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Showering in Labor: An Effective Pain Management Alternative

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SHOWERING IN LABOR:

AN EFFECTIVE PAIN MANAGEMENT ALTERNATIVE

By

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ABSTRACT

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Health care professionals continue to be concerned about the relief of pain and anxiety associated with childbirth. There are recent anecdotal reports in the literature which describe showering as an effective nonpharmaceutical alternative for labor pain management. The effectiveness of showering can most likely be explained physiologically by the "gate control" theory of pain. The importance of providing laboring women with nursing interventions that effectively reduce pain and anxiety is supported by Roy's Adaptation Model.

The purpose of this descriptive-correlational study was to examine the labor patient's perception of the effectiveness of showering as a comfort measure and the relationship between showering in labor and outcome variables such as analgesia use, anesthesia use, and childbirth satisfaction. After approval by appropriate human subjects review committees, data was collected by written questionnaires and review of the patient's medical record. Qualified primiparous patients (n=46) became part of a "shower" or "no shower" group depending upon their utilization of the shower during labor. The mean age of subjects was 24.9 years with the majority being married, Caucasian, and well educated..

Findings from this study suggest that women are satisfied with showering in labor as a comfort measure and perceive it to be effective in reducing pain and anxiety. It is particularly useful for patients in the latent phase of labor and for those patients experiencing back pain. Showering is easily implemented and not dependent upon advanced childbirth preparation. The study did not demonstrate a significant relationship between showering and analgesia use, anesthesia use, or childbirth satisfaction as measured by Humenick's Labor/Delivery Evaluation scale.

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CHAPTER 1

INTRODUCTION

Methods for relieving pain and anxiety associated with childbirth have long been the concern of health care professionals. Although pharmaceutical agents continue to be used to provide pain relief to women in labor, they are now used judiciously (Brucker, 1984). Potential complications following obstetric analgesia and anesthesia have led to emphasis on nonpharmaceutical pain relief methods. Also, women have described increased childbirth satisfaction with active participation, self-control, and self-reliance during labor and delivery (Humenick & Bugen, 1981). Whether women choose to cope with childbirth pain using nonpharmaceutical techniques alone or in combination with pharmaceutical agents, obstetric nurses caring for these women have the responsibility to provide them with information about effective pain management alternatives. In order to provide such information, nurses require a knowledge base which includes evaluative data.

Spielman (1987), in reviewing the use of systemic analgesics during labor, stated that "all narcotics used for pain relief may adversely affect the fetus or neonate" (p. 496). Avoiding neonatal respiratory depression, a direct result of placental transfer of the narcotic, requires careful timing and dosage management when administering the drug (Spielman, 1987). In addition to the acute side effect of respiratory depression, the more subtle neurobehavioral effects of narcotics on the newborn have also been studied. Administration of meperidine (Demerol) has been shown to depress newborn neurobehavior (wakefulness, sucking, attention to visual and auditory stimuli) for as long as four days (Kuhnert, Linn, & Kuhnert, 1985). Babies born to mothers who received meperidine during labor have been observed to have abnormal reflexes and decreased

social responsiveness (Hodgkinson, Bhatt, & Wang, 1978). Long-term outcomes for the neonate were not predicted by these investigations.

The use of lumbar epidural anesthesia as a pain relief technique during labor and delivery is increasing in this country and throughout the world (Cheek & Gutsche, 1987). Despite its advantages, potential risks must be recognized. Maternal hypotension is the most common side effect associated with epidural block and may result in decreased cerebral and uterine blood flow (Knuppel & Drukker, 1986). Accidental intravascular or subarachnoid injection of anesthetic produces deleterious maternal and fetal effects requiring immediate emergency care. Administration of epidural anesthesia by a physician skilled in this technique is mandated, as well as one-on-one nursing care for continuous monitoring of the maternal-fetal unit.

Paracervical block anesthesia has also been used for pain relief during the first stage of labor, but bradycardia is a major risk to the fetus (Chestnut, 1987). Although fetal effects of the bradycardia remain controversial, fetal acidosis (fall in pH and rise in base deficit) has been reported with bradycardia lasting more than ten minutes (Freeman, Gutierrez, Ray, Stovall, Paul, & Hon, 1972).

A Mastery Model that proposes mastery in childbirth as the key factor leading to childbirth satisfaction has been described by Humenick (1981). In this model, childbirth is viewed as a psychologically important task for pregnant women. Mastery or control of that task and the childbirth satisfaction that results may lead to increased locus of control, increased self-esteem, and decreased postpartum depression which all affect the way in which women assume the task of motherhood (Humenick, 1981). Pain during childbirth can be viewed as a stressor that potentially threatens mastery of the task of childbirth. By mobilizing inner resources and using pain management techniques not totally reliant on doctors and drugs, laboring women can potentially maintain their sense of mastery and positively perceive their birth experience. Health care workers should provide choices, such as use of nonpharmaceutical comfort measures, that allow women to cope largely

through their own resources, supporting this concept of mastery.

Showering during labor is one nonpharmaceutical pain relief alternative that can be offered. Nurses who advocate the use of this comfort measure have found women to be very satisfied with its effectiveness. Neeson (1986) stated that bathing and showering during labor are nursing interventions that have been "underutilized." Anecdotal references to showering or bathing during labor are scattered throughout popular and professional literature, but a literature review yielded no empirical studies that examined this technique.

The purpose of this study was to explore the use of showering in labor as a nursing intervention that promotes comfort and relaxation. Showering was chosen in preference to bathing for two reasons. First, more hospital obstetrical units have showers than bathing facilities (bathtubs, hot tubs, or jacuzzis), making showering more available to labor patients. Second, is the concern about improper cleaning, contamination, and the possibility of infection after using hot tubs during labor (Waldron, 1987).

CHAPTER 2

LITERATURE AND CONCEPTUAL FRAMEWORK

Review of Literature

Bonica (1989) stated that "most data support the hypothesis that the pain of the first stage of labour is predominantly due to dilatation of the cervix (CX) and lower uterine segment (LUS) and the consequent distension, stretching and possible tearing of these structures during contractions" (p. 484). The production of labor pain involves the impulses generated by the stretching and contractions of the uterus. Stimulated nerve fibers in the cervix and uterus send impulses to the hypogastric plexus, to the spinal cord, and then to the thalamus and cerebral cortex of the brain where pain is perceived. Many elements such as fear, past experience, fatigue, and expectation contribute to the pain of labor that nurses seek to relieve.

The majority of empirical research concerning nursing interventions for reduction of the pain of labor has taken place during the last ten years. Health care professionals have realized that many pain relief methods, particularly the Lamaze method of prepared childbirth, have become standards of care as a result of personal and informal observation, rather than systematic research (Beck, Geden, & Brouder, 1979). Geden (1985) stated in reference to childbirth preparation:

> Since clinicians have little knowledge regarding which components are most responsible for the production of therapeutic benefits, it is entirely possible that the effects of preparation might be enhanced by the deletion of less effective components, with corresponding emphasis added to more effective components. (p. 164)

Review of the literature yielded studies that have been designed to determine which pain relief measures, individually and in combination, are most effective.

