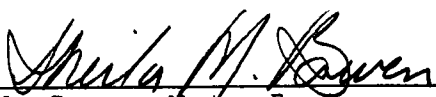
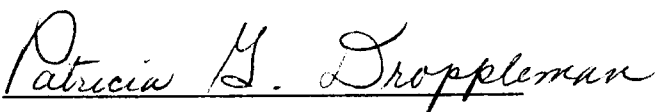


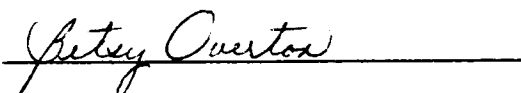
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POSTPARTUM PAIN PERCEPTION OF WOMEN 24-48 HOURS AFTER A
CESAREAN SECTION AND ITS RELATIONSHIP TO
SELECTED PREDICTOR VARIABLES

A Thesis
Presented for the
Master of Science in Nursing
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Donna R. Anderson

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ABSTRACT

A nonexperimental, correlational, prospective study was conducted to determine if selected predictor variables affect women's perception of pain after a cesarean section delivery of their infants. The purpose of the study was to determine within the conceptual framework of Dorothy Johnson's behavioral systems model whether there was a relationship between postpartum pain perception and (a) anxiety, (b) gravidity, (c) primary cesarean section (PCS) and/or repeat cesarean section (RCS), and (d) length of labor. Thirty patients on a postpartum nursing unit at a southeastern university medical center participated in the study.

The researcher used Dartmouth Pain Questionnaires, State-Trait Anxiety Inventories, and demographic information forms to collect the data. Data was analyzed using frequency distribution, means, and correlations. A significant relationship was found to exist between (a) state anxiety and pain perception and (b) trait anxiety and pain perception. Another significant relationship was demonstrated between cesarean section and gravidity.

No significant relationships were found to exist between postpartum pain perception and gravidity, and PCS and/or RCS. Length of labor and pain could not be analyzed because those subjects who had no labor were included with those that had labor pain thereby invalidating the results and making it impossible to draw conclusions. The researcher concluded that more research is needed to define postpartum pain and to identify variables that

exacerbate postpartum pain. A much larger sample size is needed to provide more valid results in the study of postpartum pain.

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CHAPTER I

STATEMENT OF THE PROBLEM

The existence of pain is a common human experience. At some point in everyone's life, some sort of pain will be experienced. However, each person's pain experience is unique. Only the person experiencing the pain is the expert on his/her pain (Carey, 1985). Pain is a fact of life and "a universal experience, and many times it is the sole reason that the patient seeks health care" (Simon, 1989, p. 23).

Pain, which is difficult to define, incorporates physiological, psychological, cultural, and behavioral aspects (Peric-Knowlton, 1984). Pain, as defined by Webster (Guralnik, 1986), is

a sensation of hurting, or strong discomfort, in some part of the body, caused by an injury, disease, or functional disorder, and transmitted through the nervous system; the distress or suffering, mental or physical, caused by great anxiety, anguish, grief, disappointment; the labor of childbirth. (p. 1020)

Many times health care providers believe that they know whether or not the patient's pain exists. McCaffery (1979) states that pain is "whatever the experiencing person says it is, existing whenever he says it does" (p. 11). Pain has also been viewed as a symptom that has a specific etiology that once determined can be controlled (McCaffery & Beebe, 1989).

Childbirth is a painful experience. Pain in the childbearing woman may be experienced throughout the antepartum, intrapartum,

and postpartum periods. Guralnik (1986) associates pain with childbirth. Due to the fact that some degree of pain is naturally involved in the childbirth experience, all dimensions of the childbearing process should be thoroughly researched to describe pain and its overall effect, including the postpartum period. However, an in-depth review of literature revealed a lack of research in the area of postpartum pain. Many studies have described and evaluated labor pain; however, there is little documented evidence to describe postpartum pain (Inturrisi, Camenga, & Rosen, 1988).

In the clinical setting, this researcher has observed discrepancies between the care of postoperative patients on various medical-surgical units and the care of patients who have undergone a cesarean section delivery. Many health care providers believe that childbirth is a natural phenomenon (Reeder & Martin, 1987) and don't consider a cesarean section a surgical procedure. Therefore, postpartum patients are treated differently, and there are more expectations for these patients. Because there are major physiological changes with the postoperative, postpartum patient, these discrepancies in care should not occur. Most postoperative patients have an order for pain medication to be given at regular intervals, at least for the first 24 hours, e.g., Demerol 50 mg, IM, every 4 hours. The postoperative patients are only expected to have a bed bath the first day after surgery. For cesarean section patients, pain medications are ordered to be given only as needed

(prn). Also, cesarean section patients are expected to be out of bed 24 hours after surgery for baths and up in the bedside chair 2 to 3 times a day as well as walking with assistance. There are additional problems for the postpartum patient who has had a cesarean section. This patient has the normal and expected postoperative pain with the addition of various types of normal postpartum pain.

Need for the Study

There are several types of pain that may be experienced during the postpartum period: (a) pain at the incision site (cesarean section or episiotomy); (b) gas pain; (c) abdominal pain; (d) pain from bladder distention; (e) back pain; (f) leg pain, (g) pain from breast engorgement (Frink & Chally, 1984; Reeder & Martin, 1987). These are normal physiological pain responses during the immediate postpartum period for either a vaginal or cesarean section delivery. After a cesarean section delivery, the postpartum pain is exacerbated by the addition of pain associated with the surgical procedure. Most patients do perceive pain after an operation, but because pain is a symptom it is very unpredictable and inconsistent (Lock, 1978). Cousin and Phillips (1984) revealed several negative effects of postoperative pain: (a) muscle splinting; (b) increased cardiac workload and peripheral resistance; (c) sleep deprivation; (d) decreased intestinal motility; (e) immobilization; and (f) hormonal responses. Besides the normal adaptations in pregnancy,

cesarean section patients have the added stresses of anesthesia and a major surgical procedure (Cranley, Nedahl, & Pegg, 1983). Since the cesarean section incorporates both a surgical and birthing experience, the aforementioned symptoms are compounded during the postpartum period by those symptoms associated with a vaginal birth.

It has been stated that "pain assessment is the grayest of gray areas in nursing" (Olsson & Parker, 1987, p. 52). With this in mind, nurses must learn to assess or be aware of the psychosocial, environmental, cultural, and historical factors that may intensify pain in postpartum patients (Sheredy, 1984). Some examples are (a) anxiety of the patient, (b) gravidity of the patient, (c) newborn infant location, (d) primary cesarean section (PCS) or repeat cesarean section (RCS) of the patient, and (e) length of labor. Any unmet expectation such as not having a vaginal delivery may result in unfavorable responses to cesarean deliveries (Cranley et al., 1983). It is important for nurses to be aware of the many aspects that impact the patient's perception of pain after a cesarean section (Frink & Challey, 1984).

Other factors that may affect the assessment and management of pain are "the hospital environment, separation of the patient from other family members, and ineffective communication between the patient and nurse" (Scott & Rigney-Radford, 1984, p. 253). A patient's ability to handle pain "is affected by a host of factors, including the person's culture, anxiety level, past experiences,

and coping mechanisms" (Beyerman, 1982, p. 303), thus supporting the ideas that anxiety, gravidity, and PCS and RCS procedures affect pain perception. Armstrong (1980) suggests that "the memory [of pain] will influence the total reaction of current pain, diminishing or augmenting it" (p. 386). The event of having a high risk delivery and an infant who will be admitted to the intensive care nursery (ICN) may be anxiety-provoking (Reeder & Martin, 1987) which relates to the idea that the degree of anxiety has an influence on how people perceive pain.

McCaffery (1989) states that with prolonged stress and pain, there is a decrease in endorphin levels. If there is a decreased level of endorphins, "they will [not] lock into the narcotic pain receptors at nerve endings in the brain and spinal cord to block the transmission of a pain signal" (McCaffery & Beebe, 1989, p. 37). This can easily be applied to postpartum patients who have had a cesarean-section and have decreased their endorphin level due to the stress of surgery and possible labor before the surgery if the cesarean-section was not planned. Marieskind (1979) states that 15% of all births in the United States are by cesarean section. The "1987 Summary: National Hospital Discharge Survey" states that the percentage of cesarean sections has increased to 39% (U.S. Department of Health, 1988). Cranley et al.(1983) reveal that women who have cesarean sections are less satisfied with their delivery and feel disappointed. One contributing factor

to this dissatisfaction may be the pain perceived during the postpartum period related to the stress of the surgical procedure.

Pain is subjective, and perception of pain depends upon a vast number of variables. Therefore, nurses must believe that their patients are experiencing pain when they say that they are, so appropriate nursing interventions can begin. White (1985) reveals that anxiety increases with postoperative pain, which in turn, inhibits patients from beginning the healing process and resuming their activities of daily living (ADL). This will lead to a vicious cycle of pain increasing anxiety levels, and then the increased anxiety leads to exacerbation of pain perception. Because of the multidimensionality and increased pain with patients experiencing cesarean deliveries, patients may not be able to enjoy the birth experience of their new infant. Nurses must be in tune with this idea and aid patients in the control of the postpartum pain and try to reduce anxiety and other factors that increase pain perception. Once the pain is under control, the patient can begin to focus on the positive aspects of her childbirth experience.

