

CHAPTER 2

LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

Literature review and related researches

In this study, the literature review includes four parts: hepatocellular carcinoma and hepatectomy; events and stress appraisal; events and stress appraisal among HCC patients undergone hepatectomy; and measurement of events and stress appraisal.

Hepatocellular carcinoma and hepatectomy

Hepatocellular carcinoma (HCC) is an aggressive malignancy, and is the most common visceral cancer in the world (Tung & Gerber, 1992). Overall prognosis for the patient with primary liver cancer is poor. The relative 5-year survival rate for cancer of the liver is 5%. For those with resectable disease, this rate increases to 10% (Otto, 1994). The epidemiology is undoubtedly multifactorial and includes exposure to hepatitis virus; cirrhosis; dietary factors, including malnutrition; ingestion of aflatoxins; and other unknown factors (Cady, 1989).

A patient with HCC may initially have epigastric or right upper quadrant pain, followed by fatigue, anorexia, weight loss, weakness, or fever as his/her disease progresses. He/she may have jaundice or dependent edema or peripheral edema if liver dysfunction and malnutrition cause low plasma albumin level. Jaundice may cause itching (Meissner, 1996).

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

Surgery is the only potentially curative treatment modality for patients with early stage of HCC (Otto, 1994). 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). In China, Tang (1998) found that hepatectomy resulted in significant prolonged survival rate and the role of surgery in treatment of HCC has been increased. The 5-year survival rate was 4.8% in 1958-1970, and 46.7% in 1984-1995 among HCC patients undergone hepatectomy in Zhongshan hospital. However, such treatment can possibly evoke stress appraisal generated by both of the illness-related events and/or hospital-related events that are faced by the patients.

Events and stress appraisal

Definition

Stress is conceptualized in several ways. It is considered as a primarily physiological or psychological phenomena, or a combination of the two. Stress is also described as a stimulus, a response, or both (Robinson, 1990). Seyle, one of the first stress researchers, viewed stress as a non-specific response of the organism to a threat or a stressor. His stress theory primarily addressed global physiological responses secondary to sympathetic system activation following exposure to a stimulus (Barnfather & Lyon, 1990 cited in Byers & Smyth, 1997). Lazarus and Folkman's model (Lazarus & Folkman, 1984) considers physiological and psychological features and the factors that cause individual variation in response to stressful events.

Lazarus and Folkman (1984) view stress within a transactional model. They defined stress as a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being. Events are the demands of the person-environment relationship that are appraised whether as stressful. An individual's level of stress at any time is a result of a dynamic transaction between the person and the environment. The net result of a transaction between person and environment and resources following cognitive appraisal determines a person's stress level.

Cognitive appraisal is an assessment activity that evaluates whether and to what extent the transaction is stressful to the individual. During cognitive appraisal, demands are assessed according to the possible impact on the individual's well-being. Demands can be judged as irrelevant, benign positive, or stressful. If demands are appraised as stressful, they can be classified as representing threat, harm/loss, and challenge. In harm/loss, some damage to the person has already been sustained, as in an incapacitating injury or illness. The most damaging life events are those in which central and extensive commitments are lost. Threat concerns harm or loss that have not yet taken place but are anticipated. Even when a harm/loss has occurred, it is always fused with threat because every loss is also pregnant with negative implications for the future. Challenge appraisals focus on the potential for gain or growth whereas inherent in an encounter and they are characterized by pleasurable emotions such as eagerness, excitement, and exhilaration, whereas threat centers on the potential harms and is characterized by negative emotions such as fear, anxiety, and anger.

Factors influencing stress appraisal

Lazarus and Folkman (1984) identified many person-related and situation-related factors influencing cognitive appraisal. Person-related factors include commitments, and beliefs, that the person has, whereas situation-related factors include novelty, predictability, event uncertainty,

temporal uncertainty, imminence and duration of the event within the developmental life cycle. Person factors and situation factors interdependently influence appraisal.

Commitments express what is important to the person, what has meaning for him or her. They determine what is at stake in a specific stressful encounter. Any encounter that involves a strongly held commitment will be evaluated as meaningful to the outcome harms or threatens the commitment or facilitates its expression. Commitments also underlie the choices people make or are prepared to make to maintain valued ideals and/or to achieve desired goals. Commitment affect appraisal by guiding people into or away from situations that threaten, harm, or benefit them and by shaping cue-sensitivity. Commitments also influence appraisal through their impact on vulnerability. The deeper a person's commitment, the depth of commitment can also push a person toward ameliorative action and help sustain hope.