Comfort Measures in Labor

Tyron (1966) examined the following comfort measures in labor: positioning, back care, elimination, oral care, oral fluids, and linen change. Effectiveness of these measures was determined by observation of patient activity (vocal activity, body activity, and breathing) after initiation of the interventions in an experimental group. Although there were significant differences in response to labor between the control and experimental groups, flaws in methodology prevented any meaningful correlations. Most importantly, it was realized in this type of research that the patient's interpretation of effectiveness needs to be considered (Tyron, 1985). The patient may find a comfort measure effective despite the fact that her behavior suggests the opposite to her caregivers.

Studies have been conducted to examine the effectiveness of pain management techniques in labor under controlled laboratory conditions (analogued pain research). Stevens (1977) examined the strategies of basic relaxation, feedback relaxation and attention focusing while 52 subjects, randomly assigned to eight study groups, immersed their hands in ice water (a laboratory pain stimulus). He found the most successful strategy for decreasing pain perception and increasing pain tolerance was attention focusing plus feedback relaxation. He concluded that psychoanalgesic strategies applied in prepared childbirth may adequately substitute for chemical analgesics.

Worthington and Martin (1980; 1982) conducted two pain research experiments analyzing pain management methods in labor. In the first experiment, three Lamaze childbirth techniques were investigated: structured breathing, effleurage (light finger massage), and labor rehearsal. After being trained in these techniques, subjects (in groups of eight), periodically immersed their hands in ice water. Study results suggested that Lamaze breathing was superior to slow breathing, that women who used effleurage tolerated ice water pain less than subjects who did not use effleurage, and that women who practiced Lamaze techniques with their hands immersed in ice water had longer pain

tolerance than those who used imaginal rehearsal or no rehearsal. A second experiment of the same design investigated the effectiveness of structured breathing plus attention focusing and the presence of a labor coach. It was found that the combination of structured breathing, attention focal points, and coaching produced the most effective treatment.

Despite attempts to increase the face validity of analog research procedures, these researchers admit that investigating coping strategies in childbirth through an analog situation has limitations related to situational differences (Worthington & Martin, 1982). One major difference is the influence of anxiety level of the mother actually in labor. Another important difference is that the pain of labor differs markedly from the simulated ice water pain. Finally, labor pain is not controllable whereas the ice water pain may be discontinued at any time. Therefore, conclusions resulting from this type of research must remain highly tentative.

A series of analogued pain studies tested the efficacy of various pain management interventions. In all of these studies, female college students were randomly assigned to various treatment groups, each consisting of ten subjects. In the first study (Geden, Beck, Hauge, & Polhlman, 1983), various cognitive strategies (imagery, sensory transformation, and relaxation) were analyzed individually and collectively using physiological effects (systolic and diastolic blood pressure, frontalis electromyelogram, and heart rate) and self-reported pain as dependent variables. One of the cognitive strategies, sensory transformation, was found to have a significant effect on self-reported pain. Analysis of the other four dependent variables failed to demonstrate significant treatment effects.

A second study of the same design evaluated relaxation training, informative lecture, and breathing exercises (Geden, Beck, Brouder, Claister, & Pohlman, 1985). Dependent variables were again self-reported pain, blood pressure, frontalis electromyelogram (EMG), and heart rate. Results indicated that relaxation training is the

most therapeutically effective component of the Lamaze treatment regimen with significant effects on self-reported pain, frontalis EMG, and heart rate.

A third study (Geden, Beck, Kennish, Anderson, & Meller-Heinze, 1986) using the same analogued pain procedure, investigated the efficacy of five cognitive strategies (systematic desensitization, sensory description, sensory transformation, modeling, relaxation) and one pharmacological strategy (Demerol), individually and in combination. Results showed subjects receiving sensory transformation, sensory description, relaxation, and Demerol to have significantly less self-reported pain than the no treatment control group. No other effects achieved statistical significance.

Experimental research using control and experimental groups to test proposed therapeutic interventions during labor itself would produce more valid research results. However, once certain interventions, individually or in combination, have been generally accepted by caregivers and the public, it becomes ethically difficult to deny patients these methods in labor for the purpose of good experimental design.

Hydrotherapy and Labor

Bathing or showering during labor has been addressed primarily by practitioners. Review of the literature suggests that bathing or showering in labor is therapeutic and various theories are presented as to why this intervention is effective. Hilbers and Gennaro (1987) discussed managing the pain of labor peripherally based upon Melzack and Walls' gate control theory of pain . This theory (cited in Siegle, 1974) contends that small-diameter fibers of peripheral nerves conduct pain signals to the spinal cord. If nothing blocks the signals, these pain impulses travel to the transmission cells in the dorsal horn of the spinal cord and from there to the thalamus and cerebral cortex of the brain. Pain perception is the result. The gate control theory proposes that cells along the spinal cord, collectively called the substantia gelatinosa, have the ability to block or "close the gate" to impulses entering the spinal cord on their way to the transmission cells. When open, the gate permits sensory pain input to reach the transmission cells in

the spinal cord. If the gate is closed, pain impulses cannot proceed.

The gate control model suggests that control of pain may be achieved by selectively stimulating large-diameter fiber input (Melzack & Wall, 1975). When pain (on small-diameter fibers) is transmitted simultaneously with other physical sensations such as touch, temperature, pressure, and movement, the sensory information (on large-diameter fibers) reaches the brain for interpretation before pain information since pain information travels on slower conducting nerve fibers (Hilbers & Gennaro, 1985). The large-diameter sensory fibers "close the gate" to the small-diameter pain fibers. The result is a decreased perception of pain.

Showers stimulate two sensory receptor systems: mechanoreceptors and thermoreceptors (Hilbers & Gennaro, 1985). Nerve endings found in the fingertips and skin called Meissner's corpuscles are part of the mechanoreceptor system. They detect the texture of objects and movement on the skin surface and when stimulated, transmit to the brain faster than pain. The movement of the water from the shower stimulates this receptor system and blocks pain transmission. Similarly, thermoreceptors transmit information about temperature to the brain on large-diameter fibers. The warmth of the shower water stimulates thermoreceptors, "closing the gate" to the slower conducting pain fibers and reducing pain perception.

Bathing in warm water was proposed by Brucker (1984) as a nonpharmaceutical, noninvasive intervention for relieving pain during labor. Brucker (1984) cited the hydrokinetic and thermal effects of water. Warm water is believed to cause muscle relaxation and local vasodilatation, which then increases nerve conduction velocity. These effects produce pain relief as most likely explained in terms of distraction (Gate Control Theory) or the release of endorphins (Endogenous Pain Control Theory) (Brucker, 1984). Neeson (1986) listed the advantages of showering in labor to be relaxation and pain relief, distraction, and maintenance of the upright position. The author suggested that one or several baths or showers may be helpful to the patient and

assist with general cleanliness.

Kroska (1982), in a letter to the editor of Birth, referenced a Soviet physician who, in working with underwater births stated, "we have proved in our experiments that water is a powerful accumulator and transformer of biological energies. The method reduced the mother's pain . . ." (p. 47). Kroska presented two case studies suggesting that bathing in labor provided pain relief and augmented progress in labor.

Brown (1982) stated that immersing the body in water is an effective method for relieving labor pain, promoting muscular relaxation, and reducing psychological tension because of the hydrothermal and hydrokinetic properties of water. It was also noted that bathing refreshes the person, relieving discomforts from position, heat, and moisture. Psychological strategies associated with effectively reducing pain perception include systematic relaxation (concentration upon active consciously directed release of voluntary muscles), dissociation strategy (concentration of the woman's attention upon a nonpainful characteristic of the pain stimulus), and interference strategies (attention focusing and a patterned response to the painful stimulus) (Stevens, 1976). Brown (1982) stated that these methods can be enhanced by the therapeutic effects of warm water.

