

## CHAPTER 2

### LITERATURE REVIEW AND CONCEPTURAL FRAMEWORK

#### Literature review and related research

In this section, the review of related literatures was presented including the following categories:

1. Hand injury

- 1.1 normal hand appearance and function

- 1.2 hand function in daily life

- 1.3 causes of hand injury

- 1.4 type of hand injury

- 1.5 treatment of hand injury

2. Body image

- 2.1 definition

- 2.2 impact of body image alteration on young

adult

- 2.3 measurement of body image

3. Hand injury affecting body image

## Hand injury

### Normal hand appearance and function

Everybody has two hands and ten fingers except those with congenital deformity. Normally, the hand skeleton consists of 27 pieces of bone divided into three groups: the carpus, the metacarpal and the phalanges. The hand and each finger have a palmar surface, a dorsal surface, and an ulnar and a radial borders. The palm is divided into three areas namely hypothenar, thenar, and midpalm which are muscle mass over the little finger and thumb on the palmar surface.

The digital refers to the thumb, index, long, ring, and little. Among them, the thumb plays vital role during pinch and grip. The thumb is a mechanical unit consisting of strong ligaments and dynamic muscles, providing the resistance to the fingers and palm (Imeada, An, & Cooney III, 1992). Each finger has three joints except the thumb which has only one interphalangeal joint and a metacarpophalangeal joint. For movement of the finger, the carpometacarpal joint of the thumb is more important because of its great mobility.

The skin on the palmar surface of the palm is tough and thick. It is not mobile, which allows for traction and

wearability. The creases across the palmar skin are adherent to deeper layers so that the hand can open and close without bunching up into folds. The palmar skin has no hair or pigment but well supplied with sweat glands.

The skin on the dorsum of the hand is thin and soft with growing hair. The subcutaneous layer is loose and pliable so that greater movement is possible, allowing the hand to be made into a fist.

The fingernails are specialized ectodermal organs for scratching, pinching, and picking up small objects. They also protect and stabilize the pulp of the distal finger, where many nerve endings lie (Maher, Salmond & Pellino, 1994).

The hand is not flat; it is based on a system of skeletal arches that must be maintained to preserve optimal hand function. The function of the hand is controlled by the central nervous system. The prime functions of the hand are feeling or sensibility and grasping. One of the most important functions of the hand is that of sensibility. An insensible hand is not used to full potential even if joints and tendons are normal. Sensibility is important on the radial sides of the index, middle, and ring fingers and on the opposing ulnar side of the thumb. It is indispensable

being able to feel, pinch, pick up, and hold things. The ulnar side of the little finger and its metacarpal, upon which the hand usually rests, must register the sensation of contact and pain to avoid burns and other trauma.

Hand mobility is performed by coordination of nerve, tendon, muscle, and skeleton of hand. The hand is an organ of grasp as well as fine movements. The specialization of the thumb ray has endowed humans with superior attitudes for defense, work, and dexterity. The thumb has exquisite sensibility and is a highly mobile structure of appropriate length, with a well-developed adductor and thenar or pronating musculature. It is the most important digit of the hand and every effort must be made to preserve its function (Way, 1983).

The nerves of greatest importance to hand function are the musculocutaneous, radial, ulnar, and median. The importance of the musculocutaneous and radial nerves combination is forearm supination and of the radial nerve alone is innervation of the extensor muscles, which stabilize the wrist and extend the digits. The ulnar nerve innervation is compared as the eye of the hand. Through its motor innervation, it maintains most of the long flexor, the pronators of the forearm, and the thenar muscles (Way,

1983). The primary role of the entire upper limb including shoulder, arm, elbow, and forearm is to place hand in its proper position for the function (Caillet, 1992).

