

## CHAPTER 2

### LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

#### Literature review

For this study, the reviewed literature covers the following topics:

1. Head injury and its impact;
2. Stress among the family members of head injured patient;
3. Social support among family members of the head injured patient; and
4. The relationship between social support and stress.

#### Head injury and its impacts

##### Definition of head injury

Head injury refers to any injury to scalp, skull, meningeal, vessel, or brain (Hickey, 1997). Head injury has been used to denote injury to the skull or brain or both. It is sufficient magnitude to interfere with normal function of the brain and require treatment. Different criteria are used to classify head injuries, including descriptors of

location or types of injuries, mechanism of injury, and scores of Glasgow Coma Scale (GCS) for severity of injury (Hickey, 1997). The GCS was developed in Glasgow, Scotland in 1979. This scale was developed to standardize observations for the objective and accurate assessment of level of consciousness. The scale is divided into three subscales: eye opening rating from 4 to 1, best verbal response rating from 5 to 1, and best motor response rating from 6 to 1. The numerical values of each subscale are summed for a total score. The range of the possible total score is 3 to 15. The severity of head injured patient is classified, according to score of GCS, as mild (GCS score = 13-15), moderate (GCS = 9-12), and severe (GCS score = 3-8) (Hickey, 1997). In this study, the head injury refers to moderate to severe head injury.

#### **Pathophysiology of head injury**

Head injuries can create diffuse and focal brain damages from the primary and the secondary injuries. Primary injury includes 1) fracture of the skull, which occurs in about 80 percent of cases with basilar fractures, being the most common head injured and 2) Contusions of the gray matter. Bruising and crushing affect both focal point of impact and on the undersurface of temporal and frontal of impact (Habermann, 1982). Secondary injury is caused by a flow-metabolism mismatch, resulted in cerebral ischemic that unleashes the ischemic cascade and biochemical change on the cellular level that can result in neuronal infarction and

degeneration (Hickey, 1997). The secondary injury includes increased intracranial pressure (ICP), cerebral edema, cerebral ischemia, and intracranial hematoma (Habermann, 1982).

In summary, the pathophysiological consequences of the primary and secondary head injury include intracranial hematoma, cerebral edema, and increased ICP.

### **Impact of head injury**

As previously mentioned, head injury has an impact on patient's physical, psychological, cognitive, and social functionings. The physical disability includes signs of continuing hemisphere dysfunction such as hemiparalysis, deficit in one or more cranial nerves, post-traumatic epilepsy and ataxia (Jennett, Snoek, Bond, & Brooks, 1981). The cognitive aspect includes disorientation and confusion, disorganization of verbal and nonverbal activity, incompleteness of thought and action, stimulus bound responses, reduced learning potential, and reduced initiation and inhibition (Bottcher, 1989).

The family members of the head injured patients found that coping with the psychological and cognitive dysfunction of the patient is more difficult than the resulted physical disability (Martin, 1994; O'Neill & Carter, 1998). Personality changes include blunting or loss of emotional feelings and loss of libido, loss of inhibition, and increased irritability and short temper (O'Neill & Carter, 1998). It was found that it is difficult

for the patient to return to work, keep the social relationships, and integrate in the society (Habermann, 1982).

In summary, the head injured patients experience various degrees of disability involving physical, psychological, cognitive, and social dysfunction. The consequence influences both the family members as well as the head injured patient.

### **Stress among family members of head injured patients**

#### **Definition of stress**

Stress has been viewed as three major perspectives (Ignatavicius & Bayne, 1991). The main ideas of these three major perspectives are summarized as following:

Stress as a response, the biologic and medical sciences have traditionally view stress as the response of the body to an event. Stress is the physiologic response of change that occurs with the body. Selye (1976) defined stress as the nonspecific response of body to any demand made upon it to adapt whether that demand produces pain or pleasure. From this definition, three things are immediately apparent. First, Selye thought that the body's response to stress is nonspecific, the body reacts as a whole organism. Second, stress is considered as a physiologic response. Third, Selye believed that it is not just the bad things in life that cause stress, but the good things as well. Selye (1976) called the body's generalized response to stressor as the General Adaptation Syndrome

(GAS). Additionally, Selye labeled the body's limited, localized response as the Localized Adaptation Syndrome (LAS).

The GAS has three distinct stages: 1) the alarm stage, in which the sympathetic system is activated and subsequently activates the neuroendocrine system. 2) The stage of resistance is a period of adaptation to the stress. 3) The stage of exhaustion, when the individual is continually ineffective in dealing with the stress (Selye, 1976).