Dr. Michael Odent and his midwifery staff practicing at a hospital near Paris, France, often utilize warm water (bathing or showering) to provide pain relief in labor or to augment progress in labor (Odent 1981; 1984). Odent (1984) reported that the warm water reduces adrenaline secretion, relaxes the muscles, and induces alpha brain waves, creating a state of mental relaxation. Odent (1981) also related the positive effects of water in the first stage of labor to relief of inhibitions.

Londo (1989) conducted a correlational study to test the relationship between hydrotherapy (tub bath or shower) and the labor outcomes length of labor, narcotic analgesia use, and patient satisfaction with the labor/delivery experience. The study also examined the use of hydrotherapay in labor as a comfort measure. Results of this

unpublished study suggest that hydrotherapy does not have a negative effect on length of first stage of labor, has a positive effect on length of second stage of labor, and is used in combination with narcotic analgesia to manage labor pain. A trend toward greater childbirth satisfaction was noted when using hydrotherapy and patients perceived this pain management alternative as a highly desirable option for coping with labor. Significant limitations of this study were the small sample size (N=25) and lack of a control group since 92% of the study population used hydrotherapy in labor.

Summary

The use of nonpharmaceutical comfort measures in labor circumvents the potentially harmful maternal and fetal side effects of analgesia and anesthesia and supports the concept of a woman's sense of mastery in childbirth. Showering or bathing in labor is one nonpharmaceutical nursing intervention that is successfully being used by many practitioners. There are many theories, particularly the gate control theory, that account for the effectiveness of this intervention. Although many nonpharmaceutical interventions have been investigated, scientific investigation of hydrotherapy as a pain management alternative is just beginning.

Conceptual Framework

Almost all women report some degree of pain during the process of childbirth. Although a small number of women report experiencing a low level of pain, many women describe childbirth as one of the most severe forms of pain a person can experience (Melzack, 1984). The ability of the nurse to provide comfort is a fundamental component of nursing responsibility (Roy, 1984). Use of Sister Callista Roy's Model of Adaptation as a conceptual framework is very appropriate for the nursing practice of providing comfort for women in labor.

Man, as the recipient of nursing care, can be conceptualized as an adaptive system (Roy, 1984). This person (family) receives inputs that come both externally from the environment outside the person and internally from the self. These inputs, termed

stimuli, can be classified in three categories: "focal stimuli, or stimuli immediately confronting the person; contextual stimuli, or all other stimuli present, either within persons as their internal condition or coming as input from the environment; and residual stimuli such as beliefs, attitudes, or traits which have an indeterminate effect on the present situation" (Roy, 1984, p. 37).

The adaptive system uses coping mechanisms to control or master these stimuli. The regulator system and cognator system are two basic internal processes used in coping or adapting (Roy, 1984). The regulator system receives input and processes this input through neural-chemical-endocrine channels to promote adaptive responses. The cognator system receives input and processes it through various cognitive/emotive pathways to promote adaptive responses (Roy, 1984). Based on the person's own development of regulator and cognator coping mechanisms, coping behavior is manifested. This observable behavior is classified into four effector modes: physiologic, self-concept, role function, and interdependence. When using the Adaptation Model in relation to providing comfort in labor, the physiologic and self-concept modes seem most important. The physiological mode focuses on basic physiological needs (including regulation of pain, a sense of feeling). The self-concept mode focuses on psychic integrity, the composite of belief and feelings that one holds about one's self at a given time (Fawcett, 1984).

The goal of nursing is to promote adaptation. Adaptive responses are those that promote the integrity of the person in terms of the goals of the human system: survival, growth, reproduction, and mastery (Roy, 1984). By exploring behavior in the four effector modes, the nurse assesses whether the person's responses are adaptive or ineffective. If the nurse determines that the responses are ineffective or that particular stimuli have exceeded the person's adaptation level, interventions are suggested to manage the stimuli. Because Roy's model includes the concept of humanism, which focuses on a person's creative power, the nurse helps the person to use his own abilities

whenever possible.

The physiologic pain of labor, the result of dynamics such as uterine contractions, cervical dilatation, and lower uterine segment stretching, can be viewed as an internal focal stimulus. Contextual stimuli that may contribute to that pain include interventions by nurses and physicians or environmental stressors such as excessive noise or temperature. A residual stimulus might be the memory of a previous childbirth experience. The laboring woman, in her own level of adaptation, tries to manage these stimuli through her regulator and cognator coping mechanisms. An increase in catecholamine or stress hormone production (Lederman, Lederman, Work, & McCann, 1978) would be a regulator coping mechanism; a decision to try a different breathing technique would be a cognator coping mechanism. The nurse, in assessing the woman's adaptive response, would focus on evaluation of the physiologic and self-concept modes. For example, if the laboring woman's blood pressure and pulse were to rise and she started to cry, thrash about in bed, and state that she could no longer tolerate the pain, the nurse would assess this as ineffective response as manifested by the physiologic mode. If the woman stated to her support person that she felt like a failure because she was not able to cope, the nurse would assess this as ineffective response as manifested by the self-concept mode.

After diagnosing the ineffective response, the nurse would then provide an effective intervention or interventions. Just as more than one intervention may be necessary, one nursing intervention may meet more than one need (Roy, 1984). Based upon knowledge of the gate control theory of pain, the nurse may suggest showering to the patient in labor. It may ease the pain (decrease the stimuli) and promote an adaptive response in the physiologic mode. Because showering involves active participation and mobilization of inner resources, its use may also promote an adaptive response in the self-concept mode.

Roy's Adaptation Model can also be applied to the fetus. The fetus adapts to the

stress of labor with a response of its regulator system. The fetus increases catecholamine production, shunting more blood to its vital organs, mobilizing energy stores, and helping to prepare the lungs for respiration (Phillippe, 1983). The catecholamine response dilates the neonate's pupils and provides an alert state, increasing the attractiveness of the infant and promoting maternal-infant bonding (Lagercrantz and Bistoletti, 1977). With excessive or prolonged maternal stress, the fetus responds in a maladaptive way by producing excessive catecholamines (Fox, 1979). This may lead to neonatal difficulties such as respiratory distress, hypothermia, decreased plasma volume, metabolic acidosis, hyperbilirubinemia, and necrotizing enterocolitis (Fox, 1979). Effective coping mechanisms for the mother may very well influence the fetus' ability to adapt.

Conclusion

Roy's Adaptation Model provides a framework to better understand why it is important for caregivers of laboring women to minimize stressful environments and interventions. Caregivers must provide management techniques that are safe and effective in lowering levels of pain and anxiety. Optimally, these interventions actively involve the woman in labor, supporting the concept of mastery. The majority of empirical research on labor pain management involves prepared childbirth techniques. Showering is a comfort measure that is easily implemented and can be offered to women with or without advanced childbirth preparation.

