CHAPTER 2

LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

Literature review and related researches

In this study, the literature review included four parts: hepatocellular carcinoma, hepatectomy pain, needs of hepatectomy patient with pain, and nurse responses to needs of hepatectomy patient with pain.

Hepatocellular carcinoma

Hepatocellular carcinoma (HCC) is the primary malignant tumor of the liver and considered to be one of the most lethal disease. The fatality of case ratio has been estimated to be 0.9 (Reintgen & Sabiston, 1987). There are many risk factors influence the development of HCC. More than 90% of HCC cases are associated with hepatitis B infection, cirrhosis, or both (Hanto & Fischer, 1995).

Current common treatments for HCC are hepatectomy, transcatheter arterial embolization (TAE), and percutaneous ethanol injection therapy (PEIT) (Makuuchi & Kawasaki, 1997).

Hepatectomy remains the primary treatment that curing patients who have an early stage of HCC. The TAE is

used most commonly in patients with unresectable HCC. The PEIT is used in patients with small HCC or borderline lesions (Makuuchi & Kawasaki, 1997; Reintgen & Sabiston, 1987). According to Makuuchi and Kawasaki (1997), 207 patients with HCC was treated by at least one or more of these three different methods. The result showed that hepatectomy produced the best 5-year survival compared to TAE and PEIT. For early stage of HCC, hepatectomy provided an excellent outcome, with a 5 years survival of 100%. Therefore, hepatectomy is the first choice of treatment for early stage of HCC (Makuuchi & Kawasaki, 1997).

Likewise, hepatectomy is the most common and effective treatment for early stage of HCC in China. Although hepatectomy is very effective strategy in improving survival rate, many complications are inevitable including hepatectomy pain.

Hepatectomy pain

Definition of hepatectomy pain

Pain is an individualized experience and is difficult to define or understand by other persons. It becomes whatever the individual says it is and what is experienced at the time (McCaffery, 1979).

According to Melzack (1973, cited in Roberts, 1986), pain is defined as a complex perceptual experience whose

quality and intensity are influenced by the unique past history of the individual, by the meaning he gives to the pain-producing situation, and by his state of mind at the moment. As Kim (1980, cited in Roberts, 1986, p. 504) stated that, "pain is an abstract construct which refers to a personal experience of hurt whose quality and intensity are known to be influenced by physical, psychological and sociocultural variables". Moreover, the International Association for the Study of Pain (1989, cited in Davis, 1989, p. 504) defines pain as an unpleasant sensory and emotional experience associated with actual or potential tissue damage.

Meanwhile, pain is a protective mechanism that protects the individual from harm. According to Holmberg (1988), pain is defined as a harmful stimuli that warns of current or impending tissue damage and as a pattern of responses used to protect the person from harm.

Pain represents a number of experience. However, pain is not purely a stimulus response. Other factors must be taken into consideration. Physical pain involves a noxious stimulus of varying degree in intensity and duration. Psychological pain is more of a perceptual experience. Physical and psychological pain are closely interrelated. As has been noted in the various definitions, pain involves both physical and psychological experiences of

individual. According to Lesle (1972, cited in Roberts, 1986, p. 504), "pain is a psychological experience of events occurring within the patient's body, always unpleasant and associates with the impression of damage to the tissues." This blend of physiological and psychological events has to pass through the patient's powers of expression and speech before being described and made comprehensible to a nurse or doctor.

Postoperative pain is an acute pain that generally lasts for a few days and whilst worst in the first 48 hours. It is typically caused by tissue injury and can be expected to end when the tissue heals (Carr, 1990). Postoperative pain results from cutting, pulling, and manipulating tissues and organs. It may result from stimulation of nerves endings by chemical substances released at the time of operation or from tissue ischemia caused by interference of blood supply to the tissue. Trauma to the nerve fiber in the skin produces sharp localized pain (Jurf & Nirschl, 1993). Postoperative pain is a complex and unique phenomenon.