#### **Hand function in daily life**

Hand is a very important organ of body parts. It is the interface between the person and his world. It is an emblem of strength, beauty, skill, and sensibility (Hoard, Bell-Krotoski & Mathews, 1995). Hands have major important role in our daily living. The hand is an incredible tool used to implement the desires of the brain. It is with the hand that the laborer supports his family, the parent cares for the child, the artist paints, the blind person "read", and the deaf person "speaks" (Maher, Salmond & Pellino, 1994). Individuals use hand to do everything in responses to the human basic need (Honing & Kon, 1996), such as cutting, cooking, eating, washing, bathing, and working buttons. For special field, like the pianist as a musician, he cannot play musical instrument without hand. For the workman, the hand means a tool that is his most valuable asset. Although the science of advanced technology developed, human being still cannot live a good life without hand. The hand is one of the important parts of our body at every age throughout

human life.

#### Causes of hand injury

Since person uses hand in doing most of the daily work, it is almost always at risk of having trauma. In the United States, 20,000 cases of accidental digital amputation occur each year. One common mechanism of hand injuries comes from driving the fist through glass, another unfortunate sequel to the frustrations of modern living. The regular use of power tools in the workplace and at home has led to greater incidence of related mishaps (Smith, Varghese & Ivatury, 1996).

Fraction of all severe hand traumas suffered annually is reported by Taras, Philadelphia, Behrman, Barbara, Degan, and Spring (1995). There are many causes of hand injury such as occupational accidents (Jensen, Christensen & Kjaersgaard, 1995; Jia 1991); outdoor recreational and vocational like using shredder/ chipper machines accidents (Hallock, 1994); and bar glass ware (Shephers, Brickley, Gallagher & Walker, 1994).

Jensen, Christensen and Kjaersgaard (1995) conducted a study of occupational accidents in Danish fishing industry's people. The result revealed that the accidents

occurring in connection with putting out and recovering apparatus constituting at 14% and 36%, respectively. Working with the trawler scoop was responsible for 18% of the accidents and was the most common direct cause of finger(s) and hand injury. Of these, finger injuries constituted 33%, with 17% of hand and wrist injuries. Trawler scoop injuries most commonly involved the fingers and hands.

Hallock (1994) reported that outdoors recreational and vocational hand injuries occur with using of shredder and chipper machines. A study about risk of occupational glass in bar staff found the incidence of sharps injury was unacceptably high.

Surveillance for cumulative trauma disorders of the hand and wrist was carried out in five automotive plants. The result indicated employees in automotive plants and in assembly plants were at high risk for cumulative trauma disorders (Nelson, Park, Silverstein & Mirer, 1992). Oleske and Hahn (1992) used the combination of administrative and clinical data from a network of occupational medicine clinics to evaluate the utility of these data in the surveillance of non-fatal occupational injuries. They found hand and finger injuries among the most of all occupational injuries.

Jia (1991) reported that trauma cases are 74.2% related to mechanical worker in Peking, China. According to researcher's experience, there are many causes of hand injury including machine, electric shock, burns, chemical substance and knife related to factory work, traffic accident, and construction work site in Shanghai.

In summary, occupational or work-related injuries is the common cause of hand injury. At Huashan Hospital in Shanghai, the most evidence found as the cause of hand trauma is occupational injury such as mechanical avulsion or the traffic accident led to brachial plexus injury of both sides of upper extremity.

#### **Type of hand injury**

The hand is the most common site at risk of having trauma. Hand injury usually involves and impairs more body tissues such as skin, nerve, tendon, skeleton, and muscle of hand which can cause changes in appearance with or without loss of hand function.

There are many types of hand injury occurred through life span severely ranged from small skin damage to gross laceration. Sharp or cut injuries from knife are one of the most common types of injury to the hand. Injuries can range

from mere lacerations to through-and-through penetration of the hand which include thumb and fingers amputation, flexor tendon laceration, lacerated extensor tendon and nerve avulsion. All of these may affect hand appearance and/or function.

