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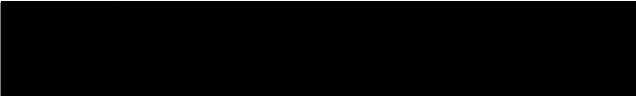
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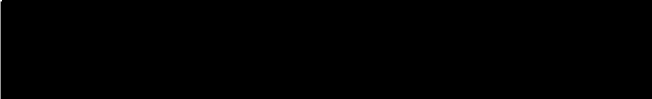
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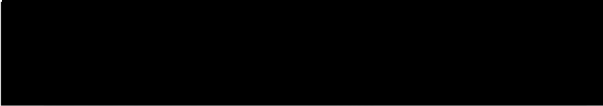
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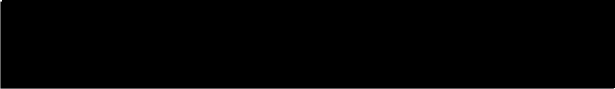
This is to certify that the thesis prepared by Merri Dianne Walkenstein, R.N. entitled Comparison of Burned Patients' Perception of Pain with Nurses' Perception of Patients' Pain has been approved by her committee as satisfactory completion of the thesis requirement for the degree of Master of Science.

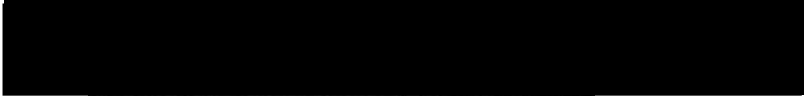

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Comparison of Burned Patients' Perception of Pain
With Nurses' Perception of Patients' Pain

A thesis submitted in partial fulfillment of the requirements for the
degree of Master of Science at Virginia Commonwealth University

By

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CHAPTER I

THE PROBLEM

Introduction

Pain is a universal experience. Caring for people in pain is a central aspect of nursing practice (16). Many studies have been done to determine the physical and psychosocial mechanisms of the pain sensation, in addition to methods of relief. Very little has been done, however, dealing specifically with the pain experienced by the burned patient.

People hospitalized with thermal injuries complain most often of the intensity and long duration of their pain experience (22). Due to the large number of persons sustaining thermal injuries every year, it is apparent that nurses must familiarize themselves with methods of evaluation and intervention to reduce or eliminate pain. More importantly, they must be aware of how they are perceiving the burned patient's pain at any given time, and whether this is congruent with the patient's perception of his or her pain.

Purpose of the Study

The purpose of this study was to determine how burned patients perceived their pain in comparison to how the nursing staff perceived the patient's pain.

Problems

What is the relationship between how pain is perceived by a burned patient and how that pain is perceived by the nurse?

Does the degree of pain perceived by the patient vary relative to specific treatments, that is tubbing, physical therapy or debridement?

Does the degree of pain perceived by the nurse vary relative to the specific treatments patients undergo, that is tubbing, physical therapy or debridement?

Definition of Terms

Throughout this study the following definitions will be used:

Burned patient - any patient admitted to a burn unit, facility or center for the treatment of thermal injury to the body surface.

Pain - an abstract concept which refers to a personal, private sensation of hurt (81).

Pain intervention - any activity which helps to decrease the level of pain sensation.

Pain perception - the personal interpretation of an unpleasant, distressing experience as measured by the Stewart Pain-Color Scale (SP-CS) (83).

Perception - the process that defines the way one experiences the world of objects, people and events (56).

Delimitations

The subjects selected for this study consisted of male and female patients eighteen years and older, hospitalized for the treatment of burn injury. Both male and female patients were considered since studies (69,93) have demonstrated a difference in pain tolerance between men and women, and since gender differences will be considered in data analysis.

Only those patients over eighteen years of age were included in

order to control for stressful reactions taking place during normal growth and development in childhood and adolescence. Children tend to exaggerate bodily damage and, therefore, their reactions to pain may be based on unrealistic fears rather than pain itself (80). In addition, no one was included in the study who was intubated, comatose or had visual impairment, specifically who was blind or color blind, since the SP-CS is based on color identification and verbal response.

The nurses included in the study must have worked with burned patients for longer than one month. Lenburg, Glass and Davitz (46) suggest that the period of time a nurse is exposed to patients in pain may affect the level of their inference to pain. In addition, the initial period of one's experience with a specific type of patient is one of orientation to the unit and adjustment to a new situation. One month is the expected allowance for such adjustments.*

Assumptions

Pain perception can be measured by the use of projective techniques.

Conceptual Framework

Perception is the process that defines the way one experiences the world of objects, people and events. The manner in which one responds to a given situation will depend largely on how he/she perceives the situation (19). Various individual factors affect one's perception, including social and cultural background, past experiences and level of education.

* One month is the allotted orientation time for registered nurses at the institution used in this study.

A nurse's perception involves conscious awareness of the needs and/or problems of individuals through direct and indirect observations (44). Through the nurse's perception "felt needs" are assessed which in turn are the basis for the nursing intervention (44). In order to achieve maximum health care, these felt needs, as the patient perceives them, must coincide with the nurse's perception of the apparent "real needs" of the patient (44). Patients' needs can, therefore, be met more effectively if the nurse's perception of a situation is closely related to the patient's perception of the same situation.

Significance of Study to Nursing

Nurses are in direct, continual contact with patients, as compared to other health professionals whose contact is sporadic and for limited periods of time. It is, therefore, the nurse's responsibility to meet patients' ongoing physical and emotional needs. It is essential that nursing practice be based, not only on humanistic, nurturing characteristics, but also on research supported data to assure the highest level of professional care. One aspect of professional practice of major importance on burn units is the alleviation or minimization of pain. Interventions to achieve this end are based on the degree of pain the nurse perceives the patient to be experiencing. It is, therefore, of utmost importance that the nurse perceives the patient's pain as the patient does.

Findings from this study will provide nursing personnel with data as to how patients' perceptions regarding pain compare with nurses' perceptions of patients' pain in general terms and as it relates to specific therapeutic measures. They will also serve as a guide for nurses to use in evaluating their methods of pain intervention.

CHAPTER II

REVIEW OF THE LITERATURE

Burn Injuries

Burn injuries are the third largest cause of accidental death in the United States (25). Approximately two million people in the United States sustain burn injuries each year; 74,000 of these require hospitalization (1,25).

The extent of a burn injury is determined by calculating the percent of body area burned plus the depth of the burn in terms of epithelial damage. Two commonly used methods for determining the percent of body area burned are the "Rule of Nines" developed by Pulaski and Ternison and the Lund and Browder Chart (65).

The depth of injury may be referred to as first, second and third degree, or as partial and full thickness injury. Partial thickness, or first and second degree burns, indicates that there are enough epithelial cells remaining for the epidermis to regenerate on its own, and there is normal or increased sensitivity to pain (24). Partial thickness burns may be expected to heal within one to thirty days or more (52). Full thickness injury, or third degree burns, imply that all the skin has been destroyed in addition to possible destruction of subcutaneous tissue, muscle and bone. Due to the destruction of pain fibers which terminate in the dermis, there is no pain sensation, nor is there regeneration of the burned skin (24).

Patients with burn injuries sustained either by thermal, electrical or chemical contact are often cared for on a specialized burn unit, center or facility. The patients are generally kept on the burn unit through the emergent or resuscitative phase, the acute phase and the rehabilitative phase of recovery. Depending on the degree and percentage of their injury, patients may remain on the burn unit for several months. The burned patient is kept on this isolated unit in order to prevent the complication of infection--one of the greatest dangers to a burned patient (24). Visiting hours may be limited, and when visitors are allowed, they often must wear gowns, gloves and masks.

