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COMPLEMENTARY AND ALTERNATIVE THERAPY FOR PAIN AND ANXIETY IN CARDIOVASCULAR DISEASE: A LITERATURE REVIEW

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ABSTRACT

Cardiovascular disease is the first leading cause of death in the world. Patients with cardiovascular disease may experience various problems, including physiological and psychological problems. Apart from pharmacological therapy, complementary therapy is necessary as a support to conventional medicine. This review aims to describe complementary and alternative therapies for pain and anxiety in patients with cardiovascular disease. This review utilized data from ProQuest, ScienceDirect, and PubMed with search keywords of "Complementary" AND "Nursing" AND "Pain" AND "Anxiety" AND "Coronary artery disease". Ten articles that met the inclusion criteria were analyzed. The results show that nursing actions increasingly develop along with the patient needs. One form of holistic nursing action is complementary and alternative therapy (CAT) that consists of three categories: body-based methods, mind therapies, and sensory therapies. CAT has positive impacts on patients with heart disease. It can reduce anxiety and pain, lower blood pressure, and improve the quality of life. This review also shows that CAT has a positive impact on the recovery of patients with heart disease. Proper therapeutic management should be implemented to reduce the risks of physiological and psychological problems in patients.

Keywords: Anxiety, complementary therapies, coronary artery disease, pain

INTRODUCTION

Cardiovascular disease is the first leading cause of death in the world. The data from WHO show that more than 17 million people worldwide die from heart and blood vessel diseases (1). In the United States in 2019, coronary events are expected to occur in about 1,055,000 individuals, including 720,000 new and 335,000 recurrent coronary (2). Patients with cardiovascular disease experience both physiological and psychological problems. Nearly 40% of patients with myocardial disease experience psychological disorders such as depression, anxiety, and stress (3), Furthermore, after heart surgery, patients with cardiovascular disease also experience similar problems

such as anxiety, depression, pain, and other problems that affect the recovery process (4).

The problems that occur in patients with cardiovascular disease can cause prolonged treatment during the recovery period. The patients often complain of chest pain that decreases pulmonary ventilation and lengthens hospitalization. Anxiety can decrease coronary blood flow and increase sympathetic nerve activity, the workload of the heart, heart rate, and breathing (5). The first intervention that can be provided for these patients is pharmacological therapy. However, this intervention may cause side effects for patients. The provision of non-pharmacological interventions is thus necessary to treat chest pain and anxiety in patients. Also, complementary and alternative therapies are recommended to reduce pain and anxiety in patients with acute myocardial infarction (AMI).

Complementary and alternative therapy (CAT) is an alternative that nurses can provide for patients to manage pain and discomfort. CAT is used as a substitute for traditional medicine. The CAT approaches that can be implemented in patients include deep breathing, yoga, meditation, diet relaxation, and guided imagery therapy (6). These therapies are innovations in providing holistic nursing care that can reduce discomfort in patients with cardiovascular disease. Accordingly, this study aims to identify complementary and alternative therapies applied to patients with cardiovascular disease to reduce pain and anxiety based on the philosophy of ontology, epistemology and axiology.

METHOD

This study is a literature review that explores complementary and alternative therapies to reduce pain and anxiety in patients with cardiovascular disease. The articles used in this review were obtained from the electronic databases of ProQuest, Science Direct, and PubMed. The keywords used for searching the articles included "Complementary" AND "Nursing" AND "Pain" AND "Anxiety" AND "Coronary artery disease". Articles that met the following criteria were included: the study population was patients with cardiovascular disease; the intervention was complementary and alternative therapy; the outcome was the decreased pain and anxiety problems; the articles were published from 2019-2021.