Purpose and Research Questions

The purpose of this study was to examine the patient's perception of the effectiveness of showering during labor. (Effectiveness was defined as the degree to which the patient perceives showering to help her relax and feel more comfortable.) In addition, the study described the phenomenon of showering during labor and examined the relationship between showering in labor and outcome variables such as analgesia and anesthesia use and childbirth satisfaction. The relationship of previous knowledge of showering and utilization of this technique was also examined. The following questions

were addressed:

1. How satisfied are patients with showering as a pain management alternative?
2. What, specifically, do patients like about showering during labor?
3. What, specifically, do patients dislike about showering during labor?
4. What reasons do women give for choosing not to use showering?
5. How does showering compare in perceived effectiveness to other pain management techniques?

The following research hypotheses were investigated:

Hypothesis I

Patients who have previous knowledge of showering in labor are more likely to use the shower than patients who do not have previous knowledge.

Hypothesis II

Patients who shower in labor will use less analgesia than patients who do not shower.

Hypothesis III

Patients who shower in labor are less likely to undergo labor anesthesia than patients who do not shower.

Hypothesis IV

Patients who shower in labor will be more satisfied with their childbirth experience than patients who do not shower.

CHAPTER 3

METHODOLOGY

Design

This was a descriptive-correlational study. The study was conducted in the obstetrical unit of a local community hospital where the standard of care for laboring patients includes showering as a pain management alternative. All qualified subjects were made aware of showering as one of many comfort measures available to them during labor. Subjects who chose to shower during the course of their labor became part of a "shower" group; subjects who did not choose to shower became part of a "no shower" group. Data were collected by a written questionnaire and review of each patient's medical record.

Pilot Study

A pilot study was performed by the researcher and an experienced Labor and Delivery staff nurse. The purpose of the pilot study was to test the newly developed tools and to assess the study design. The pilot study sample consisted of seven subjects, four of whom chose to shower during labor. After completion of the appropriate questionnaires, subjects were questioned about clarity, accuracy, and completeness of the instruments. Minor adjustments were then made.

Sample

A convenience sample of 46 subjects was obtained over a nine week period. Patients who met the following criteria were invited to participate in the study:

1. Speak and read the English language.
2. Low-risk: defined as not having a medical or obstetric condition requiring continuous electronic fetal monitoring or confinement to bed as ordered by the physician (see hospital policy, Appendix F).
3. First labor and delivery experience.
4. Singleton fetus, in a vertex presentation.
5. Dilated 0-4 centimeters on admission to the labor unit.

Imposing these criteria produced a sample that was homogeneous in regard to parity, medical and obstetrical acuity, phase of labor, and fetal presentation.

Protection of Human Subjects

Participation in this study was voluntary. A consent form was read and signed by all subjects (see Appendix D). Subjects were informed verbally and in writing of the confidentiality of their responses and that they would not be identified by name. Numbering of the instruments with an identification number was independent of any hospital numbering system. The investigator obtained approval for this project from the Human Subjects Review Committee of Grand Valley State University and from the Institutional Review Committee of the hospital where the study was conducted.

Instruments

Two versions of the same questionnaire were employed in the study. Questionnaire A (see Appendix A), an 18-item instrument, was administered to the shower group. Questionnaire B (see Appendix B), a nine-item instrument, was administered to the no shower group. Study tools were adapted, with consent, from those used in a slightly different, but related labor study (Londo, 1989).

The questionnaires each contained three parts. Part I contained questions designed to obtain demographic data (age, marital status, race/ethnic background, childbirth preparation, and education level). Part II of Questionnaires A (shower group) and B (no shower group) contained questions about showering during labor, the perceived effectiveness of various comfort measures, and previous knowledge of

showering as a comfort measure.

Part II of Questionnaire A (the shower group) included a Showering Satisfaction Scale, an eight-item Likert-type scale measuring each subject's attitude toward showering in labor as a comfort measure. An equal number of positively and negatively worded statements were chosen to avoid response bias. The same five-category disagree-agree response scale was employed for all questions. Questionnaire A also included open-ended questions designed to obtain specific positive or negative responses about showering. This permitted subjects to express individual likes and dislikes about this intervention in greater detail. Specific to Part II of Questionnaire B (the no shower group) was a question asking why the woman chose not to shower during labor.

Questions in Part II were designed to elicit information about showering during labor and evolved from the researcher's clinical experience in caring for labor patients. Content was drawn from conversations and observations of patients and other caregivers and from the review of the literature. Three obstetrical nursing experts, one educator and two practitioners, were asked to review the study tools to help establish content validity. Although suggestions were made about the format of the tools, the experts agreed that the questions adequately represented the study topic of showering during labor. Review of the tools by many Labor and Delivery staff nurses, family members, and participants in the pilot study helped to establish face validity.

Reliability was not established for the Showering Satisfaction Scale in Part II of Questionnaire A due to the limited sample size (n=23). Testing for stability was not considered because knowledge about the topic of showering in labor would change in a test/retest situation. Also, it is incorrect to assume that satisfaction with a comfort measure would remain constant over time.

Part III of both questionnaires consisted of Humenick's Labor/Delivery Evaluation Scale (1981). The scores from this ten-item semantic differential scale were used to measure childbirth satisfaction. Humenick (1981) reported a Cronbach Alpha

score of 0.91 (n=129) when testing inter-item reliability. When reliability was estimated in the present study, a Cronbach Alpha score of 0.61 (n=40) was obtained. Humenick (1981) established content validity for this scale by deriving items from pairs of adjectives on the evaluative scale by Osgood (1962). Twenty dichotomous pairs of adjectives originally were tested on 60 women. The scale was then reduced to the 10 pairs scoring highest on an item analysis. Verbal permission for use of the scale in this study was obtained from its author.

The Chart Review form (see Appendix C) was a tool used to accurately document number of showers taken, cervical dilatation at the time of the shower, and actual time spent in shower. Analgesia and anesthesia were also documented on this form at the time they were administered. The type of labor room, type of delivery, and length of labor were recorded but only type of labor room was incorporated into in the data analysis.

Data Collection

The researcher enlisted the support and participation of the nursing staff of the Labor and Delivery unit at the selected hospital. All 24 members of the staff agreed to participate in data collection. The nurses were briefed on the study's purpose and design before data collection began. A verbal and written explanation of the consent form, the instructions for the patients, and the participation criteria were provided for the data collectors.

After a qualified patient was admitted to the Labor and Delivery unit, she was asked to participate in the study by either the researcher or a staff nurse. Once the study was described (see Appendix E) and the patient agreed to participate, the consent form was signed. The consent form, questionnaires, and the chart review form were then attached to the patient's chart. Each set of documents had a matching, preassigned identification number.

During the admission assessment, the labor nurse acquainted each study subject with all available comfort measures, including but not emphasizing, use of the shower. If

during the course of labor the patient chose to shower, the attending nurse recorded the patient's cervical dilatation at the time of the shower and the amount of time spent in the shower on the chart review form (see Appendix C). If no showers were taken during labor, this was also noted on the chart review form.

After delivery, each subject was given the appropriate questionnaire, according to whether they did or did not shower. Verbal instructions for its completion and return were given (see Appendix E). All patients were asked to complete the questionnaire within 24 hours.

Each day, Monday through Friday, the researcher examined the charts of women who had delivered that week and completed the chart review form for study participants. The consent form, completed chart review form, and questionnaires with identical numbers were collected by the researcher for subsequent data analysis.