Stress as a stimulus, realizing that individuals do not react to all stressor as threats, theorists and researchers began to explore the stress inherent in stimulus. In this perspective, stress is seen as the event itself or the stressor, not as the response to the event (Ignatavicius & Bayne, 1991). With the advent of the stimulus concept of stress, research efforts were directed toward determining what life events were stressful and how stress they were.

Stress as a transaction between a person and the environment. In this context, Lazarus & Folkman (1984) 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. The view of stress as relationship between the person and the environmental event is called transaction model of stress. In this model, people are more than passive recipients of stress and are not just

unthinking reactors to the event around them. According to this view of stress, the person's interpretation of the event is important to consider. The meaning given to the event by the individual determines the perception.

In Lazarus and Folkman's model (1984), the cognitive appraisal is defined as a process through which the person evaluates whether a particular encounter with the environment is relevant to his or her well-being, and if so, in what ways. In primary appraisal, the person evaluates whether he or she has anything at stake in this encounter. Primary appraisal can be categorized as: (1) Irrelevant appraisal, it exists if the appraised event is considered to be of no concern for the person's present well-being. (2) benign-positive appraisal, it exists when the person regards the event as indicating a positive state of affairs—that all is well. (3) Stressful appraisal, it consists of some negative evaluation of one's present or future state of well-being.

Stress appraisal include harm/loss, threat, challenge. In harm/loss, some damage to the person has already been sustained, as in an incapacitating injury or illness, recognition of some damage to self- or social esteem, or loss of a loved or valued person. Threat concern harm or losses that have not yet taken place but are anticipated. Challenge appraisal focus on the potential for gain or growth inherent in an encounter and they are characterized by pleasurable emotions.

In secondary appraisal, the person evaluates what if anything can be done to overcome or prevent harm or to improve the prospects for benefit. Various coping options are evaluated. In addition to primary and secondary appraisal, the act of reappraisal also takes place. Reappraisal develops from the feedback of changes in the person-environment relationship and from reflection about the transactional process.

Once an event has been perceived as stressful, the person then mobilizes coping modes. Lazarus and Folkman (1984) believe that coping has two functions: regulating distressing emotions (emotion-focused coping), and altering the troubled person-environment relationship causing the distress (problem-focused coping). The coping modes include confrontive coping, distancing, self-controlling, accepting responsibility, escape-avoidance, planful problem solving, positive reappraisal, and seeking social support. The coping resources include health, energy, positive beliefs, problem-solving skill, social skill, material resources, and social support (Lazarus & Folkman, 1984).

In this study, Lazarus and Folkman's concept of stress is applied. Stress is defined as a particular relationship between the family members and the situation of the head injured patients that is appraised by the family members as taxing or exceeding their resources and endangering their well-being.

### **Stress among family members of head injured patients**

The impacts of a head injury are felt by the family as well as by the head injured patient. The head injuries have an impact on physical, psychological, financial, and roles and relationship of the family (Conoley & Sheridan, 1996). The family experiences changes in marital relationship, daily routine, and social activities when a member had a head injury (Acorn, 1995). The physical changes of family members of head injured patients including weakness, weight loss, and headache (Johnson & Roberts, 1996). It has also been reported that the family members has an increased incidence of duodenal ulcers and heart attacks (Engli, & Kirsivali-Farmer, 1993). In the initial period following the head injury, the family members experience psychological and emotional changes as fear, uncertainty, anxiety, and hopelessness. The consequence of such injuries disrupts usual family activities and places the family into disequilibrium.

It was reported by Johnson (1996) that the family members of the head injured patients have less time for social and leisure activities (cited in O'Neill & Carter, 1998). The marital relationship is also influenced. It was reported that the divorce rate is higher than the national average among couples where one partner experienced a head injury (Chamberlain et al, 1995 cited in O'Neill & Carter, 1998). Acorn and Roberts (1992) stated that wives of head injured patients often need considerable support because of

the myriad of role transitions and role changes they experience.

Financial problem is also reported (O'Neill & Carter, 1998). It results from the injury of breadwinner, the cost of hospitalization, or the family member has to give up employment to care for the injured patient.

Several studies have documented the high prevalence of stress experienced by the family members of the head injured patients. For example, Mintz, VanHorn, and Levine (1995) conducted a study in 21 family members of head injured patient examine the role of family stress on relatives' perception following traumatic brain injury. They found that fifty-two percent of the relative group had mild to moderate or greater depression and forty-eight percent of the relative had mild to moderate range of anxiety on Beck Scale, which is the rating scale developed to measure depression and anxiety from mild, moderate, to severe levels.