RESULTS

Table 1. The distribution of CAT in patients with cardiovascular disease

Authors, Year	Medical diagnosis	Complementary and Alternative therapy	Therapy benefits
Vasokolaei, Zohre R et al., 2019	Coronary artery disease	Hand reflexology and acupressure	Hand reflexology and acupressure have effects on reducing anxiety and lowering blood pressure.
Chen, Ming Gui, et al., 2020	AMI after PCI	Baduanjin sequential therapy for rehabilitation	Improving the quality of life in patients after the procedure of PCI
Chandrababu, Ramesh et al., 2020	Coronary artery bypass graft surgery	Foot massage and provision of education	The combination of foot massage and education can reduce anxiety, fatigue, and pain, and increase self-efficacy and quality of life.
Cahyati, Herliana, Februanti, 2020	Coronary heart Disease	Progressive muscle Relaxation	Progressive muscle relaxation can reduce the work of the parasympathetic nerves so that it can reduce anxiety, pain, stretching muscles, increasing contractions in the myocard muscles so that oxygen saturation increases
Akbari, Fatemah et al., 2019	Intravenous catheterization in cardiac patients	Aromatherapy, Peppermint essence	Peppermint aromatherapy can reduce pain and anxiety in patients before undergoing catheterization.
Chandrababu, Ramesh et al., 2019	Cardiac surgery	Pranayama	The physical practice of yoga pranayama reduces anxiety scores in patients undergoing cardiac surgery.

Nijjar, Prabhjot et al., 2019	Cardiac rehabilitation	Mindfulness-based stress reduction (MBSR)	MBSR can reduce psychosocial problems in patients with heart disease during the recovery period.
Amjadian, Mohidian et al., 2020	Coronary artery bypass surgery	Islamic spiritual intervention and breathing techniques	Islamic spiritual intervention and breathing exercises are used as rehabilitation programs for patients with CABG.
Rokni, Fatemah F et al., 2019	Surgery of CABG	Aromatherapy with rose essentials	Inhalation of rose essential aromatherapy can reduce anxiety.
Rambood, Masoume et al., 2020	Acute myocardial infarction	Lemon aromatherapy	Inhalation of lemon aromatherapy can lower systolic blood pressure, anxiety, pulse, T-waves, and blood pressure regulation.
Dai Wang et al., 2020	Patients with CABG	Music therapy	Patients who are given music therapy have the decreased pain and anxiety scores after CABG.

DISCUSSION

CAT is a therapy that is used in conjunction with other traditional therapies. The use of CAT is congruent with Florence Nightingale's theory, describing that the practice of holistic nursing may involve the use of heat, massage, music, and touch therapies. This concept is in accordance with CAT components as one form of nursing care (6). Complementary therapy can be given to patients with acute and chronic problems. In this regard, nurses are responsible for providing a holistic approach to control pain and open minds to complementary therapies. Pharmacological treatment to reduce pain in patients is relatively costly and causes side effects, so that patients can choose CAT as a part of their treatment. Nurses play a role in the patients' holistic assessment by comprehensively exploring treatment history and physical examinations. Holistic nursing plans are practiced by discussing with patients ways to

achieve the final goal to reduce pain (7). CAT is divided into some categories, namely body-based methods, energy therapies, diet and herbal preparations, mind therapies, sensory therapies, and movement therapies. This literature review shows that there are three main categories of CAT, namely body-based methods, mind therapies, and sensory therapies. The CAT description is provided in detail in the following sections.

Body based Methods

Patients with heart disease need physical therapy, often called cardiac rehabilitation, which is a comprehensive method, including exercise, education on risk factors, and psychological support. The results showed that good exercise or physical exercise can improve the quality of life of patients with heart disease (8). This literature review suggest that a holistic rehabilitation can be used for patients with heart disease of CAT, which belongs to the body-based methods, includes hand reflexology, acupressure, and foot massage. Hand reflexology is a type of massage that is well known in general and scientific studies. Reflexology points are very simple and easy to practice (9). Hand reflexology and acupressure can be applied to patients admitted to cardiac intensive care (ICCU). Patients who receive hand reflexology and acupressure may benefit from their mental, emotional, or psychological mechanisms. With the touch of the hands and contact with the skin, the body will release the endorphins and produce a feeling of relaxation (10) so that anxiety is reduced and blood pressure returns to normal values. The results of other studies are related to foot massage and education to patients who will undergo CABG surgery. Hand reflexology as a traditional and complementary nursing intervention can create comfort and aid recovery in elderly patients who have chronic diseases. The results showed that the group that was given hand reflexology intervention showed a significant value with an increased comfort level (11)Research showed that patients who received foot massage lowered their scores of anxiety, pain, and fatigue significantly with $p<0.05$. The group receiving the therapy significantly decreased their scores of anxiety, pain, and fatigue. Foot massage therapy has been shown to reduce pain scores in patients with heart surgery (12). Decreased anxiety and pain have a positive impact on increasing the quality of life of patients with cardiovascular disease.