Purpose of the Study

The purpose of this study was to determine within the conceptual framework of Johnson's systems theory whether or not there is a specific relationship between postpartum pain perception 24-48 hours after a cesarean section delivery and (a) anxiety, (b) gravidity, (c) PCS or RCS, (d) location of the newborn infant, and

(e) length of labor. Johnson's model is chosen as the conceptual framework for this study of postpartum pain because of the multidimensional nursing approaches to individual patients. Johnson's model provides an excellent "checklist" as to how many subsystems are affected by pain.

Research Question

Is there a relationship between postpartum pain perception 24-48 hours after a cesarean section delivery and selected predictor variables?

Subsidiary Questions

The purpose of this investigation was to formulate answers to the following questions:

1. Is there a relationship between postpartum pain perception and anxiety level of the patients 24-48 hours after a cesarean-section delivery?

2. Is there a relationship between postpartum pain perception and gravidity 24-48 hours after a cesarean-section delivery?

3. Is there a relationship between postpartum pain perception and (a) PCS or (b) RCS 24-48 hours after a cesarean-section delivery?

4. Is there a relationship between postpartum pain perception and length of labor 24-48 hours after a cesarean-section delivery ?

Limitations

1. This behavioral study's reliance is based on self-report data.
2. This study did not evaluate pain of postpartum patients under the age of 18.
3. This study did not evaluate patient's perceptions of pain prior to a cesarean section delivery.
4. This study did not evaluate patient's anxiety level prior to a cesarean section delivery.
5. Generalizability of the results of this study is limited due to the fact that this study sampled postpartum patients at only one local hospital, and a small sample size was obtained.

Assumptions

1. Patients answered the questionnaires honestly and to the best of their knowledge.
2. The questionnaires were unbiased and understood by all subjects.
3. The researcher's presence did not change the subjects' reports of pain.

Nominal Definitions

Pain. Discomfort perceived by women 24-48 hours after a cesarean-section delivery.

Postpartum period. For this study, 24-48 hours after a cesarean-section delivery.

Cesarean section. A surgical procedure whereby a fetus is delivered by cutting through the abdominal wall and uterus.

Newborn location. Whether the newborn infant is currently in the newborn nursery (NBN) when not with the mother or in the intensive care nursery (ICN).

Summary

It has been shown that pain is a universal human experience. However, discrepancies exist between the assessment and management of postpartum, postoperative pain. No research has been conducted defining postpartum pain and factors that exacerbate postpartum pain. Thus, due to the multiple types of pain that postpartum, postoperative patients may experience, there is a definite need for research regarding postpartum pain.

The scope of this study will be developed in five chapters. The need, purpose, research question, subsidiary questions, limitations, and assumptions of this study were discussed in Chapter I. A review of recent literature including pain definitions, Dorothy Johnson's system theory, pain theories, and pain physiology will be discussed in Chapter II. The subjects, instruments, procedures, data collection, and data analysis of this study will be presented in Chapter III. Data analysis and answers to each of the five subsidiary questions will be provided in

Chapter IV. Finally, conclusions, discussion of the results, and future recommendations for research will be presented in Chapter V.

CHAPTER II

LITERATURE REVIEW

The review of literature will be divided into three sections: (a) pain definitions; (b) Dorothy Johnson's behavioral model system; and (c) pain theories, past and present. Pain has been studied as far back as Aristotle (384-322 B.C.), and various definitions have evolved over time. One description of pain that is used today is that it is a subjective response and cannot be measured objectively. Due to this fact, health care providers have some difficulty in effectively managing any given patient's pain because of a lack of a comprehensive pain assessment tool.

Dorothy Johnson's behavioral model system provides a method of assessment of the various components of each individual's behavioral system. Pain is multifaceted; thus, it broadly effects the subsystems Johnson developed. The subsystems are as follows: (a) attachment; (b) dependency; (c) achievement; (d) aggressive; (e) ingestive; (f) eliminative; and (g) sexual. As will be demonstrated, each subsystem may affect individuals psychologically as well as physiologically.

The physiology of pain can be described by pain theories that have been developed from as early as Aristotle's time (384-322 B.C.) until 1965 when Melzack and Wall defined the gate-control theory of pain. Three early theories of pain are the affect, specificity, and pattern theories. As each new theory was

developed, it built on previous assumptions. Thus, the gate-control theory of pain incorporates each of the three previous proposals, as well as the inclusion of more complex and explanatory information on the existence of pain.

Definition of Pain

Pain, as defined by Brena (1972) is "a stimulus-evoked response, inferring that the response is consistent and dependent upon the stimulus" (p. 56). Pain may also be classified as a symptom that a patient presents requiring nursing intervention (Camp, 1988; Lock, 1978). Because pain is classified as a symptom, it is completely subjective (Cohen, 1980; Escobar, 1985; McGuire, 1984; Melzack, 1975). In other words, only the patient can describe and feel the pain.

Pain may be categorized as either acute pain or chronic pain. Acute pain "signals to the person that something is wrong" (Simon, 1989, p. 23). Chronic pain, as defined by McCaffery and Beebe (1989), is "prolonged, usually 6 months or longer" (p. 19). McCaffery and Beebe also classify prolonged pain as follows: (a) recurrent acute pain, e.g., migraine headaches; (b) ongoing time-limited pain (chronic acute), e.g., burn pain; and (c) chronic nonmalignant pain (chronic benign pain), e.g., rheumatoid arthritis. Classifying pain into categories aids health care providers in the assessment of a patient in pain since pain is a subjective response.

The severity of pain determines how affected the patient will be. Lisson (1989) states that "the more severe the pain, the more it overshadows the patient's self-defining human qualities of intelligence, autonomy, and self-esteem" (p. 115). A comprehensive definition of pain is as follows: pain is an "abstract concept which refers to (a) a personal, private sensation of hurt; (b) a harmful stimulus which signals current or impending tissue damage; and (c) a pattern of responses which operates to protect the organism from harm" (Sternbach, 1969, p. 12). Thus, this definition encompasses the subjective, physiological, and psychological aspects of pain. For the purpose of this study, pain is defined as discomfort perceived by women 24-48 hours after a cesarean-section delivery.

Dorothy Johnson's Behavioral Model System

Dorothy E. Johnson's behavioral model was constructed in 1965. From this model, "man is viewed as a behavioral system with predictable patterns of functioning, and illness results when there is alteration in one or more subsystems" (Majesky, Brester, & Nishio, 1978, p. 365). Within the construct of this model, Johnson deals most effectively with the individual's behavioral system and with the definition of nursing as a profession and nursing care.

Johnson's model follows Nightingale's idea of dealing with the ill patient instead of the patient's disease which is the medical approach (Fawcett, 1989). According to Johnson (1980), there are

several behavioral characteristics that show how an individual responds to illness and disease. Rawls (1980) describes Johnson's model as having "multidimensional components that give man his uniqueness and which influence his response to health and illness" (p. 13).

Johnson (1980) developed seven subsystems which are listed below.

1. Affiliative/Attachment
2. Dependency
3. Achievement
4. Aggressive
5. Ingestive
6. Eliminative
7. Sexual

The functioning of all subsystems together creates a total system. If there is a disturbance in one or more of the subsystems, illness may occur. Johnson also noted that many social and cultural factors may influence the development of the subsystem; therefore, nurses must be receptive and aware of these factors in order to provide holistic care to the individual. An optimal or full-functioning system is dependent upon the individual's ability to establish or maintain equilibrium among the subsystems and also upon the assistance of outsiders when the individual cannot achieve equilibrium by himself/herself, i.e. nurturance.

Subsystems

Affiliative/Attachment subsystem. This subsystem deals with the social organization of each individual. Involvement in this subsystem affects survival and security of the patient (Conner, Magers, & Watt, 1989). Pain experienced during the childbirth experience may be unbearable to some patients. This in turn may threaten the security they feel with their health care providers because the pain is out of control. Also, due to lack of control, some patients may feel that they cannot survive or endure this painful experience. Torres (1986) provides two questions for assessing this subsystem: What types of interpersonal skills does this patient have, and what types of support systems are available for this patient? Nurses can provide security and support for patients during the postpartum period to help alleviate the discomfort so as not to cause a disturbance in the subsystem.

Dependency subsystem. This subsystem assesses whether or not the patient is dependent upon others. If the patient is dependent upon others, the assessment should reveal how the patient responds to nurturance and assistance (Torres, 1986). Nurses provide nurturance to patients in pain. They also provide assistance with activities of daily living. How the patient accepts this assistance determines whether or not there is a weakness in this subsystem. Frink and Challey (1984) state that "dependency experienced by all mothers after delivery may be longer for a

mother who has a cesarean delivery" (p. 270). Nurses must be willing to provide more time and attention to patients who have had a cesarean delivery until they can regain some of their independence.

Achievement subsystem. This subsystem determines the patient's own strengths and weaknesses. In this study, a postpartum patient must be able to adjust to lifestyle changes and effectively cope with the pain experience during the postpartum period in order to have a healthy recovery, or she must be able to accept the assistance needed to achieve this goal. The nurse can evaluate the patient's ability to adjust to the changes that occur after childbirth and a cesarean section. If a patient has a weakness in infant care, self-care, or pain tolerance, the nurse can take appropriate steps to rectify the weakness. Such steps might include providing specific information and patient education about infant care and self-care after a cesarean section delivery. Also, physiological changes of the mother may be described. If there is a stronger sensation of pain expressed by the patient, the nurse must believe the patient and administer medications on time and on a regular basis. This will help to ensure a feeling of achievement in both adaptation to the childbirth experience and to the relief of pain during the postpartum period.