The treatment of patients with burn injuries coincides with the patient's phase of recovery. The emergent period, zero to seventy-two hours postburn, is the most critical time for patient survival. The emergent period can be divided into two stages. The shock, or hypovolemic stage, occurs from time of injury until forty-eight hours postburn. During this time there is a shift of plasma from the intravascular space into the interstitial and intracellular spaces. This first stage is generally characterized by edema, low blood pressure, decreased cardiac output, increased total peripheral resistance, hemoconcentration, metabolic acidosis, reduced urine output and electrolyte disturbances, such as hyperkalemia and hyponatremia (30,77).

The second stage of the emergent period is the fluid remobilization or diuretic stage which generally occurs forty-eight to seventy-two hours postburn. During this stage there is remobilization of burn wound edema resulting in increased cardiac output, hemodilution, marked diuresis and hypokalemia (3,30,75). The most important aspect of care during the emergent stage is keeping the patient alive while providing

comfort and emotional support (24).

During the acute phase of burn recovery lasting from seventy-two hours until healing has occurred, there is removal of dead tissue and planning for wound closure (24). Wound care often consists of "tubbing" twice a day at which time the patient is immersed in a whirlpool bath of water or physiological saline. The purpose of tubbing is to allow the whirlpool action of the water to gently loosen or debride the burned skin and tissue in addition to washing off any topical agent used on the burn. To help with the debridement process, the nurse must cleanse the burned area. This must be done gently in order to prevent partial thickness burns from becoming full thickness burns by adding further physical trauma (25).

Debridement is done so that granulation of the burned skin can occur. The debridement process can be done while the patient is in or out of the tub. Several methods may be used, either alone or in combination. There is natural debridement in which the body's own enzymes serve to debride the burned area, commercial enzymatic debridement in which a topical agent is applied for debridement purposes, hydrolic debridement performed by the tub water and surgical debridement in which there is cutting away of the eschar. Sharp, or surgical, debridement is "carried to the point of bleeding or pain, whichever occurs first" (52: 39). Depending on the extent of surgical debridement required, this procedure may be performed either on the burn unit or in the operating room.

Following the tubbing and supplementary debridement if ordered, the wound is either covered with an occlusive dressing, left completely open to air (exposure method) or covered with a topical antibacterial

agent (semi-open) (24). Some topical agents used include silver nitrate, silver sulfadiazine and Mafenide acetate cream (Sulfamylon[®]). Of these three agents, Sulfamylon[®] appears to cause the most discomfort to the patient on application (32,52,62,75).

Active range-of-motion exercises, or physical therapy, are usually begun forty-eight hours post-admission in order to avoid the complication of loss of joint motion or deformity (24). These exercises should be performed not only by the physical therapist, but by the patients themselves while the therapist is off the unit (86).

When the burn wound is in need of epithelialization or has granulated and is ready for skin coverage, either biological dressings or skin grafts are applied. There are several types of biological dressings used on burned patients. Among these are allografts (cadaver skin), human amnionic dressings and xenografts (animal skin) which are generally used on fresh partial thickness burn injuries for the purpose of preventing desiccation, promoting epithelialization and reducing scar formation (52). These same temporary dressings may be applied to a partial or full thickness injury to prevent fluid and electrolyte losses, to prepare the area for autografting and to decrease the wound pain (75, 79,86). Autografts (skin grafts) are sections of skin taken from uninjured parts of the patient's body ranging in thickness from 0.008 to 0.015 of an inch (63). The area from which the skin is removed is referred to as the donor site. These grafts are intended to be a permanent coverage for full thickness burn injuries. They are applied when the injured area has been debrided and is free of dead tissue (31).

Many, if not all, of the above treatments may be associated with discomfort to the patient. In her survey of eighty-seven patients,

Wagner (86) found that dressing changes, tubbing, debridement, active exercises and grafting-related procedures (that is, preparation of donor site, application of graft and excision of tissue from donor sites) were activities or procedures that caused or resulted in residual pain.

The final stage of burn wound recovery is concerned with the rehabilitation of the patient. Depending on the severity of the burn, this stage may last for years.

Pain Perception

In a continuing effort to understand pain sensation, many theories have been proposed. Among these are the "specificity theory," the "pattern theory," the "gate-control theory" and the "endogenous pain-control theory." The specificity theory proposes that there is a specific pain system which carries messages from pain receptors in the skin via A delta and C fibers in peripheral nerves and by the lateral spinothalamic tract in the spinal cord to the pain center in the thalamus (15, 59). The theory claims that there are receptors in the skin which respond only to intense, noxious stimulation (60). Melzack and Wall (60) criticize this theory because of the assumption that stimulation of these "pain receptors" must always and only elicit the pain sensation. Nowhere does it speak to the psychological component of pain.

The pattern theory proposed by Goldscheider implies that stimulus intensity and central summation are the critical determinants of pain (59). Goldscheider claims that there are small fibers converging on dorsal horn cells. Input from these fibers is then summated and transmitted to the brain where it is recognized as pain (60).

Expanding upon the previously mentioned theories, Melzack and Wall (59) proposed the gate-control theory in 1965 to include the psychological component of pain. They suggest that upon stimulation of the

skin, nerve impulses are transmitted to three systems within the dorsal column of the spinal cord--namely, substantia gelatinosa cells located within laminae II and III, fibers projecting toward the brain and central transmission (T) cells located within laminae V (92). The gate in the substantia gelatinosa allows certain afferent stimuli to "get through" or influence the T-cells. The fibers determine when the "gate" opens or closes, and the T-cells activate neural mechanisms which lead to the perception of pain (60:11). In order for pain perception and response to occur, the output of the T-cells must reach or exceed a specific level. This output is dependent on the number and firing rate of the active fibers (60). In addition, attention, emotion and past experience may influence (via descending fibers) whether or not the gate opens or closes (60).

Finally, there is a theory involving the hormone, β -Endorphin, presumably derived from lipotropin hormone and secreted by the anterior pituitary. β -Endorphin is an opiate or morphine-like peptide which has been isolated from the brain and pituitary (33,34,45). It has been found to be secreted in increased amounts in response to acute stress (28). According to Von Knorring and others (85) who assayed the level of endorphin found in cerebral spinal fluid, patients who have an endorphin level above the median have a greater pain tolerance level than patients who have an endorphin level below the median.

Responses to pain can be measured verbally, behaviorally or physiologically (88). The manner in which one responds to a painful or noxious stimuli depends on that person's sensation and pain perception threshold and on the pain tolerance level. Melzack (56:24) defines the sensation threshold as the "lowest stimulus value at which a

sensation is first reported." The pain perception threshold is the "lowest stimulus level at which a person reports feeling pain" and the pain tolerance level is the "level at which the subject refuses to tolerate" (56:25).

Beecher (6) states that pain consists of two phenomena--the physiological process and the subjective aspect. The physiological process is evidenced by sympathetic activity, such as change in heart rate, blood pressure and mental status, which occurs in response to acute nociceptive input (68,80).

The subjective aspect of pain deals with the person's past experiences, emotions, fears, culture, age, sex and meaning given to pain. Melzack (56) states that anticipation of pain alone can increase the intensity of the perceived pain. Previous experiences with pain will, therefore, influence the manner in which one perceives the present painful situation (67). Pain may be "welcomed" as in childbirth, "feared" as in anticipation of postoperative pain or prior to treatments or "psychological" as a result of loss or depression (66). Painful emotions, such as anxiety and depression, may exacerbate physical pain, making it difficult for the patient to distinguish between physical pain and emotional tension (1,91).