Pranayama is a regular yoga practice to reduce stress, anxiety and improve cognitive response and quality of life Pranayama yoga can be used as a non-pharmacological intervention to reduce postoperative pain. Other research has shown that deep breathing exercises (pranayama) could improve patients with long-term

cardiovascular disease. Pranayama also improves the heart's electrical conditions, and thus reducing the incidence of ventricular repolarization dispersion in patients with arrhythmias (13). Another body-based method used to reduce pain and improve the patient's quality of life is Baduanjin sequential therapy (BST). BST is a physical exercise for patients in the rehabilitation stage and is popular in Chinese medicine. Patients who are given BST exercises will perform the intervention twice a day for 30 minutes each session for three days. The patients stand in a relaxed manner and perform abdominal breathing. BST helps improve the patients' quality of life as pain will reduce, oxygen saturation increases, and shortness of breath is reduced as well (14).

Another therapy that can be applied to Complementary and alternative therapy is Acupressure. Acupressure can be performed on patients who experience anxiety. The effect of acupressure is that it can cause a warm feeling, the pressure at a certain point can cause a feeling of comfort. Acupressure done for 10 minutes per hand on the right hand and then the left hand. Pressure is applied to the Nei Guan (P6 or Inner Gate) point on the inner side (stomach) of the forearm. The first pressure is applied two and a half finger widths from the crease of the wrist. The pressure is applied about 2 inches lower towards the elbow (the point located between the two tendons). Point P6 can then be stimulated on both hands by applying firm pressure to the point using the index finger for one minute, while breathing shallowly through the nose(10).

Method that releases energy into the body is progressive muscle relaxation (PMR). PMR is an effective technique that can be used to reduce stress and create relaxation in muscles. This relaxation aims to reduce the work of the parasympathetic nerves to reduce stress so that the patient will relax, reduce anxiety, reduce pain and increase the oxygen saturation value(15). PMR exercises can be implemented also in patients with other chronic diseases such as cancer (16). The results of other studies also state that complementary therapies given to patients with heart disease are easier to implement and are recommended as alternative therapies to drugs, but in practice they are not routinely carried out (17). Body based methods are not only useful for reducing anxiety and pain, but other research states that body based methods as part of complementary alternative therapies are also useful for improving sleep quality in patients with chronic diseases such as heart disease, cancer and psychological disorders (18).

Mind Terapies

This review indicates that the mind therapy which can be applied to reduce pain and anxiety is meditation. Meditation in this review refers to mindfulness and Islamic spiritual intervention. In this context, CAT therapy is not only provided for patients with heart disease but also those with chronic diseases such as cancer, by focusing on the mind (mind therapies). Patients who have chronic diseases such as cancer often experience psychological problems and physiological distress that affect their quality of life; thus, cancer patients can adopt a diet of healthy or herbal products that are consumable (19). This result is also in line with other studies, showing that patients with chronic diseases, such as breast cancer, can be given herbal therapy and spiritual healing. Spiritual healing is part of CAT that focuses on spirituality (20). This therapy concurs with the results of the analysis in this review, namely, patients who are undergoing post-cardiac surgery care, i.e., CABG, often experience problems related to psychological and physiological aspects. This review shows that Islamic spiritual healing can help reduce anxiety and become a positive coping in patients with chronic diseases(21). The spiritual therapy in this review is focused on mindfulness-based stress reduction (MBSR). MBSR is a combination therapy of breathing exercises, mindfulness meditation, and yoga with gentle movements. Providing MBSR for patients with chronic problems, such as heart disease, aims to reduce symptoms of depression, anxiety, stress. In addition, MBSR also increases blood pressure, boosts the immune system, and activates the nervous system (3). MBSR has a positive impact on reducing the risk of cardiovascular disease (22). In line with other studies on patients with CABG, it is shown that spirituality and religious activities can reduce psychological problems, such as depression, anxiety, and stress in patients (23). Religious activities play a vital role in the patients' healing process and reduce mental disorders and cardiovascular problems (24,25). Mindfulness basically shows an increase in the perception of individuals who can focus their activities so that individuals can focus back on their environment (26). The results showed that mindfulness as mind therapies is carried out with a spiritual approach. A spiritual approach by recognizing that each individual has diverse personal life experiences so that in the nursing approach nurses need to be patient-centered by still observing the needs and spiritual values of each individual patient (27).