Aggressive subsystem. The focus of this subsystem is self-preservation (Grubbs, 1980). Some behaviors that may be elicited

are anger, denial, negative feelings about current events, and specific reactions to a proposed failure. Many women perceive a cesarean section delivery as a failure. Cranley et al. (1983) propose that a cesarean section delivery may result in an "unmet expectation [which can] lead to anger and disappointment" (p. 10). Due to the anger, disappointment, and increased stress, a woman may experience increased pain (Frink & Chally, 1984). Nursing interventions to improve this subsystem would be to provide encouragement, nurturance, and comfort to decrease the patient's aggression and to restore optimal function.

Injestic and eliminative subsystems. Both of these subsystems are biological in nature and can be grouped accordingly. There is a disturbance in both of these systems with postoperative and postpartum patients. Thus, cesarean section patients exert a double negative effect on the system. With cesarean section or any postoperative patient, food intake is limited to only clear liquids for 24 hours postpartum or until the patient's bowel motility returns. Nausea and vomiting may also occur after surgery. All of these factors in turn lead to a decreased intake by postpartum cesarean section patients. Due to the fact that the patient is a postpartum and a postoperative patient, bladder distention and gas pain may occur which leads to decreased elimination. Again, the nurse must assess this situation and provide appropriate interventions to each individual patient. This should restore the subsystems to full-functioning capacity.

Sexual subsystem. This subsystem identifies several aspects of sexuality, such as sexual related behaviors, sexual activities, and behaviors associated with sexual roles, e.g., parenting (Grubbs, 1980). It is easy to understand that there are changes in the areas of sexually related behaviors, e.g., pregnancy, and sexual activities (intercourse) after pregnancy. Most patients may have limited parenting abilities because this is their first child. Appropriate nursing interventions must be provided to help the patient obtain an optimal sexual subsystem. The main intervention in this area is patient education. However, the patient must be comfortable in order to accept and retain information given. In other words, pain must be decreased and the patient must be comfortable in order to begin to return the sexual subsystem to optimal functioning.

Another important aspect in Johnson's model is nursing. She views nursing as "a professional discipline with a distinctive service to offer and encompass both an art and a science component" (Loveland-Cherry & Wilkerson, 1989, p. 148). In dealing with basic human needs, nurses help to restore and/or maintain an individual's optimal health. Torres (1986) states that Johnson believes "that nursing's basic role is to restore, maintain, and obtain a balanced and stable behavioral approach towards social demands, illness, and trauma" (p. 120). Because postpartum cesarean section patients have had a disturbance in their lifestyle, nurses must help to restore some stability. The first intervention is to help to

decrease their pain so that they can begin the healing process. Once the pain has been alleviated, the nurse can begin to provide education and support to the new mother to help in the transition into parenthood. Once this is accomplished, the new mother will exhibit more stable behaviors in the face of life's demands.

Several research studies have incorporated Johnson's model as a conceptual framework. The theory has proven useful in studies such as Holaday's (1980) in caring for children and Glennin's (1980) in the formulation of standards of performance in nursing practice. Rawls (1980) states that these examples provide evidence that Johnson's model may be incorporated in the care of single patients and groups, respectively.

Johnson's model was chosen as the conceptual framework for this study of postpartum pain because of the multidimensional nursing approaches depicted in this model. Physiological and psychological components that affect postpartum pain perception have previously been described; thus, Johnson's model provides an excellent "check list" regarding how many subsystems are affected by pain. Each person is unique in his/her experience of pain, and Johnson's subsystem provides a means of evaluating that uniqueness. Once evaluated, nurses can provide appropriate interventions to help each individual to reach equilibrium and to maintain that steady state. Her mode clearly denotes the art and science of nursing (Conner, Magers, & Watt, 1989). The science of nursing is understanding the physiology behind the pain in order to provide

relief, and the art is clearly the ability to detect subtle cues of psychological factors that may affect the patient's perception of pain. For example, nurses should be aware of changes in aggression, dependency, ingestion, elimination, affiliation, achievement, and mothering behaviors. When a weakness is noted in any of these subsystems, a disturbance in the entire behavioral system may occur. It is the responsibility of the nurse to intervene. Inturrisi, Camenga, and Rosen (1988) state that "maternity nurses are responsible for assessing the postpartum patient's pain and intervening in a timely fashion" (p. 238).

Pain Theories

There are many pain theories that describe the origins, interpretations, and perceptions of pain. Some examples are (a) affect, (b) specificity, (c) pattern, and (d) gate-control. Ott (1988) states that the theories, "although not mutually exclusive nor singularly comprehensive, help health professionals to better understand what causes people to perceive pain following a specific stimulus" (p. 9).

Past Theories

The early pain theories were affect, specificity, and pattern. The simplest pain theory was the affect theory. This theory began during Aristotle's time (384-322 B.C.) when pain was considered to be an emotion. Melzack (1973) described the affect theory of pain as having a sensory quality and a negative affective quality. It

was believed that the negative affect drove one to action that stopped the pain. In other words, the affect theory described pain as evoking a feeling as well as a physical response. Once pain had occurred, patients had to do something to relieve it, and Melzack and Wall (1973) stated that "this behavior is in the realm of emotion and motivation" (p. 215).

Specificity theory was the traditional pain theory and was best described by Descartes in 1644. He described pain as having a channel straight from the skin to the brain. Other names for the specificity theory were the alarm-bell theory and the push-button theory because Descartes suggested that the system was like a church bell ringing when its rope was pulled. An example used to describe this theory was the concept of touching the hand to a hot stove. Once the hand touched the stove, an impulse was sent directly from the hand to the brain where the impulse was registered, and the person responded to the pain by quickly removing the hand from the hot stove.

Two other scientists who were affiliated with the specificity theory were Johannes Müller and von Frey (Melzack, 1973). Müller believed that sensory information travels via sensory nerves. By the late nineteenth century, it was identified that the quality of the stimulations were determined by the nerve's termination site in the brain. von Frey's idea was as follows: "since the free nerve-endings are the most commonly found, and pain spots are found almost everywhere, the free nerve-endings are pain receptors" (p.

130). The limitation of this theory is of only dealing with receptors and not including the quality of sensations.

The main focus of the specificity theory was the location of pain nerve fibers and the areas of the nervous system involved in evoking a pain response (Gedaly-Duff, 1988). Utilizing this theory, one means implemented to alleviate pain was cordotomy. This procedure severed the neural pathways carrying the transmission of pain from the periphery to the cerebral cortex where pain is perceived. However, it was later discovered that pain could still occur after a neural pathway had been severed.

Pattern theory of pain described pain as the result of a pathway of nerve stimulation, but it was not supported by physiological research. Wendell and Sinclair (cited in Shekleton, 1989) developed the peripheral pattern theory in which "excessive peripheral stimulation produces a pattern of impulse transmission that is interpreted centrally as pain" (p. 398). In 1894, Godscheider, as well as others, described the pain theory as having a central pattern. An example was the phantom limb pain.

Other names for pattern theory were peripheral pattern and central summation theories. The peripheral pattern theory was the simplest form. It stated that there was an increase in peripheral stimulation that was perceived as pain. However, this can now be disproved due to the "high degree of receptor-fiber specialization" (Melzack & Wall, 1973, p. 211).

The central summation theory was used to attempt to explain pain disorders, such as the phantom limb pain. In 1943, Livingston proposed that "stimulation of sensory nerves (such as occurs after peripheral nerve damage) initiates activity in reverberatory circuits (closed, self-exciting loops of neurons) in the grey matter of the spinal cord" (Melzack & Wall, 1973, p. 210). In other words, there was a central neurological mechanism to elicit a pain response.

Present Theory

In 1965, Melzack and Wall developed the gate control theory of pain to incorporate all past theories in a comprehensive approach to describe pain. Melzack and Wall (1973) described the theory as "a neural mechanism in the dorsal horns of the spinal cord [that] acts like a gate which can increase or decrease the flow of nerve impulses from peripheral fibers to the central nervous system" (p. 222). Shekleton (1989) defined the theory as a "gating" mechanism that controls pain impulses, pain perception, and response. This theory postulated that there was a stimulus to nerve receptors via large and small fibers to the substantia gelatinosa (SG) which was the "gatekeeper" in the dorsal horn of the spinal column.

Melzack and Wall (1965) began by stating that injury of any kind released signals to the small fibers (S), the A-delta and C fibers. These fibers then stimulated the dorsal horns of the spinal cord which led to the activation of the central transmission cells (T cells). The dorsal column fibers activated the central

control system which in turn led to the expression of cognitive and evaluative components of pain perception.

The transmission of signals from the S fibers to the T cells was controlled by the SG of the dorsal horns by the spinal gating (Melzack & Wall, 1973). Excitation and inhibition of T cells were determined by the SG because it received information from both large and small fibers. If the SG received increased stimulation from small fibers, the gate was opened, thus allowing more stimuli to pass to the T cells to be activated. In reverse, if the large fibers were producing more stimulation to the SG, T cell activation was inhibited. T cell activation was proposed to determine pain perception and response because they received information from the skin, viscera, and muscles and their activation was determined in the brain (Melzack & Wall, 1973).