CHAPTER 4

RESULTS/DATA ANALYSIS

Data were collected over a nine week period in Spring 1989. Fifty patients met study criteria and were invited to participate in the study. Ninety two percent (n=46) of the subjects returned completed questionnaires. Of these 46 subjects included in the study, 50% (n=23) chose to shower (shower group) and 50% (n=23) chose not to shower (no shower group). All data were analyzed using the SPSS/PC+ statistical software system.

Characteristics of Subjects

The age of participants ranged from 18 to 36 years (mean=24.9, S.D.=4.5). Seventy eight percent (n=36) of the subjects were married. Ethnic background of the population was predominantly Caucasian (91%). Fifty percent (n=23) of the sample had at least a partial college education. Forty four percent (n=20) had completed high school and 6% (n=3) had completed junior high. Childbirth preparation classes were attended by 87% (n=40) of the participants.

Research Questions

Description of the Phenomenon of Showering in Labor

The majority of the shower group (82%, n=19) took one shower during labor. Nine percent (n=2) took two showers, and 9% (n=2) took three showers. The amount of time spent in the shower ranged from seven to 40 minutes (mean=20.6, S.D.=7.8). Sixty nine percent (n=20) of the showers were taken during the latent phase (0-3 cms.) of labor and 31% (n=9) were taken during the active phase (4-7 cms.). No subjects showered during transition or the second stage of labor.

Patient Satisfaction with Showering in Labor

A Showering Satisfaction Scale was created to measure the showering patients' satisfaction with this comfort measure. The response alternatives to each of the eight statements in this scale ranged from "1" (strongly disagree) to "5" (strongly agree). Table 1 illustrates the number and percentage of patients who had a "negative to neutral" versus a "positive" response to each statement. The statements are listed starting with the highest percentage of agreement. Patient agreement with seven of the eight statements ranged from 78-96%. However, only 26% of the sample agreed that showering made their labor easier.

Table 1

Patient Satisfaction with Showering in Labor

Statement	Agree and strongly agree n (%)	Strongly disagree to uncertain n (%)
I liked showering during labor.	22 (96)	1 (4)
Showering during labor made me more relaxed.*	21 (91)	2 (9)
Showering during labor made me more comfortable.	20 (87)	3 (13)
Showering during labor was a pleasant experience.*	19 (83)	4 (17)
If I had it to do over, I would shower during labor.*	19 (83)	4 (17)
Showering was an effective comfort measure for me.	19 (83)	4 (17)
I would recommend showering during labor to a friend having a baby.*	18 (78)	5 (22)

* To avoid response set bias, these statements were "negatively" worded on the questionnaire (see Appendix A). Responses to these questions were reverse scored.

A total overall satisfaction score was determined for each subject by adding the numeric responses for the individual statements on this scale. The summed scores ranged from 15-40, with a mean score of 33.2 (a score of 40 being the highest possible). This mean score indicates a positive overall response to showering in labor.

What Patients Like About Showering

Ninety one percent (n=21) of the patients who showered responded to the open-ended question asking what they liked about showering. Sixty seven (n=16) percent of the patients who answered offered one response, while 33% (n=7) of the patients who answered offered two responses, making the total number of responses 28.

The researcher and an experienced staff nurse reviewed these qualitative responses and assigned them to specific themes. A response such as the shower "took my mind off the pain" was assigned to the theme of "distraction." Responses like "the warm water relaxed me," "it felt soothing," and "everything seemed less painful" were grouped into a "pain relief, relaxation" category. A response such as "the warmth helped my chills" was assigned to a "warming effect" category while the "cleansing effect" category consisted of responses like "I liked getting clean."

The majority of responses (61%) were related to the "pain relief and relaxation" theme. Of particular interest, nearly 50% of the responses in the "pain relief, relaxation" category referred to relief of back pain with statements such as "the hot water eased my back pain" and "the shower relaxed the muscles in my back." Fourteen percent (n=4) of the responses referred to "distraction," 14% (n=4) to the "warming effect," and 11% (n=3) to the "cleansing effect" of the shower.

What Patients Dislike About Showering

Fifty-six percent (n=13) of the patients who showered responded to the open-ended question about showering dislikes. One patient offered two responses, making the total number of responses 14. The responses were assigned to themes in the manner described for shower "likes." Thirty six percent of the responses (n=5) related to "feeling

lightheaded" or finding it "hard to breathe with the steam." Two responses (14%), "it was difficult getting to and from the shower" and "it was painful to walk and bend, and I could have used more help in and out of the shower" created the "ambulation to shower" theme. Three dislikes (21%) referred to discomfort from the intense water spray. Four responses (29%) such as "when the contractions came, I was alone" and "when contractions came, it was hard" were assigned to the theme "anxiety during contractions."

Why Patients Chose Not to Shower

Ninety one percent (n=21) of the patients who chose not to shower during labor responded to the question asking why not. Participants were instructed to check the "most important" reason they chose not to shower. Seven specific choices were given, as well as the choice "other" under which a reason not listed could be given. Three of the seven specific reasons listed on the questionnaire were never selected and no subject described an alternative reason under the "other" category. The reason most frequently given for not showering was "being too uncomfortable to get up" (52%, n=11). Twenty four percent (n=5) of the patients didn't think a shower would help, 14% (n=3) were too tired to get up, and 10% (n=2) didn't shower because they had never heard of showering during labor.

Perceived Effectiveness of Showering Compared to Other Comfort Measures

All study participants responded to a checklist of eight alternative comfort measures rating the effectiveness of each technique they used. Effectiveness was defined in the questionnaires as "helping you to relax and feel more comfortable." The response alternatives for each technique ranged from "1" (not effective) to "5" (very effective). The number and percentage of the subjects who used each pain management technique and their response toward perceived effectiveness are presented in Table 2. Responses were regrouped into three categories: "not to somewhat effective," "moderately effective," and "very effective." Seventy percent (n=16) of the subjects found showering to be moderately or very effective, placing it third in effectiveness among the measures

evaluated. Although pain medication was the most widely used technique (87% of the total sample), it was perceived to be less effective than showering as a comfort measure.

Table 2

Perceived Effectiveness of Pain Management Techniques

	Effectiveness in %		
Technique (Use)	Very	Moderate	Not to Somewhat
Breathing (n=44)	55	20	25
Paracervical (n=7)*	57	14	29
Showering (n=23)	31	39	30
Cool Compresses (n=29)	21	48	31
Backrubs/Massage (n=8)	29	39	32
Pain Medication (n=38)*	29	32	39
Towels/Blankets (n=17)	18	23	59
Ambulation (n=37)	14	24	62

* A small number of subjects who received pain medication or a paracervical block according to documentation on the chart did not note their use or effectiveness on this question.

Research Hypotheses

Hypothesis I

Patients who have previous knowledge of showering in labor are more likely to use the shower than patients who do not have previous knowledge.

All patients in the study were asked if they were aware of showering as a comfort measure before entering the hospital to have their baby. The majority of the sample (74%) was aware of the technique. Table 3 compares the number and percentage of patients in the total sample, in the shower group, and in the no shower group who did and

did not have previous knowledge of the intervention.