Regardless of the type of pain, the person will first experience the sensation (primary pain) and then react to the sensation (secondary pain) (5). Following his study of wounded men in battle, Beecher (4:110) concluded that "there is no direct relationship between the wound per se and the pain experienced." Pain is determined to a greater extent by other factors, such as the significance of the wound, the level of anxiety (fear of death versus the lesser worry of the wound) and how much

disruption in the life pattern occurs as a result of the wound (4,5,43). Melzack (56:47) supports this by stating that the "same injury can have different effects on different people, or on the same person at different times." Wall (87:2) noted that "the variation of the relationship between pain and injury occupies all positions between injury with no pain and pain with no injury."

Petrie (73:7) identifies individuals as either "reducers" or "augmenters". Reducers tend to tolerate or accept pain better than augmenters who apparently exaggerate the sensory input. Each individual responds to a perceived situation by exhibiting some type of behavior, which varies from situation to situation and from person to person (44). There may be overt signs of pain such as tears, groaning and moaning or more subtle signs such as depression or lack of energy (95). There may be times when a patient tries to control expression of pain so that he is not seen as a nuisance or uncooperative (95).

Pain perception can also be influenced by the patient's specific illness situation (46). Anticipated pain may allow the patient to prepare a response in contrast to pain perceived suddenly, as is the case with burns (95). According to Roberts and Pruitt (76:372), each patient has his own "level of intrinsic reserve" which must be considered when determining his perception of pain. In general, pain perception is a unique and distinctive phenomena for each person.

The effect of analgesics on a person's pain perception seems to support the idea that pain has a strong psychological component. Murray (67) claims that the amount of pain one experiences is not necessarily related to the amount of injury, nor is the relief of such pain always related to the amount of or type of analgesic administered as is

demonstrated with the effective use of placebos. Beecher (6) and Keats found that pain relief following morphine and pentobarbital administrations was varied. Some patients "appeared" comfortable yet they claimed they had no relief from pain, while others claimed there was relief yet they appeared restless and tense. Feller and Jones (24) conclude that the sedative effect of an analgesic may be equally as important as the pain-relieving quality of the drug.

The way in which an individual perceives pain may explain why at certain times a stimulus is deemed painful or a specific analgesic is effective. The statement, "My pain is the same, but it doesn't hurt me now," illustrates how individuals integrate the various components of a painful experience so that their reaction to the sensation differs (29: 165).

Finally, age, culture and sex may affect how pain is perceived. The young are generally felt to have an increased pain perception threshold as compared to the aged (6,93). Zborowski (94) and Melzack (56) found that response to pain stimuli varies from culture to culture. Woodrow and others (93) and Notermans and Tophoff (69) found that men were able to tolerate more physical pain than women.

Burn Pain

Burn injury itself in addition to the treatments administered to the person sustaining burns can be a painful process. Heat, in general, has been used experimentally as a means of evoking pain (6). The description of "burning" pain is utilized in Melzack's McGill Pain Questionnaire when patients are asked to describe what their pain feels like (57). McLaughlin (53) also uses the term "burning" as a means of describing pain.

According to Fagerhaugh (22), one of the outstanding features of burn pain is its intensity and long duration. Patients express a fear of pain, asking, "How long will I suffer like this?" (36:72). The discomfort the patient is experiencing is, therefore, not only due to the painful burn and treatments, but also to the patient's anxiety (24).

The depth of the burn injury may be partially diagnosed by the presence or absence of the pain sensation (65). Partial thickness burns tend to be painful since the sensitive nerve endings are intact and irritated (52). Full thickness injuries are painless since the pain fibers terminating in the dermis are destroyed (24). It is, therefore, generally a "good sign" if the burn injury hurts, since it implies that the burn extends to only partial thickness, rather than a deeper, full thickness burn injury (14,41). Pain experienced by the patient during tubbing and debriding may actually help prevent the treatment person from handling the burn wound too roughly, thereby preventing further injury. Some patients may view tubbing as soothing or relaxing, especially when they are allowed to wash themselves or sit leisurely in the tub.

Theoretically, debridement along with other treatments can be performed on full thickness injuries without the use of analgesics. However, most injuries are a combination of full and partial thickness burns, and therefore, the need for analgesics must be evaluated (24). Complete analgesia, however, is not always possible while surgical debridement is being done (89).

Other treatments, such as the use of topical agents, physical therapy and grafting, may cause or result in pain. Pain experienced in association with the application of Sulfamylon[®] appears to occur at varying intensities (62) and according to the "makeup of the individual"

(36:33). Physical therapy is performed on the burned limbs of patients in spite of pain in order to prevent contractures (90). The grafting procedure imposes new and painful wounds (the donor site) so that the original burn wound may be covered and heal (90). Although the grafting procedure may be painful, it often has a "positive effect on the patient's morale" (42:80).

Jacoby (36:59) states that pain-relieving drugs must be used "generously but judiciously because of the long-term nature of the healing process in burns." This places the nurse in the position of determining whether the patient's pain is severe enough to require medication, or mild enough to allow the patient and nurse to decide on an alternative method of pain alleviation. The nurse who is caring for patients with burns appears to be in a sort of "double bind." Nursing administers many of the treatments deemed painful, yet the nurse is also the one who determines if, when and how much pain alleviation will be provided for the burned patient by the judicious use of analgesics ordered. Fagerhaugh (22:647) states that the "more experienced nurse tends to control pain with smaller doses of drugs than less experienced nurses." She also claims that the staff "manipulates their expertise to control the patient under circumstances of irreducible and unavoidable pain. Marvin (49:916) stresses the importance of "research and detailed reporting by nurses in order to deal with the pain of burned patients."

Finally, patients sustaining a burn injury may eventually develop additional painful complications, such as acute pancreatitis or cholecystitis. They may require painful or uncomfortable procedures, such as a tracheostomy or nasotracheal intubation. There may also be the need for various surgical procedures, such as an amputation, release

of contractures or cosmetic surgery of the eyes, ears and mouth (52). These factors compound the already lengthy and painful burn experience for the patient.

Nursing Interventions

Nurses working with people in pain are obligated to assess patients' unique pain experiences. Due to the subjective aspects of pain, however, only the person experiencing the pain can truly know its character and intensity (43). Patients may express their pain through non-verbal or verbal communication. One view is that a verbal statement by the patient is the only true way to assess pain (11), while another view is that vocabulary for pain description is relatively poor and relates to the etiology rather than the feeling of pain (61). In order to interpret the patient's message, the nurse is faced with several decisions. He/she must determine if the patient's pain is disease-related, a plea for attention, a sign of unhappiness or a "habitual way of responding to other people" (58:75). It appears that the nurse must initially evaluate or assess the patient's reaction and/or verbal expression to pain before deciding on the degree of pain being experienced (95).

As was mentioned previously, various characteristics, such as age, sex and culture may affect how a patient perceives pain. These same characteristics may determine how a nurse perceives the patient's pain (17). In addition, the nurse's educational preparation, marital status, the length of time in practice and the patient's diagnosis may all influence how a nurse perceives the patient's pain (17,27). Nurses must recognize these influencing factors in order to respond objectively to patients in pain.