According to hepatectomy procedure, all approach can be accomplished through a midline, right paramedian, or right subcostal incision (Flint & Polk, 1988). However, subcostal incision is preferred by majority of surgeons because it provides an excellent exposure of liver. The right subcostal incision begins at the midline below the

xiphisternum, and follows the line of the costal margin, as far as laterally as required (Marshall & Ludbrook, 1988). The incision may cause trauma of some muscles such as rectus abdominis muscle, internal and external oblique muscles, and transversus abdominis muscles (Makuuchi & Kawasaki, 1997). Not only the incision but also hepatectomy procedure is painful. As a result, postoperative patients often experience great discomfort from hepatectomy pain.

Management of hepatectomy pain

All surgical procedures will produce various postoperative intensity of pain, and pain relief is the core treatment after operation. Pain management include pharmacologic and nonpharmacologic intervention (Jurf & Nirschl, 1993; McCaffery, 1980).

Narcotics or opioid analgesics are the most commonly used pharmacologic interventions. They relieve postoperative pain by attaching to the opioid receptor sites in the brain and spinal cord (Jurf & Nirschl, 1993). Commonly used narcotics include morphine, pethidine, and hydromorphone. These drugs are effective in the relief of severe to moderate pain (Christoph, 1994; Jurf & Nirschl, 1993). Even though they are extremely effective in controlling postoperative pain, they are associated with numerous side effects such as, respiratory depression, cardiovascular depression, nausea, vomiting, and drowsiness (Christoph,

1994).

According to Christoph (1994), appropriate narcotics should be provided before the development of severe pain. Once pain has become severe, pain threshold will decrease. The patient perceives pain as unbearable, it may need a large dosages of analgesics to relief pain. Therefore, prompt response from nurses is needed to achieve the pain control. The proper management of narcotics is needed as well as carefully monitoring and using additional therapies such as nonpharmacologic interventions. The comprehensive pain control can significantly reduce the use and dosage of narcotic agents needed to control pain (Jurf & Nirschl, 1993).

Nurses have an independent role to control pain by appropriately utilizing nonpharmacological pain relief measures. Nonpharmocological interventions include information support, distraction, and relaxation (Jurf & Nirschl, 1993; McCaffery, 1980). Nonpharmocological techniques usually succeed in relieving pain without adverse effects to the body. The key to the success of these techniques in pain control is the use of the appropriate strategy in combination with narcotics to fulfill the needs of each individual patient in order to control pain successfully.

Distraction is a kind of a protecting of one's self

from the pain sensation by focusing on and increasing the clarity of sensations unrelated to pain (McCaffery, 1980). Distraction techniques include visiting or being visited by people, listening to music, imagery, and using humor. According to recent studies, humor and music appear to be particularly effective methods of distraction, perhaps because of high patient acceptance of these interventions (Good, 1996; Weisenberg, Tepper, & Schwarzwald, 1995; Jurf & Nirschl, 1993).

Relaxation is a getting away from mental and physical tension and stress. Examples of relaxation techniques are deep breathing, muscle relaxation, and meditation relaxation (Bolander, 1994). Relaxation helps patient assume a sense of control over the pain, reduce muscle tension, and the distress associated with pain experienced (Jurf & Nirschl, 1993).

In summary, nonpharmacologic techniques can bring the most therapeutic response when used in conjunction with an appropriated pharmacologic regimen (Jurf & Nirschl, 1993). In fact, nurses may employ several of these strategies simultaneously whereas appropriate to obtain the optimum amount of pain relief for the patients. Since many factors influence hepatectomy pain, patients' needs for pain relief are different. Whatever methods will be used, the key to the success of interventions in hepatectomy pain

management is the use of the appropriate strategy to fulfill the needs generated during pain of each individual patient. Only after their needs regarding to hepatectomy pain have been met, the hepatectomy pain will be controlled successfully.

Needs of hepatectomy patient with pain

Definition of human needs

A need is that which is necessary, useful, or desirable to maintain well-being and life. All human beings have needs and these needs must be satisfactorily met to make the people obtain optimal feeling of comfort. Many authors have defined human needs in various way.