Beaton, Williams and Moseley (1994) conducted a study among 1,003 patients. They found injuries of the right hand were more common than those of the left hand in both left and right-handed people. In the retrospective study conducted by Taras and colleagues (1995), they studied two groups of patients (N1=128, N2=116) to investigate the relationship between hand dominance and the risk of major hand injury. The result of this study found that left-handed persons (N=128) were more likely to have an amputating injury of their dominant hand than were the right-handed (N=116).

#### **Treatment of hand injury**

The treatment of hand injury is specialty concentrated on the restoration of function and repair body structures damaged by trauma. The major therapeutic and reconstructive treatment is operation. The advanced technology enables hand surgeon to perform many kinds of

operation for restoring function and correction of deformity. In the last two decades, many successfully operation among hand injured patients were done, for instance, tendon repair, nerve repair and reconstruction, joints reconstruction, digital reconstruction and replantation, and soft tissue replacement.

The absence of the thumb is a severe handicap. Thumb amputation is usually treated by replantation. But if replantation cannot be done or fails, several surgical methods will be used to reconstruct the thumb such as osteoplastic reconstruction, microsurgical wraparound, toe-to-hand transfer, and pollicization, etc. (Brunelli & Brunelli, 1992).

Microsurgical techniques allow nerve defects, avulsions, and lesions in continuity to be managed by surgery. In order to treat for brachial plexus root avulsion, several types of nerve repairment are now used in China, which includes phrenic nerve transfers, contralateral C7 nerve root transfers, and multiple nerve transfers (Gu, 1995).

Although the viability rate of reconstruction and replantation parts is higher than 90%, some undesirable sequels still remain such as tendon adhesion, wound scars,

and inability to regain full sensory and motor functions (Gu, 1995; Tang, 1994). Even after the pollicization, the absence of nail and the size of thumb are still differ from normal (Brunelli & Brunelli, 1992). Some patients may undergo the operation only once or twice while the others require more times of reconstructive surgery. Changes in hand appearance and function secondary to hand surgery may possibly develop.

In summary, the hand is very important organ for daily living activities as well as occupational status, hygiene, and recreation. Hand is susceptible to injury. Having hand injury may develop changes in appearance with or without loss of function. Although hand surgery can facilitate injured hand restore function and minimize the change of appearance, the undesirable sequelae still remains.

## Body image

### Definition

The concept of body image began to develop in the 1920s. Head (1920, cited in Wassner, 1982) described body image in terms of postural and body movement. Schilder (1950, cited in Neatherlin & Brillbart, 1995) was the first

person who identify and define body image. He described a person's body image as the picture of his own body formed in his mind, the way in which the body appears to himself. Schilder also emphatically stated that the mental image and appearance of body, body perception, are dependent on emotional feeling toward the body, body attitude, and that perception of the body changes as emotional attitude changes (cited in Fawcett & Frye, 1980).

Gruendemann (1975) emphasized that body image is dynamic and changes with experiences. It is based on outward appearance, inner somatic, and significant others' reactions to his body.

Norris (1978) defined body image as the constantly changing total of conscious and unconscious information, feeling, and perceptions about one's body and response to sensations originating from the inner regions of the body as the individual copes with a kaleidoscopic variety of living activities. The body image is basic to identify and has been referred to as the somatic ego.

Body image, as delineated by Jourard and Landsman (1980), is the perceptions, beliefs, and knowledge an individual holds in regard to his or her body's structure. King (1981) defined body image as a person's perceptions of

his own body, other's reactions to his appearance.

Fisher (1968, cited in Roberts, 1986) defined body image in the way that human being sees his own body. She believed that body image refers to the body as a psychological experience and to the individual's feeling and attitude toward his body.

Roberts (1986) described body image as the result of interaction between physical and emotional stimuli. It is formed through interaction between the perceptual and experiential pools. Individual's body image includes physical appearance, bodily sensation, beliefs and emotions about the body that makes up part of his self-concepts. According to Roberts, body image involves a number of things. It stands for a unity between temporal, environmental and interpersonal factors. It also infers as an interpersonal experience among the individual's feelings, attitudes, and body.