Another example, Leathem, Heath, and Woolley (1996) conducted a study of 29 parents and partners of head injured patients to examine the level of stress among family members of head injured patients. In this study, using a structured interview, both verbally administered and written response questionnaires were completed by 18 parents and 11 partners. The parents and partners group stated that they experienced moderate levels of stress and role changes. Partners indicated a slightly higher level of stress and a greater level of role change than parents did, and a large

proportion of partners indicated the presence of health problem. Positive correlation was found between stress and role change and stress and health problem among the parents and partners of head injured patients.

Stancin and colleagues (1998) interviewed parents to obtain pre-injury estimates of family functioning, child behavior problem, post-injury measures of parent distress, and family stress and children behavior in 108 traumatic children with and without accompanying brain injuries. Group 1 (n=80) had only skull fractures, group 2 (n=28) had skull fracture accompanying moderate or severe brain injuries. The findings showed that parents reported significant clinical distress (35 percent in group 1, 57 percent in group 2), family burdens (group 2 higher than group1), and child behavioral changes (41 percent in group1 versus 89 percent in group 2). The family of pediatric injuries with brain injury children experiences more family distress and family burdens than those family whose children did not have brain injuries.

In summary, the above studies demonstrate the negative impact of head injuries on the family members' physical, psychological, financial, role, and relationship of the family. The stress brought threats to the health of family members of the head injured patients.

### **Measurement of stress**

Since stress is defined in different ways, it is impossible to use a unique measurement tool to assess it. Several measurement tools were reviewed as following:

Checklist measurement of life event are based on the assumption that illness is related to the cumulative impact of events requiring substantial behavioral adjustment (Cohen, Kessler, & Gordon, 1995). The life Events and Difficulties Schedule developed by Brown and Harris (cited in Cohen, Kessler, & Gordon, 1995) were use to assess a wide variety of stressors.

The Stress Appraisal Measure was specifically developed to assess three dimensions of primary appraisal and secondary appraisal of stress (Peacock & wong, 1990 cited on Cohen, Kessler, & Gorden, 1995).

In this study, Stress Appraisal Questionnaire (SAQ) was developed by the investigator based on Lazarus and Folkman's stress and coping model and reviewed literature. It was a 5-point, 16-item Likert scale. The SAQ included personal-related stress appraisal and environmental-related stress appraisal. It was used to measure the level of stress appraised by the family members of the head injured patient.

### **Social support among family members of the head injured patients**

#### **Definition of social support**

Social support is a multidimensional concept that is difficult to conceptualize and define (House, 1985).

Although this concept has been studied extensively, there is little agreement among theorists and researchers for its theoretical and operational definitions. There has been many definitions being used.

Caplan (1974) stated that social support is various form of aids or assistance supplied by family members, friends, neighbors, and others. Three broad themes involved in support include helping the individual mobilize psychological resources; helping the mastery of emotion burdens; and sharing the individual's task and providing extra supplies such as money, materials, skills and guidance.

Weiss (1974) defined social support as relational provisions for attachment/intimacy, social integration, opportunity for nurturant behavior, reassurance of worth, a sense of reliable alliance, and the obtaining guidance.

Cobb (1976) defined social support as information leading people to believe they are cared for and loved, esteemed and valued; a member of a network of community and mutual obligation. Therefore, social support was classified as emotional support, esteem support, and network support.

Kahn and Antonucci (1980. cited in House, 1981) defined social support as interpersonal transactions that include one or more of the following key elements: affect, affirmation, and aid. Affect refers to expressions of like, admiration, respect, or love. Affirmation refers to expressions of agreement or acknowledgement of the appropriateness or rightness of some act or statement of

another person; Aid refers to transactions in which direct aid or assistance is given, including things, money, information, time, and entitlements. House (1981) analyzed the same components of social support behaviors and proposed four supportive behavior categories that reflect four types of support including informational, instrumental, appraisal, and emotional support.

Brandt and Weinert (1981), based on Weiss's concept, defined social support as relational provisions for attachment/intimacy, social integration, opportunity for nurturant behavior, reassurance of worth as an individual and in role accomplishment, and the availability of informational, emotional, and material help. Attachment/intimacy refer to gaining a sense of security and place. Social integration is the sharing of concerns, information, and ideas among the social participants. Opportunity for nurturance refers to opportunity for taking responsibility for the well-being of another. Reassurance of worth occurs through recognition of person's competence in a social role. Obtaining informational, emotional, and material help is what Kakn and Antonucci's aid, and House's information and instrumental support.