The main effect of the gate-control theory was to bring attention to the idea that pain is not a simple concept. The gate-control theory proposed that pain was experienced when T cell capacity in the dorsal horn of the spinal cord reached a critical level. The activation of T cells begins a chain reaction that incorporates all components influencing pain. With this idea in mind, the gate-control theory integrates "sensory, affective, and cognitive dimensions of pain" (Melzack & Wall, 1973, p. 241). In other words, all dimensions of pain were integrated.

This theory also suggested that "anxiety, past experiences, attention, suggestion, and the meaning of the event can influence

the opening or closing of the gate at the spinal cord level" (Gedaly-Duff, 1988, p. 68). These items have also been related to the way a patient will interpret pain (Beyerman, 1982). As previously stated, this supports the idea that gravidity, anxiety, and PCS and RCS procedures may affect postpartum pain perception. Armstrong (1980) revealed that memory has an effect on the way pain is perceived. However, the gate-control theory does not explain this mechanism (Gedaly-Duff, 1988).

Another theory of pain perception was related to endorphin levels. With prolonged stress and pain, there is a decrease in endorphins which act like natural "pain-killers." Surgical procedures induce stress which leads to decreased endorphins. Cesarean section patients have had a decrease in endorphins due to this procedure, as well as because of the possibility of labor resulting in painful contractions that may also lower their endorphin levels. Hence, postpartum cesarean section patients have a multidimensional perception of pain based upon the gate-control theory and level of endorphins after delivery, thus exemplifying the complexity of nursing care needed to attend to a postpartum patient's pain after a cesarean section delivery.

Summary

Chapter II contains a review of literature in three areas: (a) pain definitions; (b) pain theories; and (c) Dorothy Johnson's behavioral system model. This researcher believes that there are

various physiological and psychological factors that influence perceptions of pain, and because of this, various systems may be affected more than others due to the uniqueness of pain perception.

CHAPTER III

PROCEDURES AND METHODS

Procedure

The research study was conducted over an 8 week period of time on the postpartum unit at a southeastern university medical center. A convenience sampling of available housestaff patients, and one private physician's patients was obtained. Thirty subjects participated.

Data collection was obtained every Monday, Wednesday, and Friday from 2:00 p.m. to 4:00 p.m. for the 8 week period. The time period of 2:00 p.m. to 4:00 p.m. was chosen because infants from the NBN who were out for feedings with their mother were returned to the nursery at 2:00 p.m. and returned to visit the mothers at 4:45 p.m. Thus, the researcher had no contact with the infants as requested by the hospital's Human Subjects Committee.

Human Subjects Committee also required that subjects be approached by a staff nurse rather than the researcher to obtain verbal consent to participate in the study. In order to ensure continuity of the project, the researcher conducted an inservice for the nurses on the postpartum unit several weeks prior to beginning the study. During the inservice, nurses were provided with an introduction to the study that briefly explained the purpose and need for the study. The staff was provided with a criteria for inclusion check sheet (see Appendix A) to obtain

subjects for the study. Also, staff nurses were told to provide the following information about the study to eligible participants: A nurse researcher is conducting a study on how women feel about their pain after they have a cesarean section delivery. Would you (the patient) be willing to talk to her more about this study and participate by answering three questionnaires that take about 30 minutes to complete? The staff was in unanimous agreement to help the researcher with the study.

On data collection days, the staff nurse provided information to the patients meeting the criteria for inclusion in the study regarding pain in postpartum cesarean section patients as instructed at the earlier inservice. The staff nurse asked each subject if she would be willing to participate in the study. Those patients who were willing to participate had their room numbers provided to the researcher who then further explained the purpose and requirements of the study. No names were required, but individual response forms were coded with the number generated from the number on the questionnaires. Informed consents were (and continue to be) kept in a separate envelope and in a separate locked filing cabinet from the coded questionnaires in the researcher's home so as not to reveal the identity of the participants.

Subjects who agreed to participate were approached by the researcher who identified herself, and provided the participant with the letter of information regarding the study (see Appendix

B). After the potential subject read the information sheet and any possible questions regarding the information sheet and the study had been answered, the consent form was provided (see Appendix C). The concept of confidentiality was stressed to the participants. The subject was left alone for 15-30 minutes to complete the demographic information sheet (see Appendix D) and the STAI questionnaire (see Appendix E) to assess the patient's state and trait anxiety level while the researcher introduced herself and the study to another prospective participant.

Then, the researcher verbally administered the Dartmouth Pain Questionnaire (DPQ) to assess each subject's pain. Four sections of the DPQ were used to obtain data: (a) pain location; (b) descriptors of pain; (c) self-perception of pain; and (d) 24-hour pain record (see Appendix F). This questionnaire required 10-20 minutes for completion. Each subject required 30-50 minutes for the completion of required forms.

Sample Selection

The 30 female subjects participating in this study met the following criteria for inclusion: (a) 18 years or older; (b) either primary cesarean section or repeat cesarean section; (c) 24-48 hours postpartum; and (d) either housestaff or one private physician's patients. All subjects were patients on the postpartum unit at a southeastern university medical center.

Participation in this study was entirely voluntary. Informed consent (see Appendix C) was obtained before the questionnaires were given to the subjects. No subjects refused to participate when contacted by the charge nurse on the postpartum unit. Questionnaires were coded with the number generated from the number on the questionnaires; however, no names appeared on the questionnaires. Data and informed consent forms are being stored in separate envelopes in separate locked filing cabinets in the researcher's home.

Instruments

The researcher used the Dartmouth Pain Questionnaire (see Appendix F), the State-Trait Anxiety Inventory (see Appendix E), and demographic information forms (see Appendix D) to collect data for the study.

Dartmouth Pain Questionnaire (DPQ)

The DPQ is a complement of the McGill Pain Questionnaire (MPQ) but includes assessment of self-esteem and activities of daily living (ADL). The DPQ incorporates five components: (a) location of pain; (b) description of pain; (c) self-perception; (d) 24-hour record of pain; and (e) daily activities (Corson & Schneider, 1984). Participants completed the DPQ as follows: Part 1--mark the location of the pain on the drawing provided; Part 2--circle words from a list provided that best describes the pain; Part 3--

circle answers to questions regarding self-perception; Part 4--graph pain intensities over a 24 hour period; and Part 5--from a list of activities, estimate minutes spent in each hour during a 24 hour period.

Melzack (1975) stated that the DPQ should be administered verbally by the researcher to avoid confusion by the participant. The time estimate for completion of the questionnaire was approximately 10-20 minutes.

The DPQ's reliability was determined by Corson and Schneider (1984) after a test-retest. The control group demonstrated a positive correlation of 0.709 ($p < .05$), as did the experimental group, i.e., pain patients, when they were tested and retested. Content validity for the study sample was reported by several researchers. Reading (1979) concluded that the DPQ was consistent in evaluating physical and emotional responses to pain. McGuire (1984) stated that the MPQ is the most adequate and reliable pain assessment tool available.

State-Trait Anxiety Inventory (STAI)

The STAI is used to measure state and trait anxiety. The STAI A-Trait consists of "20 statements that ask [participants] to describe how they generally feel" (Spielberger, Gorsuch, & Lushene, 1983, p. 3). The STAI A-State also contains 20 statements, but it asks how a person feels at a specific point in time. The STAI combines both the state and trait anxiety concepts. Spielberger et

al. (1983) report that persons who exhibit high A-Trait also exhibit elevated levels of A-State.

The STAI should be referred to as the Self-Evaluation Questionnaire (SEQ). It can be self-administered because specific guidelines and instructions are presented on both questionnaires. There are no time limits for completion, but forms can be completed in approximately 20 minutes (Spielberger et al., 1983). Form Y-1 should be completed first, then Form Y-2.

Reliability of the STAI was demonstrated by the alpha coefficient on test-retest of college undergraduates. The results ranged from .83 to .92 for A-State and .86 to .92 for A-Trait; "thus the internal consistency of both STAI subscales is reasonably good" (Spielberger et al., 1970, p. 10). The construct validity was demonstrated in a study of 977 Florida State University undergraduates and in another study of 197 Florida State University undergraduates. The STAI was "proven to be useful in clinical work" (p. 3).

Demographic Information Form

The Demographic Information Form was designed by the researcher to describe the sample population. The researcher summarized the data obtained and grouped the data into means and percentages.

Data Analysis

Subsidiary Question One: Pain and Anxiety

The first subsidiary question was whether or not there was a relationship between pain and anxiety. In other words, with increased/decreased pain was there increased/decreased anxiety? Data was obtained for this subsidiary question from Part 4 of the DPQ, the 24-hour pain record, and the total score of the STAI. Spearman's rho and Pearson's product-moment correlation coefficients were applied to examine the relationship between pain and anxiety with a set $p \leq .05$.

Subsidiary Question Two: Pain and Gravidity

The second subsidiary question was whether the gravidity was related to how women perceived their postpartum pain. Data was obtained for this subsidiary question from the Demographic Information Form and the DPQ. Subjects were grouped according to gravidity as follows: (a) first pregnancy; (b) second pregnancy; (c) third pregnancy; and (d) fourth or greater pregnancy. Group means were calculated of the gravidities. Pain perception scores were obtained from Part 4 of the DPQ, 24-hour pain record. Spearman's rho and Pearson's product-moment correlation coefficients were used to determine if a relationship existed between gravidity and postpartum pain perception with a set $p \leq .05$.