Each organ of human body has a function and a movement for certain purpose. Movement is essential for the individual's sensation of well-being. Hand is one of the important motor and sensation organs. Once injury occurs, it may loss of function and movement. When the physical loss is obvious, the individual utilizes coping mechanism for

adjustment. If an adjustment is not success, feeling of threats will arise. The individual may desire to abandon his body because he feels a loss of wholeness. Body image is not simply only what person thinks about his appearance, it also includes his perception of his function, sensation, and mobility as well as his perception of his physical self shapes what he feel about himself as a person (Roberts, 1986)

Schilder (1989) defined body image is the sum of the conscious and unconscious attitudes the person has toward his body. The body can be thought of as a capsule in which one is permanently enclosed and through which one interacts with the world. One lives with his body 24 hours a day from birth until death. It is the most material and visible part of the self, and although it alone never accounts for self-awareness. An individual's attitude towards his body may mirror important aspects of his identity. Body image is a dynamic entity because new perceptions and experience continually modify it. It includes present and past perceptions as well as feelings about size, function, appearance, and potential.

Body image described by Luckmann and Sorensen (1993) as an individual's perception of his/her body - how the

person thinks he looks, rather than an objective assessment of the person's characteristics. Body image changes continually, depending on individual expectations and feedback from others.

In conclusion, many authors define body image as resulting idea of what person perceives his/her own body including appearance, function, sensation and mobility, structure, function, or outward appearance of the body. Body image is a dynamic entity, it forms through development and changes with experience. Body image is also a representation of the self, built around a particular body, biased thoughts and wishes from others. Hand is the most visible part of body. Although person with normal hand's appearance and function is seldom aware of his hand, person reidentifies his hand appearance and function and more concern with other's reaction to his hand after hand injury. For the purpose of this study, body image is defined as the perception of the person's feeling and attitude toward his hand appearance and function, and other's reaction to his hand appearance and function after receiving reconstructive hand surgery.

### Measurement of body image

Body image can be measured through some instruments. Body-Cathexis Scale is an old instrumentation that being used by many researchers (Fawcett & frye, 1980; Neatherlin & Brillbart, 1995; Samonds & Cammermeger, 1989; Bello & McIntire, 1995).

The Body-Cathexis Scale (Secord & Jourard, 1953) is used to measure the degree of feeling satisfied or dissatisfied with various parts or processes of the body. The scale contains a total of 46 items about hair, appetite, back, hips, knee, exercise level, sexual function, posture and health. The scale rates body items on the scale of 1-5 with 1 being the least satisfied and 5 being the most satisfied. In scoring the Body-Cathexis Scale, lower score indicated a higher degree of unhappiness about one's own body. The total possible score of the scale could range from 46 to 230.

Samonds and Cammmermeyer (1989) conducted a study identifying that persons (N=20) with multiple sclerosis who had permanent disabilities would have alteration in body image. They used Body Cathexis Scale in their study to measure each subject's satisfaction or dissatisfaction with body and self. The result revealed that persons with

permanent disability occurred had changes in body image, especially of those with bodies and selves. In this study, split-half coefficient scores on the Body-Cathexis scale were .78 for males and .83 for females. The Body-Cathexis Scale has been evaluated and found reliable on test-retest ( $r=.87$ ) and considered stable on repeated administrations. Another study was conducted during postoperative period in lumbar laminectomy patient ( $N=24$ ). They used Body-Cathexis Scale to measure body image. Results indicated that there was a significantly higher difference in the total Body-Cathexis score postoperatively as compared to preoperatively. Validity for the instrument was established by administering the Homonym test. The result indicated significant intercorrelation ( $r=.66$ ). Split-half reliability of the Body-Cathexis Scale was .81.

Bello and McIntire (1995) used Body-Cathexis scale to study body image among 117 young adults with cancer and 54 without cancer. The result revealed that body image score was significant difference between young adults with cancer and those without cancer.