Once the nurse is familiar with the various factors influencing

both the nurse's and the patient's pain perception, a nursing diagnosis must be formulated. Kaufman and Brown (43) state that the way a situation such as pain is evaluated will affect the plan of care delivered. The nursing interventions will, in turn, have a great effect upon the patient's ability to cope with pain (72).

In order to make a nursing diagnosis concerning pain, a complete nursing assessment is indicated. Assessment requires separating the sensation into its various physiological and psychosocial dimensions (68). Emotions may block or magnify the pain response necessitating ongoing assessment. Assumptions regarding the pain response must be avoided in order to assure proper assessment. It is frequently assumed that patients in pain will verbalize their discomfort; and, if there are no verbal complaints, it is often assumed that the patient has no pain, and therefore, there is nothing to worry about (23). Fagerhaugh and Strauss (23) cite these assumptions as hazardous especially when patients refrain from complaining of pain because they do not want to antagonize the staff. This silence, in turn, reinforces the nurse's assumption that the patients are comfortable.

Since pain reactions involve the whole personality, nurses must deal not only with the pathophysiology of pain, but also with how the pain is being perceived (40). The nurse who perceives the patient to be having a mild degree of pain will probably institute different nursing actions than if he/she perceives the patient to be suffering intensely (17). There is a possibility that the degree of pain perceived by the patient may differ from the nurse's perception of the patient's pain. It is, therefore, imperative that the nurse validate his/her perceptions with the patient so that the patient can correct, verify or elaborate on the

nurse's perceptions (21).

The nurse working with burned patients must consider all the above described aspects regarding pain perception. His or her considerations, however, are compounded by the fact that when a body organ such as the skin is destroyed, the patient is subjected to a long hospital stay consisting of many daily treatments which may, in and of themselves, elicit additional pain. The patient is not only in pain, but also must face possible disfigurement and adjustment to physical limitations. All these situations may make it especially difficult for a nurse to assess which behavior is due to pain and which is due to the reaction to a new situation (14). The patient with burn injuries may have difficulty expressing pain in that two means of conveying one's perceptions of a situation-- facial expressions and verbal response--may not be possible (44).

It is suggested that nurses who are accustomed to being with patients in pain eventually decrease their level of inference of pain (46). Nurses working with burned patients are administering painful, but necessary, treatments each day they work. As the patient's burn wounds heal, the nurse may expect the patient's pain to lessen. Whether or not this expectation of improvement actually reduces the nurse's perception of the patient's pain is still in question, according to Lenburg and others (46).

The nurse working on a burn unit must be able to assess patients' perceptions of pain so that an accurate nursing diagnosis can be made and appropriate nursing actions implemented. In order to achieve this end, the nurse must consider the psychosocial and physiological aspects of the patient's pain. One must assess not only the response the patient has to the pain, but the patient's response to the new situation with which he/she

is confronted (14). According to a report by the National Institute of Health (68:19), "lack of education and training accounts for a large part of the inadequate management of pain." In order to educate nurses concerning pain, they must first see the possible patient-nurse variance of pain perceptions as a real, yet workable, problem.

In summary, patients sustaining burn injuries have the potential of being in pain every day of their hospitalization. Nurses working with these patients must consider the various physiological and psychosocial aspects involved in pain perception. These factors influence not only the patients' perception of pain, but the nurse's perception of the patients' pain as well. If the nurse and the patient perceive the patient's situation similarly, then the nurse will be successful in assessing and diagnosing the patient's condition. This, in turn, will lead to appropriate nursing interventions geared toward pain alleviation which will promote the patient's general well-being.

CHAPTER III

METHODOLOGY

Selection of Subjects

The subjects consisted of fifteen patients over the age of eighteen years of age admitted to the burn center for the treatment of thermal injuries and eight nurses who were employed at the burn center for longer than one month. The subjects were selected from patients and nursing staff at an urban center in a mid-atlantic state.

Only those patients over eighteen years of age were included in order to control for stressful reactions taking place during normal growth and development in childhood and adolescence. Both male and female patients were considered since gender differences in pain perception were included in data analysis. Nurses included in the study must have worked with burned patients for longer than one month to allow for a period of orientation to the center and adjustment to burned patients. Table 1 is a list of pertinent patient information.

Table 1

Patient Information Regarding Age, Sex,
Percentage of Body Area Burned and Degree of Burn

Patient #	Age	Sex	% of Burn	Degree of Burn in Terms of Thickness
0001	38	M	16%	Full
0002	32	M	8%	Partial
0003	41	M	4%	Full
0004	60	F	20%	Partial and Full
0005	24	F	51%	Partial and Full
0006	79	M	2%	Full
0007	19	M	1.5%	Partial and Full
0008	59	M	22%	Partial and Full
0009	24	M	6%	Partial
0010	19	M	6%	Partial
0011	27	M	7%	Partial
0012	54	F	2%	Partial
0013	29	M	50%	Partial and Full
0014	87	F	2%	Partial and Full
0015	75	M	10%	Partial and Full

Selection of Instrument

The Stewart Pain-Color Scale (SP-CS) is a "chromatic array of yellow-orange-red-black" (Appendix A) (83:119-20). The colors are placed along a continuum from left to right with yellow signifying little or no pain and red-black signifying intense pain. The subjects were appraised of this continuum prior to each measurement. The subject was asked to point to the color which best described the intensity of his/her pain. To facilitate analysis of data each color was assigned a numerical value, known only to the researcher, in order to assure that the pain was associated with color rather than numbers in the subject's mind. Starting from left to right the colored squares were assigned a number from zero to ten in numerical order.

There are numerous methods available for pain assessment. Some are based on changes in vital signs, that is blood pressure, pulse or respiratory rate. Others measure the degree of anxiety or level of stress experienced. There are simple descriptive scales, numerical scales, questionnaires and Likert-type rating scales. The SP-CS was selected because perception of pain, rather than exact intensity or reaction to pain, was to be measured and was, therefore, more appropriate for use in this study. The SP-CS was easy to administer and entailed relatively little time or effort on the part of the subject.

Validity

The SP-CS has been used by patients with numerous painful conditions (83). Based on one study of 163 patients, the SP-CS was found to be significant at the 0.001 level, when correlating it to a simple descriptive scale (83:120).

Data Collection

Patients selected for study were interviewed at randomly selected times between the hours of seven-thirty a.m. and nine p.m., a time period during which the majority of patients complain of pain (27). Treatments, such as whirlpool baths, debridement and physical therapy, which are often associated with pain usually occur during these hours. Time was selected randomly by blindly drawing one card from each of three card stacks. One stack consisted of cards on which hours from one to twelve were noted. Another consisted of cards on which fifteen minute intervals were noted, that is "00," "15," "30" and "45." The third stack consisted of two cards, one indicating "p.m." and the other "a.m." Thus, one measurement of pain perception may have been at 2:45, if a "2" was drawn from the hour stack, "45" from the minute stack and "p.m." from the third stack.

Each patient subject's pain perception was measured by the SP-CS three randomly selected times, immediately followed by the nurses' assessment of the patient and measurement of his/her perception of the patient's pain, also utilizing the SP-CS. Thus data analysis was performed using 45 paired scores. Permission to utilize the burn center was obtained from hospital administration (Appendix B). Prior to the testing procedures, a signed, informed consent form was obtained from the nurse (Appendix C) and the patient (Appendix D) subjects. At this time the nurse subjects were asked to complete an attribute variable questionnaire (AVQ) (Appendix E), and the patients' gender was recorded. All subjects were assigned code numbers at that time. Testing of patients and nurses was done in the center in an area which provided privacy. Confidentiality was assured for all subjects.