Maslow (1970) views a human need as a phenomenon arising from an internal tension caused by some change in the relationship of individual and that individual's surroundings. This tension results in goal-directed behavior that persists until the tension is reduced and need is satisfied.

Berger and Williams (1992) define human needs as physiological or psychological conditions that must be met in order for an individual to achieve well-being. According to Kozier and Erb (1979), human needs are those necessary things which are required by human beings in order to maintain physiologic and psychologic homeostasis. Taylor and

coworkers (1989) defined human needs as something that are essential to the emotional and physiologic health and survival of humans. Kozier and Gas (1967) identified patient's needs which included movement and exercise, hygiene, comfort, nutrition, safety, communication and learning, and spiritual needs.

According to Lederer, a human need is viewed as what is lacking perceived by a person (Lederer, 1980, cited in Yura & Walsh, 1983). He suggested that social and cultural factors play important parts in the expression of physiological needs, and pointed out that needs satisfaction must account for differences related to age, gender, socioeconomic status, occupation, and educational level.

Human needs are also said to be motivational forces. The motivational strength and manner of expression of these needs is influenced by culture, socioeconomic factors, personal values, and health status. All people develop behaviors that help them meet their needs. They can learn to delay meeting needs and modify the specific behaviors that satisfy a need depending on the need's motivational strength. If a need goes unmet, physical illness, psychological disequilibrium, or death can occur (Craven & Hirnle, 1992).

In summary, human needs are all necessary things required to maintain physiological and psychological

homeostasis for human healthy or life. The physical and psychosocial needs are common to all human being. A person whose needs are met may be considered to be healthy, and a person with one or more unmet needs is at increased risk for illness or health alterations in one or more of the human dimensions.

Many philosophers, psychologists, and physiologists have described human needs and have discussed them from various points of view. The most prominent theorist to focus on human needs is Abraham Maslow (Craven & Hirnle, 1992).

Maslow's theory of human needs

Abraham Maslow (1970, cited in Craven & Hirnle, 1992) developed a theory of human needs in 1950s. He believed that all human beings are born with instinctive needs. These needs can be grouped into five categories and arranged in order of importance from those essential for physical survival to those necessary to develop our fullest human potential. The lower needs must be satisfied before higher level needs can be met. The five level hierarchy of needs include: 1) physiological needs, 2) safety needs, 3) love and belonging needs, 4) esteem needs, and 5) self-actualization need.

Physiologic needs are the most prepotent needs of all that are experienced by all human beings at all levels

and must minimally met to maintain life. They locate at the base of the hierarchy, among them are the needs for oxygen, food, water, rest and sleep, activity, elimination, and sexuality. If all needs within this level are unsatisfied, the human organism will be dominated by physiological needs alone and all other needs will seem nonexistent. Once basic physiological needs have been reasonably well met, they no longer remain needs, and other higher-level needs emerge to drive the human organism.

Safety needs come next in priority and involve both physical and emotional components. Humans need to be physically safe and free from the fear and anxiety that can result from a lack of security and protection. If this need goes unmet, the person may experience of pain, injury, or death.

If physiological and safety needs have been fairly well gratified, love and belonging level of needs will emerge and become dominant. They include the understanding and acceptance of other in both giving and receiving love, and feeling of belonging to other namely peers, families and community.

Esteem needs include self-respect or self-esteem, and esteem from others. If esteem needs go unmet, the person is doomed to a life characterized by self-doubt and feelings of helplessness and worthlessness.

Self-actualization needs is the highest level on the hierarchy which are the needs for an individual to reach his or her potential through full development of the individual's unique capabilities if all the lower needs are fairly well met.

Maslow's theory has been used extensively by health personnel when planning and providing health care. One of the important values of this theory is that it can be used to identify priorities when planning care for patients. Once patient's needs have been identified, priorities can be assigned to them. This is the process of determining which needs is the most important for a patient at a particular time. In identifying what is of primary importance to the patient and adding our expertise, we can design a plan of care that is the most effective in fulfilling the patient's needs.

