 times at each point:
		    Even though, I have anxiety
		    I deeply and completely accept myself what Allah desires to me.
		.

	Zikr : The researcher
	  manage a calm and quiet environment for patients.
	  lead patients perform Zikr by softly reciting "Subhanallah"
		Patient recites remembrance of (God) Allah by "Subhanallah" insight heart for 10 minutes

Appendix A (continued)

Phase	Researcher's activities	Patient's activities
Closing	The researcher do the followings: Let the patient end Zikr and open eyes Lead to the patient to take deep breathing and thank God 3 times. Listen to the patient to express his/her feeling. Cheer up the patient before leaving.	The patient do the followings: Open eyes slowly Take deep breathings and thank Allah (God) what he/she has already given easiness 3 times

Appendix B

Code: ……………

Date: …………….

Demographic Data Questionnaire

1. Age : ☐☐ year old

2. Gender : ☐ male ☐ female

3. Education : ☐ primary ☐ junior high school ☐ high school

    ☐ Bachelor ☐ Master ☐ Doctor

Occupation : ☐ retired/unemployee ☐ employee ☐ entrepreneur

    ☐ farmer ☐ teacher/lecturer ☐ police/soldier

4. Marital status : ☐ single ☐ married ☐ widow/widower

5. How many times have you been admitted in hospital with myocardial infarction?

    …………………………………………………………………………….

Research assistants   complete the following questions.

6. What are the current symptoms? …………………………………………………...

    …………………………………………………………………………………....

7. What is the type and dose of anxiolytic drug administered? ..……………………

8. Length of stay in ICCU ……….days.

Appendix C

Code: ……………

Time: …………….

Numerical Rating Scale -Anxiety

| | | | | | | | | | | |
|0|1|2|3|4|5|6|7|8|9|10|
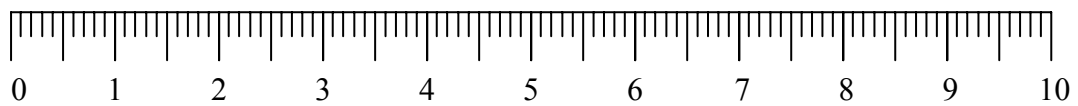
No anxiety   The highest anxiety

Appendix D

Code: ……………

Subjective and Objective Measure Form

Variable	Within 12 hours Date…….		Within 24 hours Date…….	
	Time …	Time …	Time …	Time …
Anxiety level :				
Blood pressure :				
Heart rate :				
Respiratory rate :				

Variable	Within 48 hours Date…….		Discharge Date…….	
	Time …	Time …	Time …	Time …
Anxiety level :				
Blood pressure :				
Heart rate :				
Respiratory rate :				

Purwokerto, ……..……........201…

(………………………….)
research assistant

Appendix E

Anxiety Control Questionnaire

Listed below are a number of statements describing a set of beliefs. Please read each statement carefully, and on the 0-5 scale below, how much you think each statement is typical of you.

0 --------------- 1 ---------------- 2 ---------------- 3 ---------------- 4 ---------------- 5

Strongly disagree	Moderately disagree	Slightly disagree	Slightly agree	Moderately agree	Strongly agree

No	Statements						
1.	How well I cope with difficult situations depends on whether I have outside help.	0	1	2	3	4	5
2.	When I am put under stress, I am likely to lose control.	0	1	2	3	4	5
3.	When I am frightened by something, there is generally nothing I can do.	0	1	2	3	4	5
4.	Whether I can successfully escape, a frightening situation is always a matter of chance with me.	0	1	2	3	4	5
5.	I can usually put worrisome thoughts out of my mind easily.	0	1	2	3	4	5
6.	I am able to control my level of anxiety.	0	1	2	3	4	5
7.	There is little I can do to change frightening events.	0	1	2	3	4	5
8.	The extent to which a difficult situation resolves itself has nothing to do with my actions.	0	1	2	3	4	5
9.	If something is going to hurt me, it will happen no matter what I do.	0	1	2	3	4	5
10.	I can usually relax when I want.	0	1	2	3	4	5
11.	When I am under stress, I am not always sure how I will react.	0	1	2	3	4	5
12.	Most events that make me anxious are outside my control.	0	1	2	3	4	5
13.	I am unconcerned if I become anxious in a difficult situation, because I am confident in my ability to cope with my symptoms	0	1	2	3	4	5
14.	I usually find it hard to deal with difficult problems.	0	1	2	3	4	5
15.	When I am anxious, I find it hard to focus on anything other than my anxiety.	0	1	2	3	4	5