CHAPTER IV

DATA ANALYSIS

Analysis of Data

In order to determine what relationship exists between burned patients' perception of pain and nurses' perception of patients' pain, the Pearson product-moment correlation coefficient (r) was selected because it shows the relationship between two related groups (patients and nurses) concerning the same trait (pain).

The Pearson correlation coefficient was calculated as $r = 0.44$ with an assumed mean of 3 for patient responses (actual mean, 2.88) and 3 for nurse responses (actual mean, 2.84). The t -score was 3.22 with 43 degrees of freedom. A positive relationship between nurses' and patients' perceptions of pain, in general, was significant at the 0.01 level.

The problem regarding whether or not the degree of pain perceived by the patient varies relative to specific treatments could not be analyzed due to the small sample size of patients receiving each of the various treatments. The same small sample size prevented the statistical analysis of nurses' perception of patients' pain relative to specific treatments.

The Wilcoxon matched-pairs signed-ranks test was done to determine how nurses perceive patients' pain during treatments in general terms. Debridement, physical therapy, hydrotherapy and dressing changes were grouped rather than examining each treatment individually.

The Wilcoxon test shows whether nurses perceive the patients' pain as more or less than the patients perceive their pain. The test shows the direction and magnitude of a difference between the nurse and patient responses. There were five instances in which nurses underestimated patients' pain, and seven instances in which nurses overestimated patients' pain. There were no instances in which the nurse and patient perceived the patient's pain exactly the same.

The calculated T-score equaled 18. In order for the relationship between nurses' and patients' perceptions of pain regarding treatments to be significant for a two-tailed test with a sample number of 12 at the 0.05 level of significance, T must be equal to or less than 14. Therefore, there is no statistically significant relationship between the nurses' perception of patients' pain and the patients' perception of pain while treatments are being administered.

To determine the relationship between length of time as a registered nurse and perception of patients' pain unrelated to treatments, the Spearman rank correlation coefficient (r_s) or Spearman rho was used. The original 45 paired observations were subdivided into three categories according to length of time the nurses responding had been registered. The Spearman rho correlation was calculated separately for each category.

In calculating the correlation coefficient between burned patients' perception of pain and nurses' perception of pain according to length of time as registered nurses, subdivision results were as follows:

Nurses (3) registered for zero to two years, $r_s = -0.083$, $N=13$

Nurses (3) registered for three to five years, $r_s = 0.185$, $N=18$

Nurses (2) registered over six years, $r_s = 0.083$, $N=14$

The method for calculating ties was used due to the large number of similar responses in both the nurse and patient groups. In order for there to be a significant relationship at the 0.05 level between the nurse and patient observations, r_s must be equal to or greater than 0.456 for $N=14$ and 0.506 or greater for $N=12$. For $N=18$, r_s must be equal to or greater than 0.399 for significances at the 0.05 level. Therefore, there were no statistically significant relationship between burned patients' perception of pain and nurses' perception of pain according to length of time the nurse was registered.

The original 45 paired observations were again subdivided according to three categories according to length of time as a nurse in a burn center. The Spearman rho was calculated separately for each category.

Calculation of the Spearman rho correlation coefficient between burned patients' perception of pain and nurses' perception of patients' pain according to length of time as a nurse in a burn center, corrected for ties, were found not to be statistically significant.

Subdivision results were as follows:

Nurses (3) who had worked in the burn center from two to six months, $r_s = 0.110$, $N=13$

Nurses (3) who had worked in the burn center for six months to five years, $r_s = 0.085$, $N=18$

Nurses (2) who had worked in the burn center for over five years, $r_s = 0.083$, $N=14$

In order for there to be a statistically significant relationship at the 0.05 level between patient and nurse observations, r_s must be equal to or greater than 0.456 for $N=14$, 0.506 for $N=12$, and 0.399 for $N=18$.

Finally, male and female subjects were analyzed using the Mann-Whitney U test to determine if two nonparametric independent groups (males and females) from the same population (burned patients) were related. With female responses $N_1=4$ and male responses $N_2=11$, the value of U was calculated as 18.5. In order for there to be a significant relationship at the 0.05 level for a two-tailed test, U must be equal to or less than 6. Male and female responses are, therefore, not significantly related. Because of the small sample size, no attempt was made to determine whether male patient perceptions of pain were less than, equal to or greater than female patient perceptions of pain.

Discussion of Findings

Analysis of data demonstrated that there is a positive relationship between how nurses perceive burned patients' pain and how

patients perceive their pain at the 0.01 level of significance. This significant positive relationship indicates that nurses at the burn center studied were realistic in their assessment of patients' pain in general. This ability to assess patients' pain correctly suggests that the nurses were intervening appropriately and providing adequate analgesics for the patients. Since there were no studies in the reviewed literature dealing specifically with how burned patients perceive their pain and with what the nurses' perception of the burned patients' pain is, this data may serve as a baseline for future studies.

The data analyzed for comparison of burned patients' perception of pain and nurses' perception of the patients' pain during treatments, although showing no statistically significant relationship, suggests that nurses perceive the patients to be having more pain than the patients claim they are having. This overestimation of pain as perceived by the nurses was seen in seven out of the twelve instances measured. Perhaps, these nurses overestimated the pain burned patients experience during treatments due to the belief that these treatments are indeed painful. Wagner's (86) survey of burned patients identifies various treatments which cause or result in pain. If nurses are familiar with such studies, they may be biased as to what are painful experiences for patients, without assessing each patient individually. In addition to these findings, the data in this study indicates that patients may be in as much, if not more, pain while no treatments are being administered. This seems to support Melzack (56), Wall (87)

and Beecher's (5) studies suggesting that there is a strong psychosocial aspect of pain perception. Although the patients' level of fear and anxiety were not determined in this study, these factors may have been influential in the patients' perception of pain regardless of the treatment administered.

Another factor not accounted for in pain perception during treatments is that patients may not have responded with higher scores during treatments due to the possible administration of analgesics prior to treatments. As several studies (67,6) have shown, each individual reacts in a unique way to analgesics thereby requiring individual pain assessment. It is possible that the nurses measured did not take into account the effect of anticipated pain (56,95) or analgesics on the patients' pain perception. Since there was no statistically significant relationship between the nurses' and patients' perception of the patient' pain during treatments, it is evident that the problem of inaccurate pain assessment exists concerning treatments. This may result in over or under use of ordered analgesics.

In determining whether length of time in nursing, per se or burn nursing specifically has an effect on perception of patients' pain, the data analyzed showed that length of time as a registered nurse was not statistically significant in relation to assessment of patient perception of pain. Though not statistically significant, nurses who were registered nurses for three to five years did assess the degree of pain being experienced by the patient more closely to how the patients reported their pain than nurses in the zero to two

year and over six year experience groups. Perhaps the new nurses are overwhelmed by what they experience in a burn center, whereas the more experienced nurses become hardened to the patients' pain. It is also possible that there is a discrepancy between the number of years a nurse has been registered, which was the variable recorded, and the number of years the nurse has actually been providing direct patient care. It should also be noted that part time nursing personnel were not distinguished from full time nursing personnel.

The data analyzed concerning male and female pain perception demonstrates that the two groups are not significantly related. The sample size was too small to determine whether Woodrow and others (93) and Notermans and Tophoff's (69) studies would be supported concerning males tolerating more physical pain than females.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

To determine how burned patients perceive their pain in comparison to how nurses perceive the patients' pain, this study was conducted using the Stewart Pain-Color Scale on a total of fifteen burned patients and eight nurses working with these patients. The fifteen patients ranged in age from 19 to 87 years and included both males and females. The nurses included in the study had been nursing in a burn center for less than six months to longer than ten years.