Beliefs are personally formed or culturally shared cognitive configurations. Belief about personal control and existential concerns are two major categories that are relevant to appraisal. In appraisal, beliefs determine what is fact, that is "how things are" in the environment, and they shape the understanding of its meaning.

A completely novel situation will result in an appraisal of threat only if some aspect of it has been previously connected with harm. Novelty encourages appraisal inferences based on related previous experience or on general knowledge. Predictability implies that there are

predictable environmental characteristics that can be discerned, discovered, or learned. Predictability has been studied extensively in animals, and the findings indicate a preference for predictable stimuli. The analogous construct in human behavior is event uncertainty, which introduces the notion of probability. In real-life events, anecdotal observations suggest that maximum uncertainty is often extremely stressful; it can have an immobilizing effect on anticipatory coping processes and cause mental confusion.

Three temporal situational factors should be considered: imminence, duration, and temporal uncertainty. The more imminent an event, the more urgent and intense the appraisal. The less imminent an event, the more complex the appraisal process becomes. Although the passage of time can heighten threat, it can also allow the person to manage threat through cognitive coping, in which case increased anticipation time can lead to the reduction of stress reactions.

Duration refers to how long a stressful event persists. Much of the research on duration has been influenced by Selye's concept of General Adaptation syndrome. Not all enduring stressors lead to exhaustion; animals, for example, often habituate, resulting in a diminished stress response. Emotional habituation occurs in humans, and it may arise through the same evaluative mechanisms as discerned in animals, and/or through coping.

Temporal uncertainty refers to not knowing when an event will occur. Little research has been done on this

temporal factor, but the existing evidence suggests that temporal uncertainty generates coping activity that reduces stress reactions.

Personal factors vary from different individuals. Different persons has different commitments and beliefs, the stress appraisal among may be different from people in other countries.

Events and stress appraisal among HCC patients undergone hepatectomy

It is widely acknowledged that cancer is one of the most feared and stressful of all diseases (Jalowiec & Dudas, 1991). The discovery that one has cancer is viewed by the individual as a stressful event and a greater threat than that of other serious diseases (Krause, 1991). Besides, its treatment themselves are threatening (Ali & Khalil, 1991).

Being diagnosed as having HCC and undergone hepatectomy are stressful for patients especially during postoperative period. The diagnosis of cancer and its treatment introduce many illness-related and situation-related events that may be appraised by the patients as taxing or exceeding his/her resources and endangering his/her well-being. Illness-related events in this study include nature of cancer and postoperative condition whereas hospital-related events comprise hospital condition and interpersonal events.

Jalowiec and Dudas (1991) summarized a variety of events that cancer patients have to confront with. Some of

these events may be faced by HCC patients undergone hepatectomy. For instance, the illness-related events include loss of normal liver function, pain, nausea, vomiting, fatigue, decreased mobility, loss of control over one's own body and over numerous aspects of daily living, fear of dependency, uncertainty regarding the future, fear of diminished work capacity or loss of job, fear of recurrence of the cancer, fear of further treatment, fear of death/dying, and concern of financial problems. Hospital-related events consist of adjusting to the hospital environment, dealing with a variety of health care providers, strained interpersonal relationships, social isolation, and inability to perform various social roles.

Illness-related events and stress appraisal among HCC patients undergone hepatectomy

Hepatectomy is a major abdominal surgery. After the surgery, the patients may suffer from severe wound pain, sleep disturbance, abdominal distension, nausea, vomiting, and fatigue (Long, 1991). Weight loss, inability to eat, or changing diet are commonly found in the individuals with cancer (Anderson & Ward, 1997). After the surgery, tubes and lines are probably be inserted to control and treat the postoperative condition of the patients. During postoperative phase, fatigue is one most frequently experienced symptom among cancer patients recovery from surgery (Barnett, 1997). Moreover, the patients may feel stressful due to decreased mobility. The patients may worry

about diminishing work capacity, loss of job, or inability to fulfill social role. Many patients feel stressful concerning about financial problem (Volicer & Bohannon, 1975).

According to Flink and Polk (1988), hepatectomy can be accomplished through a right subcostal incision because it provides an excellent exposure of liver. Such incision induces severe postoperative pain. Heffline (1990 cited in Jurf & Nirschl, 1993) found that thoracic, renal, and upper abdominal incisions tend to be the most painful. This is probably the result of the cross-innervation of nerves in the thoracic and abdominal areas and the complex symptomatology associated with visceral and somatic pain (Schwartz, 1989 cited in Jurf & Nirschl, 1993). Irritation from drainage tubes, tight dressings, and the muscular strains are factors that can make the patients feel miserable (Potter & Perry, 1987). The patients are fear and reluctant to cough, perform deep breath, turn, ambulate, or engage in necessary exercises (Potter & Perry, 1987).