Research was done by Mock (1993), on body image among 257 women received four common types of treatment for breast cancer: mastectomy, mastectomy with delayed

reconstruction, mastectomy with immediate reconstruction, and conservative surgery. She used Body Image Scale (Berscheid, Walster & Bohrnster, 1972, cited in Mock, 1993) to assess a subject's satisfaction with various parts of the body by means of a 6-point Likert scale from extremely dissatisfied to extremely satisfied. A short form of the scale contains 22 items. Internal consistency of the Body Image Scale as measured by Cronbach's alpha was .87. The result revealed that the mean score of body image in the conservative surgery group was positive higher significantly more than the mastectomy group and the mastectomy with immediate reconstruction group.

In conclusion, body image can be measured through some instruments, but most of them focus on whole body image. There are no appropriate instruments for direct measuring body image of postoperative patients with hand injuries. Therefore the instrument used in this study will be developed by investigator with assistance and approval of the specialists in orthopedic nursing, good in English language, and having experience in developing instrument.

#### **Impact of body image alteration**

Body image is a factor in determining an

individual's self-image, self-concept, and self-esteem. Individual with a positive body image displays more confidence and interacts more easily with others (Luckmann & Sorensen, 1993).

The responses to changes in body image due to injury can include denial, repression, frustration, lack of motivation, anger of loss of function, helplessness, and depression (Drench, 1994). Reaction to a distortion of body function is also related to how much of the person's identity is invested in the involved part. A surgeon may react more severely to loss of sensation and function in his fingers than to a comparable loss in his toes. On the other hand, dancer may have the reverse reaction (Darling-Fisher, 1985). Another significant factor that needs person response to physical change is the importance of physical appearance. Hand is the most visibility of the body part which influence the person's response to a body alteration. The speed with which the change has occurred also influences the patient's response to a change in body status. Persons undergone a sudden change of body image may have a traumatic response to the alteration. Acceptance of the change may be more difficult to achieve, and the manifestations of the grieving process may be more extreme.

Trauma and surgery can change the body appearance and require adjustments of the patient's body image. The nature of the adjustment will partly depend on the type of body change and the developmental level of the patient. Changes in physical appearance may make young adult disfigurement very difficult to cope with because he is very concerned with attractiveness and acceptance.

Every person has pre-existing strategies for coping with an altered body image (Gould, 1983). The degree of emotional response to a changing body image is directly related to the intensity of the emotional struggle of the person. The integrity and intactness of the body image are cornerstones of ego integration.

Body image disturbance is most commonly associated with loss of body parts. However, any type of loss such as mobility, independence, or a body function necessitates some body image readjustments. Grief, depression, and anxiety are common reactions to loss (Drench, 1994). The phantom phenomenon is one example of normal psychophysiological mechanism for helping the person cope with this change. Denial, anger and depression are the other normal behaviors. Long time for grief, depression, and denial can be obstacles to rehabilitation in terms of motivation.

It is necessary that the readjustment of body image be in realistic accordance with the actual physical changes (Gruendemann, 1975). There must be an acceptance of the body as it is or has become an adaptation to it. Loxley (1972) identified that the patient with a crippling deformity must undergo reappraisal process in order to align the changing body image to an altered physical body. Individual with a positive body image displays more confidence and interacts more easily with others (Luckmann & Sorensen, 1993). A well-developed body image permits the patient to enter into social interactions with confidence. Patient with negative body image may be manifested by a refusal to participate in care, refusal to discuss the care, withdrawal from social contacts, and avoidance of intimate relationship.

In summary, physical body changes may cause body image alteration. An individual with a healthy body image will feel confidence in interaction with others. Person with negative feeling and attitude toward body image will have trouble in interaction with others. They will have less or not cooperate with health care and instruction.