Analysis of data demonstrated that there was a positive correlation between the nurses' perception of the burned patients' overall pain experience and the degree of pain reported by the burned patients to a statistically significant degree. However, when the data was analyzed in reference to pain experienced by the burned patients during specific treatment modalities, there was no statistically demonstrable correlation. Indeed, the nurses tended to overestimate the degree of pain experienced by the burned patient. Neither were there any statistically significant findings related to length of time nurses had worked in a burn center and their assessment of the patients' pain. Although there was no statistically significant relationship found between pain perception of male and female patients, the sample size was too small to determine whether men were perceiving their pain experience as lesser or greater than did women.

Conclusions

Data from this study demonstrated the following:

1. There is a positive correlation between the burned patients' perception of pain and the nurses' perception of the patients' pain, in general, at the 0.01 level of significance.

2. There is no statistically significant relationship between the patients' perception of pain while receiving treatments and the nurses' perception of the patients' pain.

3. There is no statistically significant relationship between the length of time as a registered nurse and perception of patients' pain.

4. There is no statistically significant relationship between length of time working as a nurse in a burn center and perception of patients' pain.

5. There is no statistically significant relationship between male and female patient perceptions of pain.

Recommendations

It is recommended that this study be replicated:

1. Using a larger patient and nurse sample size.

2. Recording amount and type of analgesic given prior to treatments.

3. Collecting data during treatment times rather than at random times during the day.

4. Exploring in greater detail variables related to the nurse population, such as age, sex, educational preparation, length of time in actual practice and sex of the nurse versus sex of the patient.

5. Examining the nurses' perception of patient pain relative to the age and cultural/racial background of the patient and nurse.

6. Studying a pediatric population.

BIBLIOGRAPHY

BIBLIOGRAPHY

1. Artz, Curtis P. "Psychological Considerations." In Burns: A Team Approach, pp. 461-65. Edited by Curtis P. Artz, John A. Moncrief and Basil A. Pruitt, Jr. Philadelphia: W.B. Saunders Company, 1979.
2. Baer, Eva; Davitz, Lois Jean; and Lieb, Renee. "Inferences of Physical Pain and Psychological Distress in Relation to Verbal and Nonverbal Patient Communication." Nursing Research, 19:388-90. September-October, 1970.
3. Baxter, Charles R. "Fluid Volume and Electrolyte Changes of the Early Postburn Period." Clinics in Plastic Surgery, 1:693-708. October, 1974.
4. Beecher, Henry K. "The Subjective Response and Reaction to Sensation." American Journal of Medicine, 20:107-13. January, 1956.
5. Beecher, Henry K. "Relationship of Significance of Wound to Pain Experienced." Journal of American Medical Association, 161:1609-13. August, 1956.
6. Beecher, Henry K. Measurement of Subjective Responses. New York: Oxford University Press, 1959.
7. Bonica, John J. and Fessard, Denise G., eds., Advances in Pain Research and Therapy. Vol. 1. New York: Raven Press, 1976.
8. Bruegel, Mary Ann. "Relationship of Preoperative Anxiety to Perception of Postoperative Pain." Nursing Research, 20:26-30. January-February, 1971.
9. Cady, Jane Wood. "Dear Pain" American Journal of Nursing. 76:960-61. June, 1976.
10. Caillet, Rene. Soft Tissue Pain and Disability. Philadelphia: F.A. Davis Company, 1977.
11. Chambers, Wilda G. and Price, Geraldine G. "Influence of Nurse Upon Effects of Analgesics Administered." Nursing Research, 16:228-33. Summer, 1967.
12. Copp, Laurel Archer. "The Spectrum of Suffering." American Journal of Nursing, 74:491-95. March, 1974.
13. Craig, Kenneth D. and Best, J. Allen. "Perceived Control Over Pain: Individual Differences and Situational Determinants." Pain, 3:127-35. 1977.

14. Cullen, Stewart. "Pain and Its Treatment." In On Burns, pp. 18-28. Edited by Nathan A. Womack. Springfield: Charles C. Thomas, 1953.
15. Curtis, Brian A.; Jacobson, Stanley; and Marcus, Elliott M. An Introduction to the Neurosciences. Philadelphia: W.B. Saunders Company, 1972.
16. Davitz, Lois J. and Davitz, Joel R. "How Nurses View Patient Suffering." RN, 38:69-74. October, 1975.
17. Davitz, Lois Jean and Pendleton, Sydney Harrison. "Nurses' Inferences of Suffering." Nursing Research, 18:100-07. March-April, 1969.
18. DiBlasi, Marie and Washburn, Carolyn. "The Management of Pain: Using Analgesics Effectively." American Journal of Nursing, 79:74-78. January, 1979.
19. Dodge, Joan S. "Factors Related to Patients' Perceptions of Their Cognitive Needs." Nursing Research, 18:502-13. November-December, 1969.
20. Eland, Joann M. "Living with Pain." Nursing Outlook, 26:430-31. July, 1978.
21. Elder, Ruth G. "What is the Patient Saying?" Nursing Forum, 2(1): 24-37, 1963.
22. Fagerhaugh, Shizuko. "Pain Expression and Control on a Burn Care Unit." Nursing Outlook, 22:645-50. October, 1974.
23. Fagerhaugh, Shizuko and Strauss, Anselm. "How to Manage Your Patient's Pain . . . and How Not To." Nursing 80, 10:44-47, February, 1980.
24. Feller, Irving and Jones, Claudella Archambeault. Nursing the Burned Patient. Ann Arbor: The National Institute for Burn Medicine, 1973.
25. Feller, Irving; Jones, Claudella Archambeault; and Richards, Kathryn E. Emergent Care of the Burn Victim. Ann Arbor: The National Institute for Burn Medicine, 1977.
26. Gannon, Brian. "Perception." Nursing Mirror, 134:42-43, March 3, 1972.
27. Graffam, Shirley Ruth. "Nurses' Response to the Patient in Distress--Development of an Instrument." Nursing Research, 19:331-36. July-August, 1970.
28. Guillemin, Roger; Vargo, Therese; Rossier, Jean; Minick, Scott; Ling, Nicholas; Rivier, Catherine; Vale, Wylie; and Bloom, Floyd. " β -Endorphin and Adrenocorticotropin are Secreted Concomitantly by the Pituitary Gland." Science, 197:164-65. February 13, 1953.
30. Haynes, Boyd W., Jr. "Early Fluid Treatment of Severe Burns: Hemodynamic Alterations and the Use of Dextran and Blood." Annals of the New York Academy of Sciences, 150:907-11. August 14, 1968.