Table 3

Comparison of Previous Knowledge of Showering and Selection of this Intervention

	Previous Knowledge	No Knowledge
Group	n (%)	n (%)
Shower	15 (44)	8 (67)
No Shower	19 (56)	4 (33)
Total	34 (100)	12 (100)

In this sample, there were twice as many patients with no previous knowledge who showered (n=8) than those who did not shower (n=4). Only fifteen of the 34 patients who had previous knowledge of showering chose to shower, while 19 of them chose not to shower. A chi-square test using Yates correction did not support a significant difference in previous knowledge of showering between the shower and no shower groups (x^2=1.015, df=1, p=.3138). This research hypothesis was not supported.

Hypothesis II

Patients who shower in labor will use less analgesia than patients who do not shower.

The number and percentage of subjects who used analgesics in both the shower and no shower groups is illustrated in Table 4. The same analgesic was used in all cases, although the route (IM or IV) and dosage varied. There were more patients in the shower group (n=11) who received an analgesic once during labor than in the no shower group (n=8). However, repeated analgesia use was required by fewer patients in the shower group (n=9) than by patients in the no shower group (n=13).

Table 4

Analgesia Use in Shower and No Shower Groups

Times Used	Shower n (%)	No Shower n (%)
0	3 (13)	2 (9)
1	11 (48)	8 (35)
2-4	9 (39)	13 (56)

This difference in repeated use is demonstrated after observing the mode for the showering group to be one administration of medication, while for the no shower group it was two.

Although the descriptive data from this study suggest a trend toward less analgesia use in the shower group, results of a Mann-Whitney test measured no significant difference in analgesia use between the shower and no shower groups (U=222.5, W=498.5, p=.16, one-tailed). Based upon these results, the null hypothesis could not be rejected.

Research Hypothesis III

Patients who shower during labor are less likely to undergo labor anesthesia than patients who do not shower.

The use of anesthesia by the shower and no shower groups was examined. Paracervical block anesthesia was the only anesthesia available to labor patients at the time of this study. Table 5 displays the number and percentage of patients in both the shower and no shower groups who received paracervical block anesthesia during labor. In general, there was little use of paracervical block anesthesia by the total group (n=8, 17%). This trend is based upon physicians' increasing reluctance to perform this procedure for pain relief due to the risk of fetal bradycardia.

Table 5

Paracervical Block Use in Shower and No Shower Groups

	Shower	No Shower
Paracervical Block	n (%)	n (%)
Yes	5 (22)	3 (13)
No	18 (78)	20 (87)

A chi-square test using Yates correction measured no significant difference in anesthesia use between the shower and no shower groups (x^2=.1513, df=1, p=.6973). Therefore, this research hypothesis was not supported.

Research Hypothesis IV

Patients who shower during labor will be more satisfied with their childbirth experience than patients who do not shower.

Humenick's Labor/Delivery Evaluation scale (Part III, Questionnaires A and B) was used to obtain a childbirth satisfaction score for all subjects. The scores of six patients were discarded due to incorrect completion of this question. The mean satisfaction score for the showering group (X=36.190) was slightly lower than the mean satisfaction score for the no shower group (X=37.421). A t-test for independent samples was used test the difference between the mean satisfaction scores of the showering and no shower groups. No significant difference between the groups was found (t=-.57, df=38, p=.573). Thus, this research hypothesis was not supported.

CHAPTER 5

DISCUSSION AND IMPLICATIONS

Discussion

Two major findings of this study are 1) that women are satisfied with showering in labor as a comfort measure and 2) that they perceive showering to be effective in reducing pain and anxiety. These findings support anecdotal reports in the literature describing the effectiveness of hydrotherapy in labor. Women in this study who showered reported that they liked showering and that it made them more comfortable and more relaxed. Showering was found to be a pleasant experience, would be done again, and further, the women would recommend showering to a friend having a baby. Results of this study regarding satisfaction with showering as a comfort measure during labor are consistent with results of Londo's study (1989). Eighty seven percent of Londo's showering group agreed that they liked using the shower as a labor aid and 100% responded that they would want to use it as a coping skill in any future labor.

Showering compares favorably in effectiveness to other nonpharmaceutical and pharmaceutical options for comfort and pain relief in labor. Only two measures, breathing techniques and paracervical block anesthesia, ranked higher than showering in perceived effectiveness in this study. Showering was found to be more effective than pain medication and other nonpharmaceutical comfort measures such as backrubs and ambulation.

The use of showering to make labor easier was not supported by these data. The majority (74%) of the subjects were uncertain or disagreed with this notion. This finding is contrary to Londo's (1989) showering study which reported a 78% agreement. This sample's negative response is also inconsistent with the positive responses to the other

statements of the Shower Satisfaction Scale and might be due, in part, to the ambiguous wording of the statement. When asked to respond to the statement "showering made my labor easier," the subjects may have wondered "easier than what?" One also might speculate that within 24 hours or less after delivery, few women, especially primiparas, would agree that their labor could be described by any form of the word "easy."

This study provides insight into why women like showering. Primarily, showering makes them more relaxed and more comfortable, especially when experiencing back pain. Additionally, showering serves as a distraction from their pain, warms them if chilled, and assists with general cleanliness. This information is particularly useful to the practitioner who wants to explain to a patient the possible benefits of showering.

Laboring women also reported aspects of showering they disliked. Of greatest concern to caregivers is that five patients in this study reported "feeling light-headed" or "found it difficult to breathe" because of the steam created by the shower. In discussing this concern with the nursing staff, it was noted that some nurses leave the shower door partially open to reduce the steam build up. A few patients also reported that the water spray from the shower head was painful to their skin. The patients who reported this "dislike" had all used the birthing room shower. The spray from that shower head was checked and found to be very forceful. The shower head was subsequently adjusted to deliver a softer spray.

Some women found it difficult to walk to and from the shower. The two patients who reported this "dislike" labored in a room approximately 30-40 feet from the shower. It should be noted that none of the patients who labored in the birthing room cited "ambulation" as a showering dislike. The birthing room has a private shower. Some women report feeling afraid or alone during contractions while in the shower. It is unknown whether a support person or nurse stayed in the shower area with the four women who reported this dislike.

Information was gained about why patients may choose not to shower in labor. In this study, most patients chose not to shower because they were too uncomfortable or too tired to get up. This reason, given by 66% of the no shower subjects, relates to a finding from the shower group. Some patients who showered reported as a "dislike" that they found ambulation to and from the shower difficult because they were uncomfortable. Twenty four percent of the no shower patients believed that the shower wouldn't help and chose not to try it.

Study findings did not support any of the four research hypotheses. First, showering is not more likely to be utilized if there is previous knowledge of this technique. In this study, results suggested that the more women were aware of showering before entering the hospital, the less likely they were to use the technique. Perhaps this is because the women were also more aware of other comfort measures and chose to focus on them. Methods such as standard breathing and relaxation methods require practice and often become the focal point of labor pain management. Showering is a comfort measure that can be utilized by women with or without advanced childbirth preparation. Support for this notion is demonstrated in that 22% of the shower group had not attended a childbirth preparation class and 35% of the shower group reported no previous knowledge of the technique.

Second, this study did not support the hypothesis that patients who shower are less likely to use analgesia. Although a trend was noted toward less repeated doses of analgesia in the showering group, the difference in analgesia use was not statistically significant. A question that arises but cannot be answered by this study is "would the women who showered have needed more analgesia if they had not showered?" One conclusion that can be drawn is that showering is an effective comfort measure that is often used in conjunction with chemical analgesia. Results of Londo's (1989) study also supported this conclusion.