Appendix F

Informed Consent Form

I am Mardiyono and a student of doctoral program in nursing at Price of Songkla University, Thailand. I am also a lecturer at Universitas Jenderal Soedirman University, Indonesia. I am conducting a research on the effects of the Nursing-Based Intervention Integrating Islamic Relaxation (NBI-IIR) on anxiety and perceived control in patients with AMI.

This study aims to examine the effects of the Nursing-Based Intervention Integrating Islamic Relaxation on anxiety and perceived control in patients with AMI. The findings are expected to contribute for anxiety management in patients with AMI. The Institutional Review Board of Faculty of Nursing at Prince of Songkla University, Thailand has approved this study. This referral hospital in Central Java, Indonesia obtains formal permission for data collection.

You have right to participate voluntarily and can withdraw from this study. The researcher respects to your decision and it does not make your care and treatments different. If you agree to participate in this study, you could kindly sign in the informed consent. You are expected to follow in either intervention or control group. I am going to explain the benefits and the confidentiality, and the following procedures of the study:

A. The beneficence and confidentiality

This study helps patients with AMI reduce anxiety and enhance perceived control. The findings also strengthen evidence based nursing for holistic nursing in

patients with AMI and provide useful information for further research in the related phenomena.

Information in this study are kept confidential and anonymity. The data can be only accessed by the researcher, advisors, and research committee at PSU, Thailand.

B. Procedure of the study

1. You go in either the relaxation or control group.

2. If you are in the control group, you are given health education, psychological support, and family support by allowing family to accompany patients.

3. If you are in the relaxation group, you follow the Nursing-Based Intervention Integrating Islamic Relaxation procedure.

C. Evaluation

The Demographic Data Questionnaire and Trait Anxiety Inventory are obtained at 12 hours after admission. Anxiety level, blood pressure, heart rate, and respiratory rate at 12 hours, 24 hours, 48 hours after admission, and on discharge from the ICCU are measured by the research assistants. The Anxiety Control Questionnaire are used to measure perceived control at 12 hours, 48 hours after admission, and on discharge from the ICCU by the research assistants.

Please, do not hesitate to ask directly for further information to the research assistants and contact the researcher by phone +62 8122615649. Thank you for your participation in this study.

The participant   The researcher

Mardiyono

(Your signature)   Mr. Mardiyono

Appendix G

The Experts of Content and Face Validity

Five experts examined the content validity and the face validity of the Nursing-Based Intervention Integrating Islamic Relaxation, demographic data questionnaire, Trait Anxiety Inquiry, Anxiety Control Questionnaire-15 Indonesian version. The experts are listed:

1. Assoc. Prof. Dr. Wandee Sutarangsee

    Expert of Human Caring Theory and psychiatric nursing, Faculty of Nursing, Prince of Songkla University, Thailand.

2. Meidiana Widiyanti, MSc. App.

    Expert of psychiatric nursing, Univesitas Pangeran Diponegoro (Undip), Semarang, Indonesia.

3. Yanny Trisyani, PhD

    Expert of critical nursing, Univeristas Padjadjaran (Unpad), Bandung, Indonesia.

4. Mulia Hakam, MKep, SpMB

    Expert of Spiritual Emotional Freedom Technique, Univeritas Indonesia, Jakarta, Indonesia.