31. Haynes, Boyd W., Jr. "Early Excision and Grafting in Third Degree Burns." Annals of Surgery, 169:736-47. May, 1969.
32. Haynes, Boyd W., Jr. "Current Problems in Burns." Archives of Surgery, 103:454-60. October, 1971.
33. Holaday, John W.; Law, Ping-Yee; Tseng, Liang-Fu; Loh, Horace H.; and Li, Choh Hao. " β -Endorphin: Pituitary and Adrenal Glands Modulate Its Action." National Academy of Science, U.S.A., 74:4628-32. October, 1977.
34. Hughes, John. "Isolation of an Endogenous Compound from the Brain with Pharmacological Properties Similar to Morphine." Brain Research, 88:295-308. 1975.
35. Jackson, D. MacG. "The Psychological Effects of Burns." Burns, Including Thermal Injury, 1:70-73. September, 1972.
36. Jacoby, Florence Greenhouse. Nursing Care of the Patient with Burns. St. Louis: C.V. Mosby Company. 1972.
37. Jacox, Ada K. "Assessing Pain." American Journal of Nursing, 79: 895-900. May, 1979.
38. Janzen, Rudolph, ed. Pain Analysis: A Guide to Diagnosis. Great Britain: John Wright and Sons, Ltd., 1970.
39. Johnson, Jean E. and Rice, Virginia Hill. "Sensory and Distress Components of Pain: Implications for the Study of Clinical Pain." Nursing Research, 23:203-09. May-June, 1974.
40. Johnson, Marion. "Pain. How Do You Know It's There and What Do You Do?" Nursing 76, 6:48-50. September, 1976.
41. Jones, Claudella A. and Feller, Irving. "Burns: What To Do During the First Critical Hours." Nursing 77, 7:22-31. March, 1977.
42. Jones, Claudella A. and Feller, Irving. "Burns: Avoiding and Coping with Complications Before and After Grafting." Nursing 77, 7:72-81. November, 1977.
43. Kaufman, Margaret and Brown, Dorothy. "Pain Wears Many Faces." American Journal of Nursing, 61:48-51. January, 1961.
44. King, Imogene M. "A Conceptual Frame of Reference for Nursing." Nursing Research, 17:27-31. January-February, 1968.
45. La Bella, Frank; Queen, Gary; Senyshyn, Jan; Lis, Martin; and Chretien, Michel. "Lipotropin: Localization by Radioimmunoassay of Endorphin Precursor in Pituitary and Brain." Biochemical and Biophysical Research Communications, 75:350-57. February, 1977.
46. Lenburg, Carrie Byrd; Glass, Helen P.; and Davitz, Lois Jean. "Inferences of Physical Pain and Psychological Distress in Relation

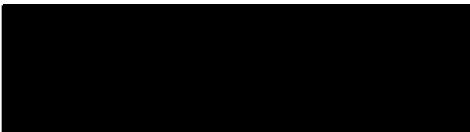
- to the Stage of the Patient's Illness and Occupation of the Perceiver." Nursing Research, 19:392-98. September-October, 1970.
47. Luterman, Arnold and Curreri, P.W. "Emergency Treatment of Burn Injuries." Hospital Medicine, 16:66-79. January, 1980.
 48. Mahoney, Elizabeth Anne. "Some Implications for Nursing Diagnosis of Pain." Nursing Clinics of North America, 12:613-19. December, 1977.
 49. Marvin, Janet A. "Burn Nursing as a Specialty." Heart and Lung, 8:913-17. September-October, 1979.
 50. McBride, Mary Angela. "Nursing Approach, Pain and Relief: An Exploratory Experiment." Nursing Research, 16: 337-41. Fall, 1967.
 51. McCaffery, Margo and Hart, Linda L. "Undertreatment of Acute Pain with Narcotics." American Journal of Nursing, 76:1586-91. October, 1976.
 52. McDougal, W. Scott; Slade, C. Lawrence; and Pruitt, Basil A., Jr. Manual of Burns. New York: Springer-Verlag, 1978.
 53. McLachlan, Eileen. "Recognizing Pain." American Journal of Nursing, 74:496-97. March, 1974.
 54. McMahan, Margaret A and Patricia Miller. "Pain Response: The Influence of Psycho-Social-Cultural Factors." Nursing Forum, 17(1):58-70, 1978.
 55. Mehta, Mark. "The Principles of Pain." Nursing Mirror, 144:48-50, March 10, 1977.
 56. Melzack, Ronald. The Puzzle of Pain. New York: Basic Books, Inc., 1973.
 57. Melzack, Ronald. "The McGill Pain Questionnaire: Major Properties and Scoring Methods." Pain, 1:277-99. 1975.
 58. Melzack, Ronald and Chapman, C. Richard. "Psychological Aspects of Pain." Postgraduate Medicine, 53:69-75. May, 1973.
 59. Melzack, Ronald and Wall, Patrick D. "Pain Mechanisms: A New Theory." Science, 150:971-79. November, 1965.
 60. Melzack, Ronald and Wall, Patrick D. "Psychophysiology of Pain." International Anesthesiology Clinics, 8:3-34. Spring, 1970.
 61. Mersky, H. "Psychological Aspects of Pain." In Pain, Clinical and Experimental Perspectives, pp. 24-35. Edited by Matisyohu Weisenberg. St. Louis: C.V. Mosby Company, 1975.
 62. Moncrief, John A. "Topical Antibacterial Treatment of the Burn Wound." In Burns: A Team Approach, pp. 250-69. Edited by Curtis A. Artz, John A. Moncrief and Basil A. Pruitt, Jr. Philadelphia: W.B. Saunders Company, 1979.

63. Moncrief, John A. "Grafting." In Burns: A Team Approach, pp. 273-98. Edited by Curtis A. Artz, John A. Moncrief and Basil A. Pruitt, Jr. Philadelphia: W.B. Saunders Company, 1979.
64. Moss, Fay and Meyer, Burton. "The Effects of Nursing Intervention Upon Pain Relief on Patients." Nursing Research, 15:303-06. Fall, 1966.
65. Moylan, Joseph A. "First Aid and Transportation of Burned Patients." In Burns: A Team Approach, pp. 151-58. Edited by Curtis A. Artz, John A. Moncrief and Basil A. Pruitt, Jr. Philadelphia: W.B. Saunders Company, 1979.
66. Munley, M. Joan and Keane, Mary C. "Symposium on Impressions of Pain: A Nursing Diagnosis." Nursing Clinics of North America, 12: 609-11. December, 1977.
67. Murray, John B. "Psychology of the Pain Experience." Journal of Psychology, 78:193-206. July, 1971.
68. National Institute of Health Publication. National Institute of Neurological and Communicative Disorders and Stroke. Report of the Panel on Pain. N.I.H. Pub. #79-1912. June 1, 1979.
69. Notermans, S.L.H. and Tophoff, M.M.W.A. "Sex Difference in Pain Tolerance and Pain Apperception." In Pain, Clinical and Experimental Perspectives, pp. 111-16. Edited by Matisyohu Weisenberg. St. Louis: C.V. Mosby Company, 1975.
70. Papper, E.M.; Brodie, Bernard B.; and Rovenstire, E.A. "Postoperative Pain; Its Use in the Comparative Evaluation of Analgesics." Surgery, 32:107-09. July, 1953.
71. Payne, J.P. and Rap, Burt, eds. Pain, Basic Principles, Pharmacology and Therapy. Baltimore: Williams and Wilkens Company, 1972.
72. Peeling, Barbara. "One Day at a Time on a Burn Unit." The Canadian Nurse, 74:38-41. November, 1978.
73. Petrie, Asenath. Individuality in Pain and Suffering. 2nd ed. Chicago: University of Chicago Press, 1978.
74. Pruitt, Basil A., Jr. "Fluid and Electrolyte Replacement in the Burned Patient." The Surgical Clinics of North America, 58:1291-1312. December, 1978.
75. Pruitt, Basil A., Jr. and Curreri, William. "The Burn Wound and Its Care." Archives of Surgery, 103:461-68. October, 1971.
76. Roberts, Mary Lou and Pruitt, Basil A., Jr. "Nursing Care and Psychological Considerations." In Burns: A Team Approach, pp. 370-89. Edited by Curtis A. Artz, John A. Moncrief and Basil A. Pruitt, Jr. Philadelphia: W.B. Saunders Company, 1979.