Having severe pain were appraised by patients as highly stressful events (Cochran & Ganong, 1989; Cornock, 1998). However, different patients experience pain differently, as perceived severity of pain can be influenced by the individual's personality, age, gender, personal belief, and value system (Jurf & Nirschl, 1993).

Severe wound pain may cause sleep disruption and interfere sleep cycle. Closs (1992) interviewed 100 patients who had abdominal surgery about sleep disruption

and pain over the first three postoperative nights. Only two patients reported pain-free nights; 25 patients reported no sleep problem, while 75 said their sleep had been disrupted by pain. Increased pain during night-time was reported by 49 patients. Sleep is the basic physiological need for the patient. When their need can not be satisfied, the patient may interpret this event as stressful.

Postoperative vomiting is one of the most distressing problems that a patient encounters. Abdominal distension is experienced to some degree by most patients after abdominal surgery. It will persist until the tone of the bowel returns to normal and peristalsis resumes. Abdominal distension may produce restless, and vomiting (Long, 1991). With the alternation of hepatic function, most of HCC patients may feel suffering from abdominal distension, nausea, and vomiting postoperatively (Long, 1991). Some of these patients with postoperative paralytic ileus are managed by maintaining the patient NPO and draining gastric secretions with a nasogastric tube (Beckermann & Galloway, 1989). With different type of operation and preexisting hepatic function, the manifestation of abdominal distension, nausea, and vomiting are different among HCC patients undergone hepatectomy.

Cancer and its treatment affect the nutritional status of the patient. Besides being subject to metabolic effects due to cancer, patients are emotionally stressed when nutritional intake is impaired. Weight loss is presented in half of patients at diagnostic time (Anderson &

Ward, 1997). Caloric requirements imposed by the physiologic stress of surgery and recovery may be high. Weight loss, inability to eat, or difficulty in eating may have a profound physical and psychological impact on the individual with cancer (Anderson & Ward, 1997). Malnutrition may cause HCC patients feeling not enough energy and fatigue (Beckerman & Galloway, 1989). In addition, the patient may worry that their recovery will be slow because of malnutrition. They may appraise this situation as taxing or exceeding his/her resources and endanger his/her well-being.

Fatigue is the most frequently experienced symptom of cancer and cancer treatment (Aistars, 1987; Hansen & Kehlet, 1992, cited in Barnett, 1997). Studies showed that patients with cancer recovering from surgery consistently reported fatigue, which may persist as long as 6 months postoperatively (Nail & Jones, 1995; Nail & King, 1987; Piper, Lindsey, & Dodd, 1987 cited in Barnett, 1997). Patients found the symptom of fatigue very distressing (Barnett, 1997). In addition to cancer and hepatectomy, many physical factors such as pain, sleep/rest disturbance, nutrition, and psychological factors such as anxiety, depression, and isolation may influence fatigue experienced by HCC patients undergone hepatectomy.

Having tubes and lines were appraised by most of patients as stressful events (Connelly, 1992; Cornock, 1998). After hepatectomy, oxygen may be administered through a nasal cannula to the HCC patients to prevent hypoxemia. Intravenous line should be kept to administer fluid,

electrolyte, nutrition, and medication. Catheterization is still kept in some of the patients as well as nasogastric intubation. Being restricted with such tubes and lines, the patient may feel uncomfortable and realize that his/her condition is not that good.

Decrease mobility is another illness-related event that occurs to HCC patients undergone hepatectomy. Decrease mobility may be caused by pain (Jurf & Nischl, 1993), malnutrition, fatigue (Barnett, 1997), or being intubation or line insertion (Cochran & Ganong, 1989; Cornock, 1998). Activity, mobility, and flexibility are integral to a person's life-style. Compromised mobility has a serious impact on self-concept and life-style (Christian, 1982 cited in Carpenito, 1997). Mobility is one of the most important aspects of physiological functioning because it is essential for maintenance of independence (Miller, 1995 cited in Carpenito, 1997). The patient may feel stressful because he/she has to depend on others. During the first period of recovery, he/she may worry about diminishing work capacity, possible loss of job, or inability to fulfill social role.

Patients frequently express feelings of being 'out of control' of their lives and what is happening to them (Denton & Oliver, 1996). During the postoperative period, the major operated patients suffer from the various physical discomforts. The feeling of loss of control of their body function and daily living can be intensified. The patient's realization that he/she cannot control the over the

situation is major cause of his/her fear, anxiety, depression, and hostility (Bouchard & Owens, 1976).