#### **Hand injury affecting body image**

Initial trauma and sequelae secondary to surgery

influence the aesthetic role of patient hand and his hand function as well. Severe injuries may open flood gates of intense emotions and disturb image of one self. Since almost every individual had hand injury from accident, the patient perceived his hand as abnormal even though undergoing the reconstructive surgery. He sees his hand function and previous hand appearance never return to what he used to familiar with. Misperception is as common as they are unpredictable. Patient is not thinking clearly and misconstrue clues, usually to mean the worst (Lenehan, 1986).

Hand, one functional significant of specific body parts, refers to both the physical and symbolic importance of human body. Although hand injury is not a threat to life, it can have an impact on human being's daily living. The hands are only a small portion of the total body, the person with severe hand injury may see her hands as the center of his body image (Maher, Salmond & Pellino, 1994).

Hand intact appearance and well function serve the person sense of self and his interactions with others. Hand serves as a multifunctional tool in daily life. When hand injury occurred, especially loss of function and/or change appearance of hand, it has a great impact on the person's

inner image. A number of hand deformities described in the literature presented being the "clenched fist" (Horing & Kon, 1996). Body image alterations are negative feeling or perceptions about bodies or body parts associated with loss of body integrity, altered control of body function, and physical alterations. Psychological changes resulted from dealing with disfigurement, functional changes and reactions of others can also alter a hand injury patient's body image (Maher, Salmond, & Pellino, 1994).

Literature dealt with case studies of gross body image disturbances revealed severe physical disability. The result enabled that multiple sclerosis patients have poor feelings about the bodies. The feeling of lowered personal efficiency and sense of well-being associated with declining physical ability (Zeldaw & Pavlou, 1984).

Samonds and Cammermeyer conducted a pilot study using Body-Cathexis Scale and Self-Cathexis Scale developed by Secord and Jourard (1953, cited in Samonds & Cammermeyer, 1989) to assess the perceptions of body image in subjects with multiple sclerosis. They used Kurtzke's Status Disability Scale (Kurtzke, 1983, cited in Samonds and Cammermeyer, 1989) to rate physical disability. They tested the relationship between body image and the severity of

physical disability. The result showed no relationship between two variables, but revealed the gradual changes of a disease process may allow for a gradual adaptation to changes in body image and may be to loss from psychologically trauma than a sudden insult to the body. However, they stated limitations of the study including the lack of randomization to select subjects, absence of females in the sample, and absence of full demographic profiles on subject. The sample size was small (N=20), and no inference could be made in terms of statistical significance.

It can be concluded that hand is one of the vital motor organs of human body. Hands and fingers play important role in individual's activities of daily living and work. Many causes lead to hand injured especially work-related factors. Change in hand appearance with or without loss of function may alter person's perception of body image. In China, nursing research related to concept of body image among patients with hand injuries is not found. This study will be the starting point in this field.

#### **Nature of adulthood**

Adulthood is the time for setting down. Adulthood can be divided three stages: young adulthood, middle

adulthood, and late adulthood. Young adulthood is generally designed as the period between the 20th and 35th years. The time between 36-64 years of age is generally considered the period of middle age. Over 65 years old is considered late adulthood (Ignatavicius, D.D, Workman, M.L., & Mishler, M.A., 1995). The changes in young adulthood relate more to sociocultural forces and expectations and to value and cognitive changes than to physical development. The young adult generally has more contact with people of different ages than previously. This experience tends to influence the young adult toward a more conservative or traditional viewpoint (Murray & Zentner, 1993).

Nature of young adulthood is a time of rapid change and growth. The accident may interfere with or alter normal growth and development. The tasks of young adulthood include the development of independence (Bello & McIntire, 1995). The young adult is expected to enter new roles of responsibility at work, at home, and in society in order to develop values, attitudes, and interests in keeping with these roles. During the twenties, the tasks include finding an occupation, stable staying in one place, and establishing a new family, which involve focusing affections on one person with whom daily details of life are shared and

assuming responsibility for continuous care of the offsprings. Normally, by the time the person reaches the midtwenties, the person should be experienced in the emotion of love. The young adult will look for the opposite sex as a loved one. At this time, the appearance of body is the most important things for young adult. Since society values physical attractiveness, prowess and functional abilities, disability would be expected to negatively impact body image (Drench, 1994).