Subsidiary Question Three: Pain and PCS or RCS

The third subsidiary question was whether there was a relationship between PCS and pain perception and/or RCS and pain perception. Data was obtained for this subsidiary question from the Demographic Information Form and the DPQ. Subjects were grouped according to whether this was a PCS or a RCS. Group means were calculated of the PCS and RCS categories. Pain perception scores were obtained from Part 4 of the DPQ, the 24-hour pain record. Spearman's rho and Pearson's product-moment correlation coefficients were used to identify a relationship between the cesarean-section groups and postpartum pain perception with a set $p \leq .05$.

Subsidiary Question Four: Pain and Length of Labor

The fifth subsidiary question was whether there was a relationship between length of labor and postpartum pain perception. Once again, data was obtained from the Demographic Information Form and the DPQ. Subjects were grouped according to length of labor as follows: (a) 0-5 hours in labor; (b) 6-10 hours in labor; (c) 11-15 hours in labor; and (d) greater than 15 hours in labor. Group means were calculated for each of the four categories. Pain perception scores were obtained from Part 4 of the DPQ, the 24-hour pain record. Spearman's rho and Pearson's product-moment correlation coefficients were applied to identify

possible relationships between the length of labor and postpartum pain perception with a set $p \leq .05$.

Summary

The 30 subjects were divided into groups according to each specific subsidiary question and from data obtained on the Demographic Information Forms. The researcher used Dartmouth Pain Questionnaires, State-Trait Anxiety Inventories, and Demographic Information Forms to collect data necessary for this study. All subjects' rights and identities were protected by procedures taken by the researcher to preserve anonymity. A SAS Statistical Software Package was utilized by the researcher to analyze the data.

CHAPTER IV

FINDINGS

Thirty women participated in this study of postpartum pain 24-48 hours after a cesarean section and its relationship to selected predictor variables. Data was obtained from Demographic Information Forms, the STAI, and the DPQ. Upon completion of the data collection period of 8 weeks, the data was analyzed using the SAS Statistical Software Package. Data was double entered into the computer system, and random checks were performed to ensure that the correct data was entered.

Demographic Data

Demographic data was summarized in Table 1. Thirty women between the ages of 18 and 37 years old participated in the study. The mean age was 24 with a standard deviation of ± 5 . Also, the women were divided into two groups, (a) 18-24 years old (66.7%) and (b) 25 years old and over (33.3%) to inquire if there was a significant relationship between age and pain. No relationship existed. The majority of the patients were primigravidas (50%), and the multigravidas were divided as follows: (a) second pregnancy (26.7%); (b) third pregnancy (13.3%); and (c) fourth or greater pregnancy (10.0%).

Table 1
Frequency Distribution of Demographic Data (N = 30)

	Number	Percent
Age		
18-24	20	66.7
25 and over	10	33.3
Pregnancies		
Primigravidas	15	50.0
Multigravidas	15	50.0
Infant		
NBN	29	96.7
ICN	1	3.3
Cesarean section		
PCS	20	66.7
RCS	10	33.3
Family members present after delivery		
Yes	27	90.0
No	3	10.0
Methods of pain relief		
Pills/tablets	25	83.3
Injections	22	73.3
Position changes in bed	25	83.3
Effectiveness of pain relief		
Pills/tablets	24	80.0
Injections	20	70.0
Position changes in bed	15	50.0
Length of labor		
0-5 hours	16	53.4
6-10 hours	6	20.0
11-15 hours	4	13.3
Greater than 15 hours	4	13.3

Almost all infants (96.7%) were admitted to the NBN. Only one infant was admitted to the ICN. The vast majority of mothers (66.7%) had primary cesarean sections, whereas only 33.3% had a repeat cesarean section. However, the number of cesarean sections that the RCS group had previously undergone was not documented. Also included was whether or not family members were present after the patient's cesarean section. An overwhelming 90% stated that they had family members present after delivery. Only 10% stated that no family members visited after the cesarean section.

Various methods of pain relief were used by postpartum patients. A large percentage of patients (83.3%, 73.3%, and 83.3% respectively) used p.o. pain medications, IM injections, and position changes in bed. Of the previously mentioned methods of pain relief given to various percentages of patients, effectiveness was shown to be 80.0%, 70.0%, and 50.0%, respectively. Other methods of pain relief that were received by subjects were ice packs (3.3%), heat (6.7%), PCA pumps (3.3%), and epidural pain medication (6.7%). All aforementioned methods were shown to be effective (heat, 6.7%; PCA pump, 3.3%; and epidural pain medication, 6.7%), except for ice packs which demonstrated a zero percent effectiveness. Also reported was the time interval between pain medication administrations and the time the questionnaires for this study were completed. The time interval ranged from 4.0 minutes to 16.5 hours with a mean of 4.0 hours.

Another variable reported on the demographic information form was the amount of time that subjects were in labor. The length of labor time ranged from a minimum of zero hours to a maximum of 24 hours in labor with a mean of 6.9 hours. Subgroups of length of time in labor were as follows: (a) 0-5 hours (53.4%); (b) 6-10 hours (20.0%); (c) 11-15 hours (13.3%); and (d) greater than 15 hours (13.3%).

Measurement

Dartmouth Pain Questionnaire

The DPO consisted of five parts; however only four parts were analyzed for this study. In Part 1, a diagram was provided for the subjects to mark their areas of pain. It was reported that all subjects (100%) had pain at their incision sites (see Table 2). Three other sites that a high percentage of subjects marked as painful were back (56.7%), leg (23.3%), and bowel which resulted in gas pain (20.0%), respectively. Breast pain (6.7%), IV site pain (3.3%), and "pain all over" or multiple pain sites (3.3%) were also reported. No subjects identified headaches or stated that they experienced pain in the region of the head.

In Part 2 of the DPO, subjects circled descriptors of their pain. Among the 20 groups of descriptors, high percentages of responses were shown in nine categories (see Table 3). Some examples of descriptors in those categories were throbbing, sharp,

Table 2
Areas of Pain (N = 30)

	Number	Percent
Incision site pain	30	100.0
Breast pain	2	6.7
Gas pain	6	20.0
Leg pain	7	23.3
Back pain	17	56.7
Headache	0	0.0
IV site pain	1	3.3
Multiple pain sites	1	3.3

Table 3
Descriptors of Pain (N = 30)

	Number	Percent
Throbbing	20	66.7
Sharp	17	56.7
Pinching	21	70.0
Wrenching	17	56.7
Sore	25	83.3
Tender	20	66.7
Exhausting	16	53.3
Miserable	17	56.7
Tight	21	70.0

pinching, wrenching, dull, sore, hurting, tender, tiring, exhausting, intense, tight, and numb.

In Part 3 of the DPQ, self-perception and questions for the subjects to rate as much worse, slightly worse, same, slightly better, or much better now as compared to perception prior to surgery were provided. Question 1 regarding tension was the only question that had a higher percentage of subjects (23.3%) responding slightly better post than prior to the cesarean section pain. All other questions (e.g., ability to concentrate, satisfaction with self, control of life situations, depression, irritability, and fatigue) had the highest percentage of subjects selecting the response, same.

Part 4 of the DPQ was the 24-hour pain record. Subjects entered points on a scale of 0-10 (no pain to unbearable pain, respectively) for every 2 hours over the previous 24 hours. Subjects who had more points plotted above the rating of 5 on the pain scale received a high pain rating (56.7%). On the other hand, those subjects who had more points plotted on the 24-hour pain record below the rating of 5 received a low pain rating (43.3%). The total number of points plotted were 13 per subject.

State-Trait Anxiety Inventory

The STAI was divided into STAI-State Anxiety (STAIS) and STAI-Trait Anxiety (STAIT). A-trait anxiety provided a description of the anxiety that individuals generally feel; whereas, A-state

anxiety provided a description of the degree of anxiety that individuals exhibited in a particular situation. The STAIS scores ranged from 27.0 to 58.0 with a mean of 38.9. The STAIS and STAIT were averaged to show a range of 24.5 to 57.5 and a mean of 40.1 (see Table 4).

Table 4
STAI Results (N = 30)

	Mean	SD	Range
STAIS: State Anxiety	41.3	7.9	22.0-61.0
STAIT: Trait Anxiety	38.9	7.9	27.0-58.0
STAI Mean: Anxiety	40.1	7.2	24.0-57.5

Results

Subsidiary Question One: Pain and Anxiety

The first subsidiary question was whether or not there was a relationship between pain and anxiety. To answer this question, subjects completed Part 4 of the DPO and the STAI questionnaire. The mean score of the STAIS was 41.3, and the mean of the STAIT was 38.9 (see Table 4). The scores for Part 4 of the DPO were that 56.7% of the subjects had a high pain rating (greater than 5) and 43.3% had a low pain rating (less than 5) on a scale of 0-10. A positive correlation was proven to exist between pain and STAIS,

pain and STAIT, and pain and STAI mean, according to the Spearman's rho and Pearson's product-moment correlation coefficient analysis with a $p < .05$ (see Table 5).