Application of Maslow' theory on needs of hepatectomy patient with pain

Hepatectomy patients experience acute pain especially within the first 48 hours after operation. Surgical procedures have pronounced effects on respiration because of alterations in the actions of the respiratory muscles (Lutz & Lamer, 1990). Therefore, hepatectomy patients usually experience altered respiratory function related to impaired

ability to cough and take a deep breath. Therefore, atelectasis and retention of secretions may occur following by inadequate gas exchange.

In addition, uncontrolled hepatectomy pain limits mobility, decrease appetite, and interfere peaceful sleep of the patients. Immobility finally increases the liability to deep vein thrombosis, pressure sores, muscle wasting, urinary retention, and constipation (Carr, 1990; Christoph, 1994; Jurf & Nirschl, 1993). It is obvious that hepatectomy pain affects patients' physiological needs.

Hepatectomy pain not only affects patient's physiologic needs, but also has an impact on safety needs which generated anxiety as well. According to Van and Syrjala (1990, cited in Jurf & Nirschl, 1993), increased intensity pain has a direct association with the presence of fear and anxiety. For hepatectomy patients, a variety of factors may generate anxiety, including fear of continuous pain, fear of the uncertainty, and/or fear of delayed recovery period. Feelings of helplessness and/or lack of control may also contribute to anxiety and fear (Christoph, 1994). These feelings may be enhanced by the constraints of postoperative care, such as a flat-lying position in bed without engaging in any necessary daily activities. Adverse effects generated from having major operation becomes more prominent.

In addition, being hospitalization, staying away from their families, and not being able to engage in daily activities are common among hospitalized patients. Moreover, hospital environment is not familiar to them. The patients may feel lonely. After experienced hepatectomy pain, they need more of the understanding, love, care, and concern from others, including nurses. Therefore, nurses should concern more of emotional support provision in an appropriate time to fulfill their love and belonging needs which generated during having hepatectomy pain in the hospital.

According to Maslow, the suffering of hepatectomy patients within 48 hours after operation affects their well-being; thus, needs are generated during this period. Basic levels of needs in the hierarchy are minimally met. Therefore, hepatectomy patients' physiological needs, safety needs, and love and belonging needs are generated during having postoperative pain need to be responded thoroughly and individually first unless the higher needs such as self-esteem needs, and self-actualization needs will not be met. Nurse takes full responsibility to respond to such needs adequately and thoroughly. Only after patients' needs are generated during having hepatectomy pain are fulfilled by nurse responses, their hepatectomy pain will be relief successfully and finally achieve ultimate well-being. Study of needs of hepatectomy patients with pain has not been

found in China. Such study is needed.

Nurse responses to needs of hepatectomy patient with pain

According to Yura and Walsh (1983), the nurse's primary responsibility is to fulfill human needs by using nursing as a means. Nursing activities need to be carried out to fulfill patient's needs regarding hepatectomy pain. While planning for hepatectomy patient care, it should not be forgotten that patients may be suffering not only physical pain but also psychological pain. So, pain relief is desirable to improve the patient's physiological and psychological welfare.

The relief of pain and the promotion of comfort should be major goals in the care of the hepatectomy patients. This evidence also provides a sound rationale for the prompt control of hepatectomy pain with appropriate narcotics as well as nursing intervention before the development of severe pain. Once severe pain reaches its peak, a large dosages of narcotics are needed to bring the postoperative pain under control (Christoph, 1994). Nurses also need to assess the effectiveness of pain relief measures regularly.

After operation, the relief of pain requires the reduction of noxious stimuli. Positioning and repositioning to avoid pressure and/or stress on an incisional wound and

promoting adequate ventilation are important. Surgical incision should be handled carefully to avoid further trauma whenever possible. Careful attention to positioning body parts is important to prevent further discomfort and suffering during the postoperative period (Christoph, 1994).

Postoperative patients should be taught preoperatively how to splint the incisional wound externally to minimize unwanted vibration during ventilatory exercises and coughing. Assistance from others during the first couple days after operation may be needed.