Body image in the adult is a social creation (Murray, 1993). Normality is judged by appearance, and the ways of using the body are prescribed by society. Approval and acceptance are given for normal appearance and proper behavior. Bodily appearance serves as an expression of identity of the self to others although a person may regard the disability as a private concern. Changes in visible body part like hand are especially potent because they present a person in terms of physique, which can color other impressions.

The difference between men and women was greatest for the young-young adult respondents. Among them, 40% of the women and only 21% of the men evaluated their appearance negatively. In a study of body image and medical illness

(Schwab and Harmeline, 1968), the result indicated striking body image differences between the sex, the female was much dissatisfied with her bodies and their negative attitudes were closely tied to conditions of illness and psychological well-being. In contrast, male had more negative body images correlated with advancing age and higher socioeconomic status. Bello and McIntire (1995) reported that male demonstrated a more secure body cathexis than female did. Men are expected to be strong and agile but not preoccupied with their body. Men have tended to equate self with outward achievement and accomplishment and to de-emphasize their body attributes.

When passing from one age group to another, a person redefines self and the body image may change (King, 1981). A survey study with nearly 30,000 people responded was conducted by Cash, Winstead and Janda (1986). The questionnaire used was dealing with weight concerns, eating patterns, feelings about one's sexuality and psychosocial well-being, reflecting their belief in a multifaceted concept of body image. The result revealed that men and women in their 20s most concerned about their appearance. There was a steady decline of interest in appearance as age increased, with one exception that women older than 60 were

more interested in their appearance. This can be implied that the decline with age does not occur in how people evaluate their appearance. People do not report a poorer body image as they grow older, in fact young women are the most dissatisfied of all with their bodies.

Among hand injured patients admitted in Haushan hospital, the majority of them is in 20s age group. Normally, early adulthood sees some stability in body growth, and the individual strives to maintain and increase his body control (Schilder, 1989). Once people undergo organic injury that distorts the body structure can alter body image and further interfere with the entire self-image (Bronheim, Strain & Biller, 1991). Schwab and Harmeline (1968) studied body image and medical illness among medical inpatients (N=124). The result indicated that the patient express the most dissatisfaction with those parts of the body affected by illness.

In a study of body image disturbance in 162 American young adults with cancer indicated that demographic variables such as age, sex, marital status have significant effect on the mean scores of body-cathexis and self-cathexis. Married subjects demonstrated a more secure self-cathexis. The result also revealed the development of a

life-threatening illness might alter or influence the completion of the developmental tasks of young adulthood (Bello & McIntire, 1995). Hand injury does not threaten patient's life, but it may threaten their daily living. Loss of hand function may interfere with person's daily activities and work. Hands are one tool to earn a living and help others. Thus, those patients may experience some degrees of body image alteration.

#### **Conceptual framework**

In this study, the references served as foundation for investigation hand injured patient's body image. Hand injury is due to a trauma that can cause changes in hand appearance with or without loss of hand function. Since the nature of hand is closely related to function and appearance, and the target of people valued. Changes in body appearance and loss of function can lead to altered body image.

Body image is perception of person's feeling and attitude toward his hand appearance, function, and other's reaction to his hand appearance and function after receiving reconstructive surgery. Body image is a dynamic entity. It can be changed from time to time. Understanding of body

image provides a framework for studying the responses of hand injured patients, as these responses reflect the importance of the hand as visibility part of body and multifunctional tool in daily living. Change in hand appearance with or without loss hand function may result in body image alteration. Thus, this study to investigate hand injury patients' body image will be based on the basic framework derived from literature review.