Table 5
Relationship Between Pain and Anxiety (N = 30)

	DPQ: Pain
STAI S: State Anxiety	0.69881
Probability	0.0001
STAIT: Trait Anxiety	0.53932
Probability	0.0021
STAI Mean: Anxiety	0.67479
Probability	0.0001

Subsidiary Question Two: Pain and Gravidity

The second subsidiary question was whether the gravidity of the subjects was related to how women perceive their postpartum pain. To answer this question, data was obtained from the Demographic Information Form and the DPQ, Part 4. Women were grouped as either primigravidas (50%) or multigravidas (50%) for the statistical analysis. In using the Spearman's rho and Pearson's product-moment correlation coefficients, it was revealed

that there was no significant relationship ($p < .05$) between postpartum pain and gravidity (see Table 6).

Table 6
Relationship Between Pain and Gravidity (N = 30)

	Mean	SD	Range	Correlation	Significance
DPQ: Pain	1.4	0.50	1.0-2.0	0.06727	0.7240
Gravidity	1.5	0.51	1.0-2.0		

Subsidiary Question Three: Pain and PCS or RCS

The third subsidiary question was whether there was a relationship between PCS and pain perception and/or RCS and pain perception. To answer this question, data was obtained from the Demographic Information Form and the DPQ, part 4. The subjects were grouped according to whether this was a PCS (66.7%) or a RCS (33.3%). The Spearman's rho and Pearson's product-moment correlation coefficients revealed no significant relationship ($p < .05$) between pain and PCS (see Table 7) and/or RCS (see Table 8).

Subsidiary Question Four: Pain and Length of Labor

The fifth subsidiary question was whether there was a relationship between length of labor and postpartum pain perception. To answer this question, data was obtained from the Demographic Information Form and the DPQ. Length of labor groups

Table 7
Relationship Between Pain and PCS (N = 20)

	Mean	SD	Range	Correlation	Significance
DPO: Pain	1.4	0.50	1.0-2.0	0.0882	0.6428
PCS	1.0	0.94	1.0-2.0		

Table 8
Relationship Between Pain and RCS (N = 10)

	Mean	SD	Range	Correlation	Significance
DPO: Pain	1.5	0.63	1.0-2.0	0.0789	0.6878
RCS	1.0	0.94	1.0-2.0		

were divided as follows: (a) 0-5 hours (53.4%); (b) 6-10 hours (20.0%); (c) 11-15 hours (13.3%); and (d) greater than 15 hours (13.3%). Those subjects who had no labor pain were included with those subjects that had labor pain thereby invalidating the results and making it impossible to draw conclusions.

Upon data analysis, two other correlations were found to exist. The first was between gravidity and PCS and/or RCS. There was a significant relationship between cesarean sections and

gravidity This may have been due in part to the fact that the sample consisted mainly of primigravidas. This data suggested that most cesarean sections were performed on primigravidas.

Summary

In conclusion, results of the data analyzed were discussed in Chapter IV according to the research and subsidiary questions previously stated. Subjects who exhibited a high state-anxiety and high trait anxiety scores also exhibited high pain scores. Also, a significant relationship was shown to exist between pain and the mean score of the STAI. Subjects' gravidities or number of cesarean sections showed no significant relationship to pain as analyzed by the Spearman's rho and Pearson's product-moment correlation coefficients. A positive relationship was found to exist between gravidity and cesarean section.

CHAPTER V

SUMMARY AND CONCLUSIONS

The research question was is there was a relationship between postpartum pain and selected predictor variables 24-48 hours after a cesarean section delivery? The researcher attempted to determine within the conceptual framework of Johnson's behavioral systems theory whether specific relationships existed between postpartum pain and (a) anxiety, (b) gravidity, (c) PCS and/or RCS, and (d) length of labor.

Discussion

The findings in this study indicated that anxiety and pain were related. Both the state and trait anxiety scores suggested that there was a significant relationship with pain. Also demonstrated was a significance between the mean STAI score and pain.

Other studies using the STAI have shown that if a person exhibited high state anxiety, he or she also exhibited a high trait anxiety (Spielberger et al., 1983). Those results which were demonstrated among high school students, college students, and adults, can now be generalized to postpartum patients as evidenced by the positive correlations existing between both the state and trait anxiety scores with pain as it is perceived by postpartum patients. Another positive correlation was recognized when the

state and trait anxiety scores were averaged and correlated with pain.

Data analysis demonstrated that gravidity and PCS and RCS had no significant relationship with pain. Since anxiety was positively correlated with pain, one might postulate that variables such as gravidity, PCS, and RCS may also have a relationship to anxiety and would prove likewise to have a significant relationship with pain; however, these were not germane to this study. One reason for the lack of a correlation between these variables might be the small sample size ($N = 30$). It can be noted that there was a high percentage represented in each group (primigravidas 50%, multigravidas 50%, PCS 66.7%, and RCS 33.3%).

A relationship between postpartum pain and length of labor could not be demonstrated in this study due to the fact that subjects with no labor were included with those subjects who did experience labor. Literature suggests that an extended length of labor decreases endorphin levels which could lead to an increased perception of pain during the postpartum period because of lack of natural pain killers. One problem with the data collection for this variable was that labor was not operationally defined to patients. There may have been some confusion regarding what actually constitutes labor and how one distinguishes between quality and quantity of contractions. Some patients may have thought that because they had a cesarean section therefore did not experience labor freely, they should report that they had only

mild, irregular labor. Also, it should be noted that those patients who had little or no labor represented a majority of the sample (53.4%).

Because the majority of postpartum patients in this study had little or no labor, it can be speculated that most of the repeat cesarean sections were elective cesarean sections and not attempted vaginal births after cesarean sections (VBAC). Also correlated with cesarean section was gravidity. One can speculate that since the sample consisted mostly of primigravidas, most cesarean sections were primary cesarean sections. This would validate the increase in cesarean section rate of total births from 1979 to 1987 from 15% to 39% (U.S. Department of Health, 1988). A problem for nurses related to the increase in the cesarean section rate is staffing. The rate of cesarean sections has increased, but the number of staff nurses per unit has remained somewhat the same. Nurses are expected to provide quality care to all patients, but in reality, those patients who require more attention, e.g., a postoperative, postpartum patient, may not receive the amount of care that could be provided if nursing units were staffed based upon acuity levels. If cesarean section rates continue to rise, changes in staffing must occur to provide all patients with optimal care.

Since family members were present with patients after delivery in a vast majority of the cases (90.0%), patients may have had a lower pain rating or may have been more at ease with their pain.

Family members may cause an increase or a decrease in patient anxiety levels depending upon the individual patient. Because there was such a dominant percentage of patients who had family members present after their cesarean section, it was not possible to predict any relationship with pain. In relation to infant location, most infants were admitted to the NBN. Only one subject's infant was admitted to the ICN. A correlation could not be provided due to a lack of a representative sample for each group.

Most patients used p.o. pain medications, IM injections, and position changes in bed as pain relief measures, and most reported effective pain relief. There was a representative sample for these groups. The patient's pain revealed by this sample was assessed by the DPQ.

The DPQ is a comprehensive pain assessment tool which can be a valid pain assessment tool in practice or in research. However, one problem noted in this study in using the DPQ was that it was difficult to achieve the total score of the DPQ because of the various categories and the difficulty in scoring each category as negative or positive pain. Thus this researcher decided to use only Part 4 (24-hour pain record) of the DPQ to obtain a pain score. This tool was not developed to specifically assess postpartum pain; therefore, it cannot be generalized for use in assessing postpartum pain. A tool specifically designed to assess

postpartum, postoperative pain would have provided more valid results in studies assessing postpartum pain.

Implications

According to Johnson's behavioral systems model discussed earlier, when one of a patient's subsystems becomes affected, there is a possibility for illness development. Pain and anxiety both have the ability to disrupt one or many subsystems. In order to maintain or establish equilibrium among the subsystems, nurses must be able to recognize and to assess when a person is experiencing pain and anxiety. They must also provide appropriate nursing interventions to help to alleviate the patient's pain and anxiety.

It has been demonstrated by the data analysis in this study that there is a significant relationship between pain and anxiety. When anxiety is increased pain increases; whereas, when pain increases anxiety increases. This is a vicious cycle that must be interrupted by nurses.

There are two points in the cycle where a nursing intervention can limit or help to limit the cyclical nature of pain and anxiety. One point is in relation to the degree of pain experienced. McCaffery (1989) states that in order to effectively manage pain, nurses must get on top of the pain and stay on top of it. In other words, upon admission to the postpartum unit nurses must begin to alleviate a patient's pain by proper and efficient administration of prescribed pain medications as well as providing position

changes in bed until a comfortable position is achieved.

Decreasing environmental stimuli and applying heat and/or cold when desired are other proven pain relieving methods. All of these suggestions are nursing interventions/orders that can be used to decrease a patient's pain.

A second point where nurses can intervene to stop or decrease the vicious pain/anxiety cycle is at the anxiety level. The most important intervention that a nurse can provide to the patient is reassurance about her condition. The patient must be reassured regarding the infant's status and location. Having the patient verbalize her feelings regarding the cesarean section, the feelings of disappointment that she did not deliver vaginally, feelings of anger, grief, and/or joy, and the pain afterwards will help the patient in decreasing her anxiety level. This will also aid in establishing a positive nurse/patient relationship which is necessary for effective nursing care. The patient must be informed when pain medication is given and the length of time it may take for relief. Keeping the patient informed of any changes in both her condition, e.g., possible infection, and the infant's condition, e.g., a decrease in temperature, or of any other problems that occur will aid in reducing a patient's anxiety level.