Sensory Therapies

This literature review describes the aromatherapy and music therapy that can be used to reduce pain and anxiety in patients with heart disease. Some essential oils for aromatherapy that can be given to patients include rose, lemon, and peppermint. Research shows that aromatherapy reduces pain and anxiety due to catheter insertion (28). Essential oils and aromatherapy affect signal transmission to the olfactory nerves to release serotonin, endorphins, and noradrenaline; the presence of these hormones can reduce pain and anxiety (6). Aromatherapy can also be given to patients after heart surgery as a complementary therapy (29). Essential oils or aromatherapy can be given to patients for 20 minutes using an oxygen mask, such as for those patients after undergoing CABG surgery. The results of other studies showed that the group that was given rose aromatherapy had less anxiety and was more relaxed (30,31).Research shows that patients who are given rose aromatherapy have less anxiety and feel more relaxed(30). Rose aromatherapy can reduce anxiety and increase relaxation, which affects the nervous and limbic systems so that the activity of the sympathetic nervous system is reduced (32). The central nervous system and GABA receptors, such as benzodiazepines, provide sedative and anti-anxiety effects (33).

Aromatherapy has healing benefits and is effective for pain management; it also affects essential body systems in the pain management process (34). Some aromatherapies are evident to lower blood pressure, anxiety, pulse rate, T-waves, and changes in blood pressure (35). Research shows that the administration of lemon aromatherapy to patients with acute myocardial infarction (AMI) had an effect on decreasing blood pressure on the third and fourth days. The study also reported that anxiety and pain in these patients were reduced. Besides, lemon aromatherapy has a neuroprotective effect by changing the ECG value to prevent arrhythmias. Lemon aromatherapy is also anti spasmal (35). Another aromatherapy that can be given to patients is lavender therapy. Lavender therapy given by inhalation has been shown to lower blood pressure, increase pulse rate by activating the hypothalamus, aromatherapy can release oxytocin so that anxiety is reduced (36).

Music therapy is part of sensory therapies. This literature review describes that patients who are given music therapy have a decreased score of pain and anxiety after CABG surgery. Music is a form of CAT that has been known for hundreds of years ago. Music is evident to function as therapy after some research evidence exists.

Music is generally listened to using cellphones or music speakers. This review shows that music therapy can reduce neuropathic pain, cancer pain, palliative pain and postoperative pain. Music therapy that is provided for patients for 30 minutes can have a positive impact, namely accelerating the patient's healing process; music therapy also reduces pain and increases emotional dimension to reduce anxiety in patients (37).

Research has shown that music therapy has a positive impact on pain experiences, reduces pain levels, reduces muscle tension, and reduces opioid use. Other pain that can be treated with music therapy is neuropathic pain, cancer pain, pain associated with debridement of burns, procedural. Patients who are given music therapy in several intensive units such as the ICU, palliative care areas and after surgery feel less pain and feel more relaxed. Other studies have shown that environmental modification and patient involvement, namely by means of the patient choosing music according to his choice, will show a more significant decrease in pain scores, besides environmental modifications such as dimming lights, providing blankets, turning off electronics and cellphones, can improve overall comfort.

The results of the meta-analysis also showed that music therapy was effective in reducing stress and there were no significant side effects (38). Another advantage of music therapy is that it is a non-drug treatment that is safe, easy to apply and economical so that it can relieve pain, anxiety and depression in post-CABG surgery patients (37).