77. Rogenes, Paula R. and Moylan, Joseph. "Restoring Fluid Balance in the Patient with Severe Burns." American Journal of Nursing, 76: 1953-57. December, 1976.
78. Schmitt, Mary. "The Nature of Pain." Nursing Clinics of North America, 12:621-29. December, 1977.
79. Shuck, Jerry M. "Biologic Dressings." In Burns: A Team Approach, pp. 211-23. Edited by Curtis A. Artz, John A. Moncrief and Basil A. Pruitt, Jr. Philadelphia: W.B. Saunders Company, 1979.
80. Shultz, Nancy V. "How Children Perceive Pain." Nursing Outlook, 19: 670-73. October, 1971.
81. Sternbach, Richard A. Pain: A Psychophysiological Analysis. New York: Academic Press, Inc., 1968.
82. Stewart, Elizabeth. "To Lessen Pain: Relaxation and Rhythmic Breathing." American Journal of Nursing, 76:958-59. June, 1976.
83. Stewart, Mary L. "Measurement of Clinical Pain." In Pain: A Source Book for Nurses and other Health Professionals, pp. 107-37. Edited by Ada K. Jacox. Boston: Little, Brown and Company, 1977.
84. Triplett, June L. "Empathy Is" Nursing Clinics of North America, 4:673-81. December, 1969.
85. Von Knorring, Lars; Almay, Bella G.L.; Folke, Johansson; and Terenius, Lars. "Pain Perception and Endorphin Levels in Cerebrospinal Fluid." Pain, 5:359-65. December, 1978.
86. Wagner, Mary. "Pain and Nursing Care Associated with Burns." In Pain: A Source Book for Nurses and other Health Professionals, pp. 391-403. Edited by Ada K. Jacox. Boston: Little, Brown and Company, 1977.
87. Wall, Patrick D. "The Gate-Control Theory of Pain Mechanisms--A Re-examination and Re-statement." Brain--A Journal of Neurology, 101:1-18. March, 1978.
88. Weisenberg, Matisyohu, ed. Pain, Clinical and Experimental Perspectives. St. Louis: C.V. Mosby Company, 1975.
89. Welch, Gary W. "Anesthesia for the Thermally Injured Patient." In Burns: A Team Approach, pp. 299-306. Edited by Curtis A. Artz, John A. Moncrief and Basil A. Pruitt, Jr. Philadelphia: W.B. Saunders Company, 1979.
90. West, Donald A. and Shuck, Jerry M. "Emotional Problems of the Severely Burned Patient." The Surgical Clinics of North America, 58:1189-1204. December, 1978.
91. Wise, Thomas N. "Pain: The Most Common Psychosomatic Problem." The Medical Clinics of North America, 61:771-80. July, 1977.

92. Wolf, Steven. "Perspectives on Central Nervous System Responsiveness to Transcutaneous Electrical Nerve Stimulation." Physical Therapy, 58:1443-49. December, 1978.
93. Woodrow, Kenneth; Friedman, Gary; Siegelau, A.B.; and Collen, Morris F. "Pain Tolerance Differences According to Age, Sex and Race." Psychosomatic Medicine, 34:548-56. November-December, 1972.
94. Zborowski, Mark. "Cultural Components in Responses to Pain." Journal of Social Issues, 8:16-30. 1952.
95. Zborowski, Mark. People in Pain. San Francisco: Jossey-Bass, Inc., 1969.
96. Zderad, Loretta T. "Empathetic Nursing--Realization of a Human Capacity." Nursing Clinics of North America, 4:655-62. December, 1969.

APPENDIX A



Ada K. Jacox, R. N., Ph. D.
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and Doctoral Programs
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Denver, Colorado 80262


Dear Dr. Jacox:

After reviewing your book entitled Pain: A Source Book for Nurses and other Health Professionals, I have become very interested in Mary Stewart's Pain-Color Scale. I would like to use her tool in my thesis dealing with burned patients' perception of pain in comparison to the staff's perception of the patients' pain.

I would be most appreciative if you could send me information on how to obtain the Stewart-Scale, in addition to any legalities involved in its usage.

Thank you for your time.

Sincerely,



Merri D. Walkenstein, R. N., B.S.N.
Graduate Student
Medical College of Virginia
School of Nursing

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SCHOOL OF NURSING

October 31, 1979

Merri D. Walkenstein, R.N., B.S.N.
Graduate Nursing Student
Medical College of Virginia
Richmond, Virginia 23225

Dear Ms. Walkenstein:


Thank you for your interest in the Stewart color scale. Unfortunately, the only published information is that in the book to which you alluded. The instrument was not widely reproduced and no work has been done on it since Ms. Stewart's death two years ago.

You may be able to get some assistance in this by contacting Joann M. Eland, 8A Coral Trailer Park, Coralville, Iowa 52241. Ms. Eland has been doing some work using the color scale with children and may be able to share her instrument with you.

Again, I am sorry not to be able to give you any more assistance in this area. As far as I know there are no legalities involved in your using the scale as long as Mary Stewart is properly credited.

Best wishes in your research.

Sincerely,


Ada Jacob, R.N., Ph.D.
Associate Dean for
Research and Doctoral Programs

AJ:jrr

WHAT COLOR IS YOUR PAIN ?



APPENDIX B

Consent from the Hospital Administration

I have discussed the study, "Comparison of Burned Patients' Perception of Pain with Nurses' Perception of Patients' Pain" with Merri D. Walkenstein, R.N., a graduate student in nursing. I understand that Mrs. Walkenstein will be assessing both burned patients and nurses who regularly work on the burn unit relative to the patients' pain experiences. Mrs. Walkenstein has my permission to approach patients and nurses in this institution's burn center and to solicit their willingness to participate in this study.

Title _____

Date _____

APPENDIX C

Nurse Subject Consent Form

I agree to participate in the study by Merri D. Walkenstein, R.N., comparing how I perceive my patients' pain with how my patients perceive their pain. I understand that I may be asked to evaluate a patient pain experience three or more times in one day, and that I have to complete a brief questionnaire concerning my personal nursing career.

I understand that my name will not be used in the study and that all information will remain confidential. I also understand that I am not required to participate in the study and that I may withdraw at any time.

Signature _____

Date _____

Witness _____

Date _____

APPENDIX D

Patient Subject Consent Form

I agree to participate in the study by Merri D. Walkenstein, R.N. comparing how I perceive pain at various times. I have agreed to be tested a total of three times between the hours of 7:30 a.m. and 9:00 p.m. to determine the degree of pain I am experiencing.

I understand that my name will not be used in the study, and that all information will be kept confidential. Refusing to participate in the study will in no way affect my care in the hospital. I also understand that I may withdraw from the study at any time.

Signature _____

Date _____

Witness _____

Date _____

APPENDIX E

Nurse Subject Variable Questionnaire

1. Please indicate the length of time you have been a Registered Nurse.

- _____ 0-2 years
- _____ 3-5 years
- _____ 6-10 years
- _____ more than 10 years

2. Please indicate the length of time you have been in burn nursing.

- _____ less than 6 months
- _____ less than 1 year, but more than 6 months
- _____ less than 5 years, but more than 1 year
- _____ less than 10 years, but more than 5 years
- _____ longer than 10 years

VITA