Uncertainty over prognosis and outcome has been seen as a major variable influencing the patient's experience with cancer (Fridfinnsdottir, 1997; Krause, 1991; Mishel, Hostetter, King, & Graham, 1984). Uncertainty about the treatment effectiveness was appraised as the most stressful event among Egyptian mastectomy patients (Ali & Khalil, 1991).

Individual may experience uncertainty when the course of their disease or the efficacy of treatment for their disease is unpredictable. Uncertainty also may arise if illness-related information is not enough provided or not well understood (Galloway & Graydon, 1996). Even if surgery is deemed successful, uncertainty may still exist if the length of time for resolution of treatment are not clear (Galloway & Graydon, 1996). Individuals with cancer reported more uncertainty as a result of the unpredictable nature of their disease than individuals undergone similar surgery for benign disease (Galloway, 1986 cited in Galloway & Graydon, 1996). With uncertainty towards the situation, the HCC patients undergone hepatectomy may find it difficult to anticipate their future and may appraise the situation as stressful.

Uncertainty may be detrimental in an illness experience if it is difficult or impossible for an individual to decide upon the action to take. The detrimental nature of uncertainty can be seen in it's

associations with poorer psychosocial adjustment during the ongoing treatment (Oberst & Scott, 1988 cited in Galloway & Graydon, 1996), such as increased anxiety (Wong & Bramwell, 1992), and decreased activity levels (Mishel et al, 1984). Uncertainty regarding the future causes fear in some patients. Of all the emotions that are engendered by a diagnosis of cancer, fear appears to be the leader. For many people, cancer may initially mean the destruction of all that they hold, and certain death. Patients often state that it is not the dying, but the manner in which this happens, which is so important (Denton & Oliver, 1996).

Hospital-related event and stress appraisal among HCC patients undergone hepatectomy

Besides illness-related events, HCC patients undergone hepatectomy have to confront with hospital-related events because they have to be hospitalized. Hospital-related events include physical condition and interpersonal events. Hospital condition consists of unfamiliar room, bed, light, noise, hospital schedule, and wearing the hospital gown. Interpersonal events include sharing a room with others, relationship with nurses, doctors, and other patients, and being away from home. Some of these events were appraised as stressful in some studies (Connelly, 1992; Volicer & Bohannon, 1975).

In hospital environment, too much light or noise may cause sleep pattern disturbance. In addition, because the patients have already had the sensory overload with the

diagnosis and treatment, they may feel more stressful with uncomfortable temperature as well as too much light and noise (Connelly, 1992; Cornock, 1998; Volicer & Bohannan, 1975). Other hospital conditions such as uncomfortable bed and/or pillow, unfamiliar environment, having to stay in the same place all day, hospital schedule and wearing a hospital gown evoke the patients' feeling of boring and loss of control; thus, stress was found among some of them (Volicer & Bohannan, 1975).

In the general surgical ward of Zhongshan Hospital, four patients have to share one room. Having others in the same room and loss of privacy were stressful experience for some patients (Connelly, 1992; Cornock, 1998; Volicer & Bohannan, 1975). Watching treatments being given to other patients (Cornock, 1998), hearing the doctors or nurses discuss their conditions and others (Cornock, 1998), having roommates who probably be seriously ill, unable to share experience with others, and staying with roommates who have too many visitors (Volicer & Bohannan, 1975) are possibly be appraised by the patients as stressful.

Dealing with too many health care providers is considered to be stressful event for some hospitalized patients (Jalowiec & Dudas, 1991). Nursing procedures or inadequate communication between nurses and patients can produce stress among the patients. Being away from home and having too much concern from the family can also provoke stress (Connelly, 1992). Separation from family and

isolation from other people are reported by Ross and Mackay (1986) as stressful events for some of the patients.

Ross and Mackay (1986) studied patient's perception and nurses' perception of postoperative psychosocial stress among patients underwent open-heart surgery. In this study, the patients reported the following events scoring from the most to the least stressful: threat of severe illness, lack of information, loss of independence, problem with medications, unfamiliarity of surroundings, separate from spouse, financial problem, separate from family, and isolation from other people.

Connelly (1992) conducted a study to examine of stressful events appraised by the patient undergoing cardiac electrophysiologic studies. Twenty-eight patients and 13 nurses participated in this study. Stressful events rated by the patients and nurses. In this study, the author found that in general, illness-related events were more stressful to patients than hospital-related events. In addition, there was a significant difference between patients' and nurses' mean score on stressful events. This finding revealed that nurses could not assess stress appraisal of the patients properly.