Complementary and Alternative Therapy based on Phylosophycal theory

Complementary and alternative therapy (CAT) is part of alternative therapy with a holistic nursing approach. Holistic nursing is about equilibrium balance in nurses' skills in providing care based on mind, body and spirit (39). CAT is a complementary therapy that studies bio-psycho-socio-spiritual based on a holistic nursing approach. In the philosophy of ontology that complementary therapies arise because of the needs of patients who need to be given nursing interventions based on the value of caring. A person who has caring values can establish a human relationship between individuals and the environment. The science of caring has developed and to study caring can refer to Watson's Humanistic caring theory.

The complementary therapy in this review literature is in accordance with the nursing theory by Jean Watson and Roger. The application of complementary therapy

requires Caring Jean Watson's theory. Mind therapies are a component of complementary therapy. The philosophy of epistemology shows the truth that according to Jean Watson's theory which states that caring in nursing must be able to provide inner balance and nurses are expected to provide services with respect for patients (40). This is in accordance with the mind therapies that can be given to patients. Mind therapies are applied by respecting patients as unique beings so that the harmony between humans as individuals and their environment will be realized. The results showed that the nurses who applied the Caring Watson theory were judged by the patients to have a high sense of concern. The main key that nurses can apply Caring's theory is at the level of knowledge and education of nurses. Nurses who have sufficient knowledge and high education will influence the application of caring behavior to patients (41).

The components of other complementary therapies are body and spirit. This component ontology arises because of energy in humans, that humans are a source of energy that is one with the universe. Complementary therapy with attention to the energy dimension in humans. According to epistemology, complementary body and spirit therapy discusses therapy that has an emotional and psychosocial impact. Several therapies implemented in patients can reduce anxiety and express pain. This is in accordance with Rogers' nursing theory which states that humans have an energy dimension. It because with touches such as hand reflexology and foot massage therapy, growth will release endorphin hormones which can create a feeling of relaxation and comfort (11). The axiology shows that complementary therapies can be applied to patients with heart disease. This is because heart patients have physical and psychological problems that often arise. The problem that often arises is a psychological problem. Psychological and physical problems include anxiety, fear, depression and pain (3). With the application of complementary and alternative therapy, it will stimulate the work of the parasympathetic nerves to activate the endorphin hormone which can create a feeling of relaxation so that anxiety is reduced, pain is reduced and muscles stretch

Conclusion

Patients' experiences with psychological and physiological problems should be observed from a holistic point of view. Nurses' knowledge regarding CAT as a nursing intervention can improve the patients' conditions. CAT therapy is easy to implement in

patients with acute or chronic diseases such as heart disease; it is very affordable and does not cause serious side effects. In addition to the benefits for patients, CAT also provides positive benefits for nursing institutions to integrate CAT materials into the educational curriculum so that prospective nurses can have adequate knowledge related to complementary therapies that can be applied to patients.

Complementary and alternative therapy has been carried out in several developed countries, in Indonesia, Holistic Nursing is a part of CAT, an association which has been formed called the Indonesian Holistic Nurses Association (HPHI). Holistic nursing contains patient care that focuses on bio-psycho-socio-spiritual-cultural based on the nursing body of knowledge, namely Caring Watson's theory, Roger's energy theory and Integrative Nursing Theory. Services in holistic nursing include 1) mind body intervention: hypnotherapy, meditation relaxation, yoga, music therapy etc ; 2) energy teraii: acupressure, reiki, healing touch magnet therapy; 3) other herbs and herbs, beauty, acupuncture, message, reflection, shiatsu, aromatherapy, etc. Holistic nursing in nursing services is very necessary given the importance of nursing services that focus on humans who are seen as unique. Caring Watson's theory explains that it reveals that there are ten carative factors that can reflect the caring behavior of a nurse. These ten factors are forming a humanistic-altruistic value system, instilling beliefs and expectations, developing sensitivity for oneself and others, fostering relationships of mutual trust and mutual help, increasing and accepting the expression of positive and negative feelings, using systematic problem-solving methods in taking decisions, improve interpersonal teaching and learning processes, provide an environment that supports, protects, and or improves mental, socio-cultural and spiritual, helps in the fulfillment of basic human needs, develops phenomenological existential power factors. This is consistent with nursing services on complementary and alternative therapy.

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