5. Drs. Muhammad Ilyas Nur

    Expert of Zikr, Thoriqoh Naqsabandiyah, Purwokerto, Indonesia

Appendix H

Power Analysis

Post hoc power analysis was based on the effect size index and the number of subject each group. The effect size indexes of anxiety, respiratory rate, and perceived control were calculated from pooled standard deviation, maximum and minimum mean differences. Based on Table 8.3.12, power of the study can be calculated as follows:

Anxiety

Effect size index of anxiety=

$$\sigma' = \sqrt{\frac{\acute{o}\max^2 + \acute{o}\min^2}{2}} = \sqrt{\frac{0.0819^2 + 0.1702^2}{2}} = 0.133558$$

$$d = \frac{m\max - m\min}{\acute{o}'} \qquad = \frac{0.235 - 0.139}{0.133558} = 0.718787$$

$$f = \frac{d}{2} = \frac{0.717878}{2} = 0.359$$

Power of anxiety is .97 based on *f*=.36, and n=62 (Table obtains n=60)

Blood pressure

Effect size index of blood pressure=

$$\sigma' = \sqrt{\frac{\acute{o}\max^2 + \acute{o}\min^2}{2}} = \sqrt{\frac{5.2736^2 + 2.4046^2}{2}} = 4.098$$

$$d = \frac{m\max - m\min}{\acute{o}'} \qquad = \frac{5.903 - 3.054}{4.098} = 0.6951$$

$$f = \frac{d}{2} = \frac{.6951}{2} = .347 = .347$$

Power of blood pressure is .97 based on $f=.35$, and n=62 (Table obtains n=60).

Heart rate

Effect size index of heart rate=

$$\sigma' = \sqrt{\frac{\text{ó max}^2 + \text{ó min}^2}{2}} = \sqrt{\frac{3.0474^2 + 2.5553^2}{2}} = 2.812$$

$$d = \frac{m\max - m\min}{\text{ó}'} = \frac{4.913 - 3.177}{2.812} = .617$$

$$f = \frac{d}{2} = \frac{.617}{2} = .309$$

Power of heart rate is .91 based on $f=.31$, and n=62 (Table obtains n=60).

Respiratory rate

Effect size index of respiratory rate=

$$\sigma' = \sqrt{\frac{\text{ó max}^2 + \text{ó min}^2}{2}} = \sqrt{\frac{.9767^2 + .7169^2}{2}} = .8567$$

$$d = \frac{m\max - m\min}{\text{ó}'} = \frac{1.9565 - 1.4516}{.8567} = .5893$$

$$f = \frac{d}{2} = \frac{.5893}{2} = .29$$

Power of respiratory is .91 based on $f=.29$, and n=62 (Table obtains n=60).

Perceived control

Effect size index of perceived control=

$$\sigma' = \sqrt{\frac{\acute{o}\max^2 + \acute{o}\min^2}{2}} = \sqrt{\frac{4.4961^2 + 4.18^2}{2}} = 4.325$$

$$d = \frac{m\max - m\min}{\acute{o}'} = \frac{45.1 - 39.47}{4.325} = 1.301$$

$$f = \frac{d}{2} = \frac{1.301}{2} = 0.65$$

Power of perceived control is .99 based on *f*=.65, and n=62 (Table obtains n=60)

note: mmax = mean/mean difference maximum; mmin = mean/mean difference minimum; d = effect size, and *f* = effect size index

Appendix I

Statistical Analysis

Table 19

Comparison of the Median Scores of Anxiety between Pre and Post test within the

Relaxation and Control Group

Anxiety	Relaxation group n=69			Wilcoxon signed ranks test	Control group n=62			Wilcoxon signed ranks test
	Mdn	MR	SR		Mdn	MR	SR	
12 hours								
T1	5.2	28.44	1450	-5.38***	5.2	20.57	740	-4.53***
T2	5.0	29.10	145		5.0	19.88	79	
24 hours								
T3	5.0	28.00	1540	-6.62***	5.0	19.50	741	-5.90***
T4	4.7	.00	0		4.8	.00	0	
48 hours								
T5	4.5	33.00	2145	-7.25***	4.7	19.00	703	-5.57***
T6	4.3	.00	0		4.7	.00	0	
Discharge								
T7	4.0	35.50	2211	-7.25***	4.5	20.50	820	-5.28***
T8	3.7	.00	0		4.3	41.00	41	

Note. DMdn = Difference in median; MR = Mean rank; SR = Sum of rank
***$p < .001$