Measurement of events and stress appraisal

There is no instrument directly reflected events and stress appraisal perceived by HCC patients undergone hepatectomy. Hassles Scale developed by Kanner, Coyne, Schaefer and Lazarus, based on transaction theory of Lazarus

and Folkman (Eckenrode & Bolger, 1995) is a measurement of everyday events, that community residents experienced in their past month. The Perceived Stress Scale (PSS) is another instrument that is the only empirically established index fall into the category of general appraisal instruments (Cohen, Kamarck, & Mermelstein, 1983, cited in Monroe & Kelley, 1995). The PSS, too, was developed based on Lazarus's concept of stress (Lazarus & Folkman, 1984). The PSS measures the degree to which situations in one's life are appraised as stressful. The 14 items of the original scale were designed to tap the degree to which respondents found their lives unpredictable, uncontrollable, and overloading, and was intended for the use in community samples. These two instruments provide the guideline in developing the measurement tool based on Lazarus and Folkman's transaction theory which was used to measure stress appraisal towards different types of situations and events perceived by HCC patients undergone hepatectomy.

The Environmental Stressor Questionnaire (ESQ) (Cornock, 1998) is a 50-item Likert-type scale questionnaire modified from the previous tool, 'the ICU Environmental Stressor Score' (ICUESS), developed by Ballard and Nastasy (Cochran & Ganong, 1989). The scale ranged from 4='extremely stressful' to 1='not stressful' with an option of 0='not applicable'. Some of the items from this instrument were found to be useful for developing the measurement tool for the study of HCC patients undergone hepatectomy.

The cardiac electrophysiologic studies (EPS) Stressor Scale was developed by Connelly (1992) to be used among patients undergoing cardiac electrophysiologic studies. The patients were asked to rate the degree of stress towards illness-related and hospital-related events and conditions. This scale consisted of 38 items. The items were categorized as hospital-related events and illness-related events. A five-point Likert scale, ranged from 1 as being 'not concerned' to 5 as being 'very concerned', was used in the EPS Stressor Scale. Some items from the study were modified and used to as guideline develop the measurement tool for this study.

Being diagnosed as HCC and undergone hepatectomy are devastating life experience for the patients. Events which they face are quite different from others. Information from review of the literatures regarding events faced by HCC patients undergone hepatectomy was used to develop the Stress Appraisal Scale-Hepatectomy (SAS-H) within the framework of Lazarus and Folkman's transaction model (1984). The SAS-H consists of 40 items including two dimensions: illness-related events (24 items) and hospital-related events (16 items). The 40 items were rated on 0 to 4 interval scale. Zero was rated when the event did not occur. The possible score for occurred events ranged from 1 to 4 indicates the different level of stress: 1="not stressful", 2="mildly stressful", 3="moderate stressful", and 4="extremely stressful". This scale was used to measure events and stress appraisal among HCC patients undergone

hepatectomy. Number of events facing by the HCC patients undergone hepatectomy referred to sum of non zero items. The events that were appraised as stressful were the sum of number of items marked 2, 3, and 4. The total score of non zero items divided by the sum of number of non zero items of which the patients rated reflect the stress appraisal.

Summary

HCC is an aggressive malignancy, and is the most common visceral cancer in the world. Hepatectomy is common and effective treatment for patients with early stage of HCC. HCC patients undergone hepatectomy confront with major life situation. Studies revealed that many illness-related and hospital-related events were appraised by most of the patients as stressful. Some studies showed that patients who had high stress experienced some postoperative complications and delayed recovery. Moreover, some studies showed the evidence that nurses could not validate the stress appraisal among the patients accurately. At present, few studies regarding events and stress appraisal among HCC patients undergone hepatectomy were available. Nurses should be able to understand the events and stress appraisal among HCC patients undergone hepatectomy properly in order to manage the stressful events properly and appropriately.

Conceptual framework

Lazarus and Folkman's transaction model (1984) was used as the framework to study events that were appraised as

stressful and stress appraisal among HCC patients undergone hepatectomy.

Event was defined for this study as an encounter between the person and environment that was appraised as taxing or exceeding his/her resources and endanger to his/her well-being. Stress appraisal was result of the evaluative process that determined meaning of a particular transaction or series of transactions between the person and environment.

Being diagnosed with HCC and having undergone hepatectomy were devastating life experience for the patients. Patients were forced to face with illness-related and hospital-related events. The patients interpreted these encounters to certain types of stressful events. Stress appraisal focuses on the meaning or the significance of an encounter threatened to the individual's well-being. Similar events can be appraised whether stressful and to what extent by each individual differently; thus, stress appraisal generated are different.