In summary, social support is a multidimensional concept. In this study, it was defined as the relational provisions for attachment/intimacy, social integration, opportunity for nurturant behavior, reassurance of worth as an individual and in role accomplishment, and the availability of informational, emotional, and material help.

### **Effects of social support**

The concept of social support has received considerable attention in social and behavioral science. It plays a significant role in the maintenance of health and in responses to life stressors (Brandt and Weinert, 1981). Social support as a moderator of life stress can protect people in crisis from a wide variety of pathological states. Social support may reduce the amount of medication required, accelerate recovery, and facilitate compliance with prescribed medical regimens (Cobb, 1976). Perceived support has been shown to be related to a wide variety of outcomes including physical health, mental well-being, and successful social functioning (White, Richter, & Fry, 1992). Social support is considered as one of the important coping resource can provide the coping options in stressful transaction by enhancing the problem-focus coping and emotional-focus coping strategies (Lazarus & Folkman, 1984). Social support is a factor influences the coping process. It may protect individuals in the primary prevention of stressful occurrences, or it may assist them to appraise stressful events as less threatening (Boyle, Grap, Younger, and Thornby, 1991)

Boyle, Grap, Younger, and Thornby (1991) conducted a study of 103 critical care nurses. They found work-related and network-related social support and hardiness were negatively related to burnout. Social support was positively related to hardiness, which can mitigate the harmful effects of stress by facilitating more appropriate ways of coping.

Sepulveda and Chang (1994) tested a causal model based upon Lazarus' theory of psychological stress and coping in a sample of 75 person disabled by stroke. They found that the functional status was positively related to resource (Perceived availability of social support, perceived effectiveness of social support, and social contact) and negatively related to stressor. Resources were negatively related to stressor and positively related to coping effectiveness. Person with functional disability following stroke also had decreased social contact, perceived level of availability of social support and increased threat to physical well-being, and reduced coping effectiveness.

Mahat (1996) conducted a study in 104 first-year Nepalese nursing students in clinical practice. In the stressful event, the majority of students utilized the "seeking social support" category of coping and reported friends are the most important aspects of the supportive social network.

In summary, social support, as one of important coping resource, has impacts on effectiveness of coping and person's well-being.

#### **Social support among family members of the head injured patient**

From the literature review, there have been many studies on social support among various groups. However, few studies have been examined social support among family

members of the head injured patients. Acorn and Roberts (1992) conducted a descriptive study in wives of head injured patients (N = 12). They found that the wives had role insufficiency and emotional problems such as frustration, unhappiness or aggregation. Social support was found to be useful for the wives to receive informational and emotional support, and learn about community resources and develop a sense of hope.

Acorn (1993) also conducted a study in 100 families of head injured patients. The findings suggests that community-based support group assists families to cope with stress in their lives. Social support group assisted family by providing emotional support and information support.

Several studies indicated that social support have impacts on the family member of other kind of patients. For example, Baillie, Norbeck, and Barnes (1988) conducted a study in 87 caregivers of elderly. They found that satisfaction with support negatively related to psychological distress and depression. The findings indicated that caregivers who had low social support are at high risk for psychological distress or depression.

Another example, Lindgren (1990) found social support could reduce the caregiver's burnout by lowered depersonalization and enhanced sense of personal accomplishment in 51 family caregivers of chronically ill patients.

In summary, the social support is very important to the family members of the patients to adjust themselves to the stress.

#### **Measurement of social support**

Since social support is a multidimensional concept, there are many instruments developed to measure it. Instruments were developed and used based on the researcher's concern of social support.

Norbeck Social Support Questionnaire (NSSQ) was developed by Norbeck, Lindsey, and Carrieri (1981), based on Kahan and Antonucci's (1980) conceptual definition of social support. This instrument covers three major components: functional, network, and loss.

The Social Support Questionnaire (SSQ) (Sarason, Levine, Basham, & Sarason, 1983 cited in Lindsey, 1992) was developed to measure the perceived number of social support and satisfaction with the social support available. The Inventory of Social Supportive Behaviors (ISSB) (Barrera, Sandler, & Ramsay, 1981 cited in Lindsey, 1992) was developed to measure the frequency with which the respondents were the recipients of supportive action. The Perceived Social Support from Friends (PSS-Fr) and From Family (PSS-Fa) (Procidano & Heller, 1983 cited in Lindsey, 1992.) measures the satisfaction of the support from both friends and family.