Three other possible nursing interventions to help the patient manage his/her pain and anxiety are relaxation techniques, meditation, and imagery. McCaffery (1979) describes relaxation as a mental and physical freedom from stress and tension. Titlebaum

(1988) defines relaxation as an "essential element in the maintenance of physical and mental health" (p. 28). In addition to the previously mentioned interventions to decrease pain and anxiety, nurses can work with individual patients to find a relaxation technique that works best for them. Some examples of relaxation techniques are deep breathing, laughter, and recall of peaceful past experiences.

Meditation, a form of relaxation, may be used with patients to decrease pain and anxiety. The nurse can help patients to reflect upon past experiences that are happy and comforting. This type of therapy can also be used in conjunction with other pain and anxiety relief measures. The patient may find that meditation is more helpful at certain times of the day, and the nursing staff should plan the patients' treatments accordingly in order to provide privacy and a quiet environment for the meditating patient.

Another technique that patients may find useful in reducing pain and anxiety is imagery. One definition of imagery is "memory fragments, reconstruction, and reinterpretation . . . [that] enable us to dream, to create, [and] to know" (Zahourek, 1988, p. 53). Imagery consists of focusing on a peaceful situation much like meditation but may be approached by either hypnosis, guided imagery, and biofeedback. The nurse can provide the patient with examples to focus on or allow the patient to use his/her own ideas. One example frequently used to decrease anxiety is the idea of imagining the waves of the ocean coming into the shore (Zahourek,

1988). When relaxation techniques, meditation, and/or imagery are used in conjunction with other nursing and medical interventions, the patients should have better control of their pain and anxiety.

The preceding discussion of nursing interventions to reduce pain and anxiety was specific to the postpartum period. There is another time that health care providers can intervene to decrease the patient's anxiety and possible impending anxiety and pain after delivery. Nurse practitioners working in prenatal settings can help to reduce a patient's anxiety by discussing specific aspects of labor, delivery, and postpartum during routine prenatal visits. All prenatal patients should be provided with information and counseling regarding cesarean section deliveries whether or not a cesarean section is anticipated for the patient. Prior knowledge of cesarean sections will alleviate some anxiety and fear of the unknown experienced when a patient is informed that a cesarean section is necessary, and it may possibly help to alleviate increased anxiety after the cesarean section delivery.

To alleviate anxiety and some pain after the cesarean section, practitioners should routinely include postpartum teaching during the prenatal period. Patients should be informed about what will occur after a cesarean section from the time that they are in the recovery room until they are discharged from the hospital. A day-by-day account of postpartum hospital stay should be provided so as to ensure that patients will know what limitations might occur and what their general expectations may be. These types of

anticipatory guidance should provide a smoother transition into the postpartum period.

Recommendations for Future Research

This study is limited due to the small sample size and convenience sampling of patients from one hospital. The limitations also include the fact that some groups were not representatively sampled (NEN/ICN group); therefore, statistical analysis could not be performed. Pain scores could only be calculated from Part 4 of the DPQ (24-hour pain record).

For future research, it is suggested that investigators use a pain assessment tool especially designed to measure postpartum, postoperative pain. Such a tool would provide more valid results of postpartum pain. Also, researchers should obtain a larger sample size from various hospitals.

Other aspects that should be explored in future research are (a) the presence of family members before, during, and after the delivery, (b) the marital status of the patient, (c) the various possible cultural influences on postpartum pain, (d) the amount of pain medication administered, (e) the routes of administration of pain medications, and (f) the time intervals between administration of pain medication and completing pain questionnaires. When each of these questions are analyzed and answered, the health care system will be provided with a clearer definition of postpartum pain. Defining postpartum pain is the first step that nurses must

achieve before they can begin to adequately assess and positively intervene to alleviate postpartum pain.

This study of postpartum pain was a pilot study and first attempt to describe and to define postpartum pain and to document certain factors that are related to a patient's perception of pain. Further research is needed in the areas of when to begin interventions to alleviate postpartum pain and anxiety, as well as to determine those factors that intensify pain in postpartum, postoperative patients. Once achieved, nurses will be able to provide anticipatory guidance to patients in order to ensure a more positive childbirth experience even in situations where cesarean section deliveries occur.

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Relaxation and imagery: Tools for therapeutic communication
and intervention (pp. 53-83). Philadelphia, PA: W. B.
Saunders Company.

APPENDIXES

APPENDIX A

CRITERIA FOR INCLUSION

Patients who meet the following criteria may be included in the study of "Postpartum Pain Perception 24-48 Hours After a Cesarean Section and its Relationship to Selected Predictor Variables."

1. 18 years old or older
2. Primary cesarean section (PCS) or repeat cesarean section (RCS)
3. 24-48 hours postpartum
4. Housestaff and Dr. _____'s patients

APPENDIX B

INFORMATION SHEET

Dear Participant:

You are invited to participate in a research study designed to identify how women feel about their pain after a cesarean section (c-section) delivery of their infant. Your participation will involve completing a questionnaire that will require about 30 minutes to answer.

There are no risks or potential discomforts to you if you agree to participate. Your participation may provide information that will be of benefit to nurses and other patients.

The researcher will administer the questionnaire in person. All data will be kept confidential and stored in a locked filing cabinet in the researcher's home.

Participation in this project is voluntary, and you may feel free to withdraw at any time. If you have any questions about your participation in the study, please feel free to contact Donna R. Anderson.

Thank you,

Donna R. Anderson, R.N.
401 Gallaher View Road, #9
Knoxville, TN 37919
(615) 974-4151

DRA:amh

APPENDIX C

INFORMED CONSENT STATEMENT

I have read and understand the information sheet regarding the study of how women feel about their pain after a c-section delivery of their infant.

I freely consent to participate in this study under the conditions described.

Signed _____

Date _____

APPENDIX D

DEMOGRAPHIC INFORMATION FORM

1. Age: (a) 18-24 _____ (b) 25 and over _____
2. Number of pregnancies: (a) 1 _____
(b) 2 _____
(c) 3 _____
(d) 4 or more _____
3. Is your baby in (a) Newborn Nursery (NBN)? _____
(b) Intensive Care Nursery (ICN)? _____
(check only one)
4. Is this your (a) first c-section (PCS)? _____
(b) second or greater c-section (RCS)? _____
(check only one)
5. Have family members been present since delivery?
(a) yes _____ (b) no _____
(check only one)
6. Methods of pain relief: (check all that apply)
(a) pills/tablets: yes _____ no _____
(b) injections: yes _____ no _____
(c) position changes in bed: yes _____ no _____
(d) ice packs: yes _____ no _____
(e) heat: yes _____ no _____
(f) TENS unit: yes _____ no _____
(g) PCA pump: yes _____ no _____
(h) other: _____
(please describe in as much detail as possible)
7. Which methods of pain relief worked: (check all that apply)
(a) pills/tablets: yes _____ no _____
(b) injections: yes _____ no _____
(c) position changes in bed: yes _____ no _____
(d) ice packs: yes _____ no _____
(e) heat: yes _____ no _____
(f) TENS unit: yes _____ no _____
(g) PCA pump: yes _____ no _____
(h) other: _____
(list those methods that relieved pain)
8. How long were you in labor? _____ hours
(a) 0-5 hours _____
(b) 6-10 hours _____
(c) 11-15 hours _____
(d) more than 15 hours _____
9. When was the last time you had pain medication? _____ a.m./p.m.
Time now: _____ a.m./p.m.

APPENDIX E
STATE-TRAIT ANXIETY INVENTORY

SELF-EVALUATION QUESTIONNAIRE

Developed by Charles D. Spielberger
in collaboration with
R. L. Gorsuch, R. Lushene, P. R. Vagg, and G. A. Jacobs

STAI Form Y-1

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you feel *right now*, that is, *at this moment*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

NOT AT ALL
SOMEWHAT
MODERATELY SO
VERY MUCH SO

- | | | | | |
|--|---|---|---|---|
| 1. I feel calm | ① | ② | ③ | ④ |
| 2. I feel secure | ① | ② | ③ | ④ |
| 3. I am tense | ① | ② | ③ | ④ |
| 4. I feel strained | ① | ② | ③ | ④ |
| 5. I feel at ease | ① | ② | ③ | ④ |
| 6. I feel upset | ① | ② | ③ | ④ |
| 7. I am presently worrying over possible misfortunes | ① | ② | ③ | ④ |
| 8. I feel satisfied | ① | ② | ③ | ④ |
| 9. I feel frightened | ① | ② | ③ | ④ |
| 10. I feel comfortable | ① | ② | ③ | ④ |
| 11. I feel self-confident | ① | ② | ③ | ④ |
| 12. I feel nervous | ① | ② | ③ | ④ |
| 13. I am jittery | ① | ② | ③ | ④ |
| 14. I feel indecisive | ① | ② | ③ | ④ |
| 15. I am relaxed | ① | ② | ③ | ④ |
| 16. I feel content | ① | ② | ③ | ④ |
| 17. I am worried | ① | ② | ③ | ④ |
| 18. I feel confused | ① | ② | ③ | ④ |
| 19. I feel steady | ① | ② | ③ | ④ |
| 20. I feel pleasant | ① | ② | ③ | ④ |

Spielberger, C. D., Gorsuch, R. L., & Lushene, R. E. (1983). STAI manual for the state-trait anxiety inventory ("self-evaluation questionnaire"). Palo Alto, CA: Consulting Psychologists Press, Inc. Used by permission from Eric Kaufman.