The third hypothesis, that showering patients undergo paracervical block

anesthesia less often than patients who do not shower, was not supported. In this study, paracervical anesthesia was used minimally (22% by the shower group, 13% by the no shower group) with no significant difference in frequency of use between the two groups. Paracervical block is a physician-directed intervention whose use at the study hospital and nationwide is being curtailed because of the risk of fetal bradycardia and acidosis. Unlike chemical analgesia, which is commonly offered as a pain management alternative by physicians at the study hospital, a paracervical block is infrequently offered.

Humenick (1981) proposed that if women were allowed to cope with labor largely through use of their own resources, they would better master the task of childbirth and more positively perceive their childbirth experience. The final research hypothesis, that women who shower (a coping mechanism not totally dependent upon nurses and physicians) will be more satisfied with their childbirth experience, was not supported. Although the mean satisfaction score for the no shower group (X=37.4) was actually slightly higher than for the shower group (X=36.2), these were not significantly different. When one considers the many variables that may influence a childbirth experience, such as support persons, caregivers, length of labor, delivery outcome and fetal outcome, it is not surprising that one variable alone does not significantly influence overall childbirth satisfaction.

Application to Nursing Practice

A major role of the nurse practicing in labor and delivery is to provide comfort for the patient. Based upon Roy's Model of Adaptation, the nurse promotes adaptation when comfort is provided. The pain of labor may be the result of physiology alone (an internal focal stimulus), or may be accentuated by a past experience (residual stimulus) or unpleasant medical interventions (contextual stimuli). If nurses determine that particular stimuli have exceeded the patient's adaptation level, they are responsible for providing or suggesting interventions to manage the stimuli.

Findings of this study support showering as one pain management alternative the

nurse should consider offering to laboring women. Patients like showering because it reduces their pain and anxiety. The effectiveness of showering can most likely be explained physiologically by the "gate control" theory of pain. When nerve endings in the skin are stimulated by the movement and warmth of the shower spray, transmission of mechanical and thermal impulses "closes the gate" to pain impulses.

The effectiveness of this intervention may also be understood when one considers the influence of the many contextual stimuli to which the laboring woman is exposed. The sound of other laboring women, room temperature fluctuations, vaginal exams, prescribed positions in bed, and fetal monitoring are examples of common input from a patient's external environment. Spending time alone in the shower, away from these stimuli, may be very helpful for the patient. In fact, when subjects in this study reported "distraction" as a particular reason they liked showering, this could be conceptualized as diversion from the stimuli of both their internal and external environment.

Utilizing the shower can be an excellent intervention for women who want to maintain a sense of mastery by using coping skills not totally reliant on doctors and medication. Women were asked about their sense of independence and control on the admission assessment form at the study hospital. An intervention like showering may be very appropriate if a woman responds that independence and control are important to her.

The nurse should offer the shower to women based upon their individual needs. Showering is an intervention particularly appreciated in the latent phase of labor and is appropriate for any patient who is uncomfortable or anxious and is allowed to ambulate. Showering may be particularly useful for women who suffer from back pain during labor. (Nurses observed women with back pain often turning their backs to the shower spray for direct stimulation). If a woman is chilled, showering is an intervention that can make her feel warmer. If a woman has labored for many hours, the cleansing effect of the shower may refresh her.

Not all women have the resources or the motivation to attend a prepared

childbirth class in which breathing and relaxation techniques are rehearsed. Because showering is not dependent upon previous knowledge or rehearsal, it is easily implemented and should be considered for those women without advanced childbirth preparation who have not been taught any coping skills.

There are nursing implications that stem from patients' reported dislikes of using the shower. Prior to showering, it may not be enough to hand a patient towels and instruct her to call if she needs help. Laboring women may need assistance walking to and from the shower as well as getting in and out. If a patient has been very dependent on a labor coach or nurse during contractions, she might not like being alone in the shower. Showering may not be an appropriate intervention for her, or someone should at least stay with her in the shower area. The nurse might also suggest that a support person shower with the patient.

An extremely important study finding that has implications for the nurse is the patient complaint of feeling light-headed or having difficulty breathing because of the shower steam. If there is a fan in the shower area, it must be turned on. Leaving a door open may also allow for the escape of steam. All patients who enter the shower must certainly be instructed to stop the shower if they feel light-headed and call for help (a nurses' call light should be in the shower). A shower seat or stool must be in the shower and having a nurse or support person close by is desirable for added safety.

This study also has implications for facility planners. Many facilities nationwide are being constructed or renovated. Maternity care is becoming much more competitive and women are shopping for institutions with facilities that meet their needs. Fifty two percent of the subjects in Londo's study (1989) stated that the availability of hydrotherapy would influence where they sought care for future deliveries. Because showering is effective and because hospitals are competing for patients, new facilities should include adequate shower accommodations. Each labor room should have a shower large enough to accommodate two people. Preferably, showers should have a

built-in sitting ledge and an adjustable shower head. A ventilation system capable of removing the steam is of utmost importance.

Limitations

There are several considerations that practitioners must recognize before applying the findings of this study. The convenience sample which was small limited external validity and the power of statistical analysis. Study results limited generalizability due to homogeneity of subjects; participants were primarily married, Caucasian and well educated. Age was the only characteristic with a normal distribution. Since the study hospital serves a community with a Hispanic population of approximately 35%, a larger representation from this group was expected. The criterion of speaking and reading English most likely limited this group's participation. It is questionable, but unknown, whether experimenter bias also limited this group's participation, especially since the data collectors were aware of the cultural tendency for some Hispanic women to avoid water during and after childbirth.

Apart from Humenick's Labor/Delivery Evaluation Scale (1981), the tools used in this study were newly designed and used only in the pilot study for this research. The statements in the Shower Satisfaction Scale measuring patient satisfaction with showering as a comfort measure were not tested for reliability. An interrater reliability score was not estimated for the assignment of qualitative responses to specific themes for the showering likes and dislikes questions. Limitations related to using Humenick's Labor/Delivery Evaluation Scale in this study were it's low level of estimated reliability (Cronbach's alpha=.61) and the difficulty some patients had in following the directions and completing this question correctly.

Other limitations relate to the study design. To allow all qualified subjects a chance to choose showering as an alternative, the data collectors were instructed to make subjects aware of showering as one of many pain management alternatives, but not to emphasize this technique in the course of labor management. Recognizing the difficulty

of maintaining this "neutral" position, it is difficult to measure how much the choice to shower was influenced by the data collectors' bias. The nonexperimental design of this study also lends to other explanations for the research findings.

Suggestions for Further Research

This study supports the use of showering in labor as a pain management alternative. Further studies are necessary to validate the findings of this study and to answer new questions that have arisen. The study should be expanded to include different types of childbirth facilities, from alternative birthing centers to teaching institutions, to increase the generalizability of the findings. It would be helpful to have the questionnaires available in Spanish (and have Spanish-speaking data collectors) to study any cultural differences regarding perception of showering. Replication of this study using other methods of hydrotherapy such as jacuzzis or standard bathtubs would add to the knowledge base regarding the use of this intervention. Because anecdotal literature associates hydrotherapy with a shorter labor, length of labor might be incorporated into the study design and data analysis .