Table 20

Comparison of the Median Scores of Blood Pressure between Pre and Post test within the Relaxation and Control Group

MAP	Relaxation group			Wilcoxon signed ranks test	Control group			Wilcoxon signed ranks test
	n=69				n=62			
	Mdn	MR	SR		Mdn	MR	SR	
12 hours								
T1	97.0	37.90	1554	-2.33*	96.0	36.00	864	-0.79
T2	93.7	29.33	792		96.2	28.66	1089	
24 hours								
T3	97.3	34.62	1662	-2.99**	94.3	33.72	910	-0.46
T4	94.0	34.20	684		95.3	29.79	1042	
48 hours								
T5	95.7	33.50	1708	-2.99**	95.3	29.21	613	-2.55*
T6	93.7	39.25	706		93.7	32.67	1339	
Discharge								
T7	96.0	35.62	1995	-4.72***	95.3	25.02	550	-2.99**
T8	94.3	32.31	420		96.0	35.06	1402	

Note. DMdn = Difference in median; MR = Mean rank; SR = Sum of rank
*p < .05. **p < .01. ***p < .001

Table 21

Comparison of the Median Scores of Heart Rate between Pre and Post test within the Relaxation and Control Group

Heart rate	Relaxation group			Wilcoxon signed ranks test	Control group			Wilcoxon signed ranks test
	n=69				n=62			
	Mdn	MR	SR		Mdn	MR	SR	
12 hours								
T1	84.0	38.81	1901	-4.16***	82.5	30.52	976	.00
T2	84.0	25.68	513		82.0	32.55	976	
24 hours								
T3	83.0	35.89	2010	-4.81***	80.0	33.47	1071	.66
T4	78.0	31.15	405		79.0	29.40	882	
48 hours								
T5	82.0	37.69	2186	-5.88***	80.0	34.92	1047	.50
T6	79.0	20.82	229		79.0	28.30	905	
Discharge								
T7	82.0	36.46	2224	-612***	81.0	31.35	1285	-2.18*
T8	79.0	23.88	191		80.0	31.79	667	

Note. DMdn = Difference in median; MR = Mean rank; SR = Sum of rank
*p < .05. ***p < .001

Table 22

Comparison of the Median Scores of Respiratory Rate between Pre and Post test

within the Relaxation and Control Group

Respiratory rate	Relaxation group			Wilcoxon signed ranks test	Control group			Wilcoxon signed ranks test
	n=69				n=62			
	Mdn	MR	SR		Mdn	MR	SR	
12 hours								
T1	21.0	39.22	2118	-5.55***	21.0	32.29	1198	-1.62
T2	20.0	19.80	297		21.0	30.18	754	
24 hours								
T3	21.0	39.15	2153	-5.74***	20.0	37.50	1125	-1.09
T4	20.0	18.68	261		20.0	25.88	828	
48 hours								
T5	20.0	.00	0	-7.23***	20.0	.00	0	-6.85***
T6	19.0	35.00	2415		20.5	1953	1953	
Discharge								
T7	20.0	36.02	2125	-6.01***	20.0	949	949	-0.19
T8	19.0	24.56	221		20.0	1003	1003	

Note. DMdn = Difference in median; MR = Mean rank; SR = Sum of rank
***$p < .001$

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Educational Attainment

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Master of Nursing Science	Prince of Songkla University	2004
Bachelor of Nursing	Prince of Songkla University	2004
Diploma 3 of Nursing	Nursing Academy, Health Department, Semarang	1992

Scholarship Awards during Enrolment

Scholarship Award	Name of Institution	Year of Award
Oral presentation and paper proceeding	Faculty of Nursing, Prince of Songkla University, Thailand	2012
Visiting Scholar to Faculty of Nursing, Midwifery, and Health, University of Technology Sydney	Faculty of Nursing, Prince of Songkla University	2012
Thesis support fund	Graduate School, Prince of Songkla University, Thailand	2011
Student exchange to School of Nursing, Faculty of Medicine, Miyazaki University, Japan	Faculty of Nursing, Prince of Songkla University, Thailand Faculty of Medicine, Miyazaki University, Japan	2010
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