Moreover, most patients need accurate information about the causes of their postoperative pain regularly. Reasonable explanations are especially important when they are anxious about whether there is "something wrong" within their body. Therefore, hepatectomy patients need the information related to nature of postoperative pain to control over their anxiety and fear (Carr, 1990). The patients need to understand the nature and duration of the pain as well as to know whom they should notify and ask for pain control. In addition, they need to know what they can do and how to do to have pain control effectively.

Nurses should provide those information to the patients. In fact, information sharing is one of the most significant strategies the nurse can use to alleviate a patient's hepatectomy pain. A study of Wallace (1990, cited

in Jurf & Nirschl, 1993) indicated that patients who received accurate information before their surgery about what to expect from the experience reported lower pain scores than those who did not receive such information. The patients may fear that his/her pain will escalate and be beyond anyone's control and/or that his/her pain is an indication of unwanted effects or complications. Then they will be less able to tolerate the pain and will perceive a greater pain intensity (Bronzo & Powers, 1967, cited in McCaffery, 1979). Therefore, telling the patient about the nature and duration of uncomfortable sensations he/she may experience may help patient to alleviate the source of anxiety. Patient understanding decreases their fear of unknown, thereby reducing his/her anxiety and assisting in the control of pain (Carr, 1990).

Providing narcotics as prescribed and introducing pain relief measures such as listening to music, using humor or relaxation techniques will help to assure the patient that his/her pain will not be uncontrolled. The patient should be informed about pain relief measures that he/she can do by himself/herself and what can be anticipated from health care providers, especially nurses. These all can increase the patient's comfort, feeling of being cared for, and sense of control. Thus, it is crucial that nurses should share with the patients information about what is going on,

what experiences he/she will have and what he/she will be taken care for.

Saxey (1986) pointed out that effective pain management begins with trusting therapeutic nurse-patient relationship. In addition, McCaffery (1979) stated that being with and talking to the patient who undergoing pain experience, regardless of the specific purpose will result in his/her feeling better. These activities show the concern of nurses and trustworthiness is built. Therefore, the patient will become more relax knowing that nurses will be there to help him/her with all aspects of his/her pain experience. The presence of the nurse may reduce the patient's feeling of loneliness. When the trusting nurse-patient relationship exists, the more likely that all pain relief measures provided by nurses will be achieved. However, little information is known about nurse responses to needs of hepatectomy patient with pain as perceived by the patients. Therefore, such information is required.

Summary

In summary, being diagnosed as having HCC and undergone hepatectomy are stressful experiences for patients. Hepatectomy pain is an acute pain that may cause patients' physiologic changes and psychologic reactions that has an impact on physiologic, safety, as well as love and

belonging needs of the patients according to Maslow theory. Most of the studies show that postoperative patients express dissatisfaction with their postoperative pain relief. At the mean time, few studies have ascertained needs regarding hepatectomy pain and whether such needs are fulfilled by nurse responses. To provide an effective nursing intervention to control over hepatectomy pain, nurse should be aware of patients' needs regarding such pain, then respond to their needs appropriately and thoroughly to ensure the effective pain control.

Conceptual framework

For this study, the conceptual framework was based on Maslow's hierarchy of basic human needs. Maslow (1970) pointed out that needs were requirements for well-being. He categorized basic human needs into five levels according to priority: 1) physiological needs, 2) safety needs, 3) love and belonging needs, 4) esteem needs, and 5) self-actualization needs.

Based on literature review, being diagnosed with hepatocellular carcinoma and undergone hepatectomy are stressful life experience for the patients. Hepatectomy pain is inevitable. Such suffering within the first 48 hours after operation has a major impact on the patients' well-being. Therefore, hepatectomy patients' physiological needs,

safety needs, as well as love and belonging needs regarding pain need to be responded appropriately and thoroughly unless the higher level of needs such as self-esteem needs and self-actualization needs will not be fulfilled. Nurses have full responsibility to respond to such needs. Only after patients' needs regarding hepatectomy pain are fulfilled by nurse responses appropriately, their hepatectomy pain will be relief.