The Personal Resource Questionnaire-85 (PRQ-85) developed by Brandt & Weinert (1981) is a two-part measure of

multidimensional characteristics of social support. Part one provides descriptive information about the person's resources, and whether or not there is a confidant. Part two is based on Weiss's (1974) social relational model, defined by Brandt and Weinert (1981) composed of five dimensions: attachment/intimacy, social integration, opportunity for nurturant behavior, reassurance of worth as an individual and in role accomplishment, and the availability of informational, emotional, and material help.

The Criterion Validity Index ( $r = .93$ ) of PRQ - 85 part 2 was obtained by correlating with Cost and Reciprocity Index (CRI) (Weinert & Tilden, 1990). Weinert and Brandt (1987) tested internal consistency of PRQ-85 part 2 in a sample of 100 adult obtained from a university alumni list, the value of Cronbach alpha was .93. PRQ -85 part 2 was modified from 7-point to 5-point Likert scale and translated into Chinese by Yan (1997). Reliability of this instrument was already tested among 15 COPD patients (Cronbach alpha = .82).

It was reported that the PRQ-85 part 2 has high validity and reliability. The theoretical base of PRQ-85 part 2 is congruent with the variable being study. Therefore, it was used in this study.

### **The relationship between social support and stress**

Several studies indicated that presence of social support reduce the experience of stress among different groups of subject. Norbeck (1985) study social support and

job stress in female critical care nurses (N =164). The findings showed that social support is negatively related to perceived job stress, job dissatisfaction, and psychological symptoms. Social support was negatively related to perceived job stress. For the married group, a specific type of support (work support) explain 24 percent of the job stress, and for the unmarried group, a specific source of support (from relatives) explain 10 percent of the variance in perceived job stress.

Davis (1990) conducted a study in 109 pairs of family caregivers and individuals recovering from major illness or injury. Two dimensions of social support from PRQ-85 (Brandt and Weinert, 1981) were used to measure the social support. The Lefebvre and Sandford Multi-Model Stress Questionnaire (1985) was used to measure stress level of recovering individuals and their family caregivers. The findings showed that stress level among recovering individuals were negatively correlated with levels of social support ( $r = -.31, p < .002$ ) and negatively correlated with used of personal network ( $r = -.30, p < .002$ ). Higher stress levels among family caregiver were significantly correlated with lower levels of social support potential ( $r = -.31, p < .002$ ).

A correlative study was conducted in 30 women scheduled for a breast biopsy (Seckel & Birney, 1996). Stress was determined using State Trait Anxiety Inventory instrument. Social support strength and network sizes were measured by Norbeck Social Support Questionnaire. Stress

level was found to have a negative correlation with social support strength ( $r = -.35, p < .01$ ). They also found that a weak negative relationship between stress level and numbers of people the patient reported in her social support network.

Affiliation (1997) conducted the study to investigate the role of social support and acculturative stress in predicting depressive symptoms among 150 Korean Americans. Results confirmed that 1) Lack of social support was strongly correlated with high levels of stress. 2) Social support moderated stress, resulting in less depressive symptoms.

In summary, the social support has a negative relationship with stress among difference subject group. However, no study has been investigated the relationship between these two variables among family members of head injured patients.

### **Conceptual framework**

In this study, the concept of stress is based on Lazarus and Folkman's Model of Stress and Coping (1984) and social support is based on the concept of Brandt and Weinert's (1981). These two concepts was tested for the relationship.

Stress in this study was defined as a particular relationship between the family members and the situation of the head injured patients that is appraised by the family members as taxing or exceeding their resources and

endangering their well-being. Head injury is a life-threatening situation. It could be considered as a stressful event that has impacts on the patients as well as their families. The level of stress among family members will depend on their cognitive appraisal, which is a process through which they evaluate when the situation is relevant and threat to their well-being. Once an event has been perceived as stressful, the person then mobilized coping modes. Social support is one of the important coping resources identified by Lazarus and Folkman (1984)

Social support, in this study, is relational provisions for attachment/intimacy, social integration, opportunity for nurturant behavior, reassurance of worth as an individual and in role accomplishment, and the availability of the informational, emotional, and material helps (Brandt & Weinert, 1981). Each dimension provides different benefits to the family members of the head injured patients. Intimacy and social integration provide a sense of security and loved and belong to a social group, and make the individual feel comfortable and happy. Opportunity for nurturance and reassurance of worth provide a sense of being need and competence by the others, and increase the self-esteem. Available of informational, emotional, and material help can provide direct problem solution, give guidance, and thus enhances the family members' ability to promote health behavior and solve the financial problem for them.