SELF-EVALUATION QUESTIONNAIRE

STAI Form Y-2

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you *generally* feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

ALMOST NEVER
SOMETIMES
OFTEN
ALMOST ALWAYS

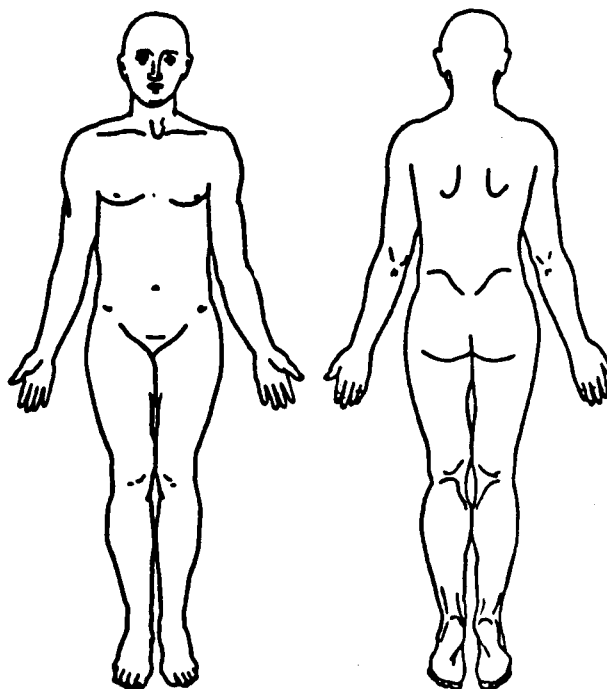
- | | | | | |
|--|---|---|---|---|
| 21. I feel pleasant | ① | ② | ③ | ④ |
| 22. I feel nervous and restless | ① | ② | ③ | ④ |
| 23. I feel satisfied with myself | ① | ② | ③ | ④ |
| 24. I wish I could be as happy as others seem to be | ① | ② | ③ | ④ |
| 25. I feel like a failure | ① | ② | ③ | ④ |
| 26. I feel rested | ① | ② | ③ | ④ |
| 27. I am "calm, cool, and collected" | ① | ② | ③ | ④ |
| 28. I feel that difficulties are piling up so that I cannot overcome them | ① | ② | ③ | ④ |
| 29. I worry too much over something that really doesn't matter | ① | ② | ③ | ④ |
| 30. I am happy | ① | ② | ③ | ④ |
| 31. I have disturbing thoughts | ① | ② | ③ | ④ |
| 32. I lack self-confidence | ① | ② | ③ | ④ |
| 33. I feel secure | ① | ② | ③ | ④ |
| 34. I make decisions easily | ① | ② | ③ | ④ |
| 35. I feel inadequate | ① | ② | ③ | ④ |
| 36. I am content | ① | ② | ③ | ④ |
| 37. Some unimportant thought runs through my mind and bothers me | ① | ② | ③ | ④ |
| 38. I take disappointments so keenly that I can't put them out of my
mind | ① | ② | ③ | ④ |
| 39. I am a steady person | ① | ② | ③ | ④ |
| 40. I get in a state of tension or turmoil as I think over my recent concerns
and interests | ① | ② | ③ | ④ |

APPENDIX F

DARTMOUTH PAIN QUESTIONNAIRE

Part 1. Where is your Pain?

Please mark, on the drawings below, the areas where you feel pain. Put E if external, or I if internal, near the areas which you mark. Put EI if both external and internal.



Corson, J. A., & Schneider, M. J. (1984). The Dartmouth pain questionnaire: An adjunct to the McGill pain questionnaire. Pain, 19, 59-69. Used by permission from John Corson.

Part 2.

What Does Your Pain Feel Like?

Some of the words I will read to you describe your present pain. Tell me which words best describe it. Leave out any word-group that is not suitable. Use only a single word in each appropriate group--the one that applies best.

- | | | | |
|--|---|--|---|
| <p>1
1 Flickering
2 Quivering
3 Pulsing
4 Throbbing
5 Beating
6 Pounding</p> | <p>2
1 Jumping
2 Flashing
3 Shooting</p> | <p>3
1 Pricking
2 Boring
3 Drilling
4 Stabbing
5 Lancing</p> | <p>4
1 Sharp
2 Cutting
3 Lacerating</p> |
| <p>5
1 Pinching
2 Pressing
3 Gnawing
4 Cramping
5 Crushing</p> | <p>6
1 Tugging
2 Pulling
3 Wrenching</p> | <p>7
1 Hot
2 Burning
3 Scalding
4 Searing</p> | <p>8
1 Tingling
2 Itchy
3 Smarting
4 Stinging</p> |
| <p>9
1 Dull
2 Sore
3 Hurting
4 Aching
5 Heavy</p> | <p>10
1 Tender
2 Taut
3 Rasping
4 Splitting</p> | <p>11
1 Tiring
2 Exhausting</p> | <p>12
1 Sickening
2 Suffocating</p> |
| <p>13
1 Fearful
2 Frightful
3 Terrifying</p> | <p>14
1 Punishing
2 Gruelling
3 Cruel
4 Vicious
5 Killing</p> | <p>15
1 Wretched
2 Blinding</p> | <p>16
1 Annoying
2 Troublesome
3 Miserable
4 Intense
5 Unbearable</p> |
| <p>17
1 Spreading
2 Radiating
3 Penetrating
4 Piercing</p> | <p>18
1 Tight
2 Numb
3 Drawing
4 Squeezing
5 Tearing</p> | <p>19
1 Cool
2 Cold
3 Freezing</p> | <p>20
1 Nagging
2 Nauseating
3 Agonizing
4 Dreadful
5 Torturing</p> |

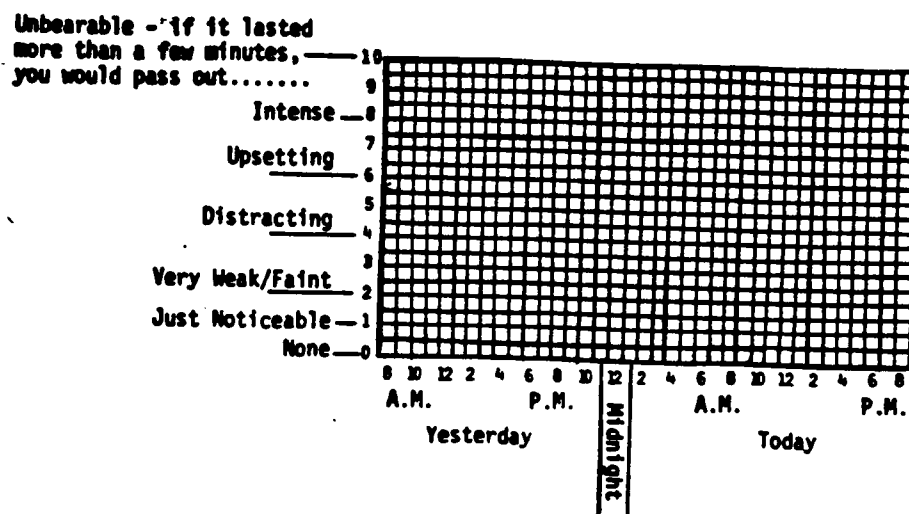
Part 3. Self Perception

Please circle the number on each scale which best describes the way you feel now - compared to the way you felt before you had the pain.

	Much worse	Slightly worse	Same	Slightly better	Much better
1. Tense or anxious	2	1	0	1	2
2. Able to concentrate	2	1	0	1	2
3. Satisfied with myself	2	1	0	1	2
4. I am in control of my life situation	2	1	0	1	2
5. Depressed	2	1	0	1	2
6. Irritable	2	1	0	1	2
7. Fatigued	2	1	0	1	2

Part 4. Pain Record

Please enter a point (or draw a line) for each hour of the past 24 hours to show how much pain you felt during each hour. Use only the part of the graph that covers the past 24 hours.



Part 5. Activities

Estimate the amount of time (minutes and hours) in the last 24 hours - which you spent in the following activities (many of these overlap and can be done together - so don't try to make the hours add to 24).

A	B	C
Walking _____	Watching TV _____	Working physically _____
Standing _____	Lying down _____	Working mentally _____
Sitting _____	(awake) _____	Pursuing a hobby _____
Time out of your house _____	Sleeping _____	(or puttering) _____
		Reading or writing _____
		Conversing or socializing _____

VITA

Donna Renea Anderson was born in Johnson City, Tennessee on February 11, 1965. She graduated from Volunteer High School in Church Hill, Tennessee in May 1983.

In May 1987 she received a Bachelor of Arts in Zoology from The University of Tennessee, Knoxville. In July 1987 she began graduate studies toward a Master's Degree in Nursing at The University of Tennessee, Knoxville. This degree will be awarded in May 1990.

Donna has worked in the antepartum, labor and delivery, postpartum, and newborn nursery units at the University of Tennessee Medical Center at Knoxville. She is a member of Gamma Chi Chapter of Sigma Theta Tau, International Honor Society of Nursing, The Society for Nursing Professionals, Who's Who in American Nursing, and Alpha Delta Chapter of Sigma Kappa Sorority.