In this study, adaptive response by the patient was ascertained by self-report within a 24 hour period after delivery. Assessing parameters such as blood pressure and pulse, observable behaviors, and patient response immediately before and after taking a shower should be included. Such analysis would better evaluate adaptation in both the physiologic and self-concept modes as described in Roy's Adaptation Model.

Conclusion

There are numerous anecdotal reports in the literature about showering in labor as a pain management alternative. Showering is currently being used in some obstetrical settings. Findings from this study suggest that laboring women are highly satisfied with showering and find it effective in reducing pain and anxiety. Showering can be easily implemented and its use is not dependent upon advanced childbirth preparation or costly renovations in existing facilities. There was no significant relationship between

showering and analgesia use, anesthesia use, or childbirth satisfaction demonstrated by this study.

In Megatrends (1984), Naisbitt stresses that whenever technology is introduced, there needs to be a counterbalancing human response; that is, there should be a parallel growth of "high tech/high touch." As the climate of hospitals and health care is becoming more "high tech," it is important to provide a "high touch" balance. Showering in labor fits well with other "high touch" concepts that hospital obstetrical units are striving to offer their patients. Study findings support the use of showering in labor and suggest that this alternative should be added to the list of comfort measures for laboring women.

APPENDICES

_____ (01-03)

APPENDIX C

Chart Review

1. Shower during labor: (07:1)
   _____yes (1)
   _____no (2)

2. Shower(s) Dilatation Time in Time out Total time

Shower #1	_____(09:1)	_____	_____	_____(11-12:1)
Shower #2	_____(14:1)	_____	_____	_____(16-17:1)
Shower #3	_____(19:1)	_____	_____	_____(21-22:1)
Shower #4	_____(24:1)	_____	_____	_____(26-27:1)
Shower #5	_____(29:1)	_____	_____	_____(31-32:1)

3. Labored in: (34:1)
   _____ birthing room (1)
   _____ labor room (2)

4. Number of times analgesic (IM or IV) used: (36:1)
   _____ 0 (0)
   _____ 1 (1)
   _____ 2 (2)
   _____ 3 (3)
   _____ 4 or more (4)

5. Paracervical block: (38:1)
   _____ yes (1)
   _____ no (2)

6. Epidural: (40:1)
   _____ yes (1)
   _____ no (2)

7. Delivery type: (42:1)
   _____ normal spontaneous vaginal (1)
   _____ forcep (2)
   _____ cesarean (3)

_____ (01-03)

8. Length of labor:

First Stage	_____ hours	(44-48:1)
Second and Third stage	_____ hours	(50-54:1)
Total	_____ hours	(56-60:1)

_____ (01-03)

APPENDIX D

Consent Form

I understand that Kathy Austin, RN, is conducting a study to examine the effectiveness of various comfort measures for women in labor and that the knowledge gained is expected to enable nurses to provide better support during labor.

I understand that:

1. Participation in this study will require me to complete a questionnaire taking approximately 15 minutes.

2. The questionnaire may be completed at my convenience sometime within the first 24 hours after I deliver my baby.

3. I have been selected for the study because no problems are expected during my labor and delivery.

4. It is not anticipated that this study will involve any emotional or physical risk.

5. The information I provide will be kept strictly confidential and the data will be coded so that identification of individual participants is not possible.

I acknowledge that:

1. All my questions about this study have been answered and I may contact Kathy Austin at 392-5424 if I have further questions.

2. In giving my consent, I understand that my participation is voluntary and that I may withdraw at any time without affecting the care I receive from the staff at Holland Community Hospital.

3. Kathy Austin has my permission to review the record of my labor and delivery.

4. I authorize the investigator to release the information obtained in this study to scientific literature. I understand that I will not be identified by name.

I acknowledge that I have read and understand the above information and that I agree to participate in this study.

_____ _____

Participant's signature Date

_____

Witness' signature

APPENDIX E

Instructions for Subjects

(Instructions from researcher)

Hello, my name is Kathy Austin. I am a nurse in the OB department and a graduate student at Grand Valley State University. For my Master's Thesis research I am conducting a study concerning comfort measures in labor so that nurses might better help their patients. If you agree to participate in this study, you will be required to complete a questionnaire about comfort measures within the first 24 hours after your baby's birth. The questionnaire should take approximately 15 minutes to complete although you will be allowed to take as much time as you wish. I will also collect information from your chart for use in the study. All information collected from the chart and the responses on the questionnaire will be kept confidential. You will not be identified by name and no particular details of your case will be divulged. A decision not to participate in this study will not affect your nursing care and you are free to withdraw from participation at any time. If you think you would like to be a participant, please read and sign this consent form.

(Instructions from staff nurse):

One of the nurses in our department is a graduate student at Grand Valley State University. She is conducting a study concerning comfort measures in labor so that nurses might better help their patients. If you agree to participate in her study, you will be required to complete a questionnaire about comfort measures within the first 24 hours after your baby's birth. The questionnaire should take approximately 15 minutes to complete although you will be allowed to take as much time as you wish. She will also collect information from your chart for use in the study. All information collected from the chart and the responses on the questionnaire will be kept confidential. You will not be identified by name and no particular details of your case will be divulged. A decision not to participate in this study will not affect your nursing care and you are free to withdraw from participation at any time. If you think you would like to be a participant, please read and sign this consent form.

(When administering the questionnaire)

You may take as much time as you wish to complete this questionnaire. When you are finished, please put the questionnaire in this envelope, seal it, and place it in the box labeled "Labor Study" at either the Labor and Delivery or Postpartum nurses' station. Thank you for your help.

APPENDIX F

USE OF ELECTRONIC FETAL MONITOR
Holland Community Hospital OB Policy & Procedure #137
(Reprinted)

1. All patients admitted in labor or for observation on "OB Exam" shall have a minimum 30 min. monitor strip run for evaluation of uterine activity and fetal heart rate pattern.

2. The patient with one or more of the following conditions should be considered for continuous electronic fetal monitoring.

Obstetrical History Factors

1. Age>35 or <17
2. Diabetes
3. Chronic hypertension
4. Cardiac disease
5. Rh sensitization
6. Sickle cell disease or trait
7. Previous Cesarean delivery

Prenatal and Early Intrapartum Factors

1. Anemia
2. Pre-eclampsia
3. Postterm (42 wks.)
4. Hydramnios
5. IUGR
6. Vaginal bleeding
7. Non-reactive NST/positive or equivocal CST/OCT
8. Induction of labor
9. Premature labor
10. PROM
11. Meconium-stained fluid
12. Abnormal fetal heart tones by auscultation
13. Twins

Labor Risk Factors

1. Prolonged latent phase
2. Dysfunctional labor
3. Secondary arrest of cervical dilatation
4. Prolonged second stage
5. Augmentation of labor

Amniotic Fluid Risk Factors

1. Meconium passage
2. Amnionitis

Abnormal Fetal Heart Rate Risk Factors

1. Tacycardia by auscultation
2. Bradycardia by auscultation
3. FHR decelerations by auscultation

Placental Risk Factors

1. Abruption
2. Previa
3. Bleeding of unknown cause

Anesthesia Risk Factors

1. Paracervical block
2. Epidural block

3. If patient not being continuously monitored, intermittent monitoring may be used at nurse's discretion for evaluation of uterine activity and/or fetal heart rate pattern.

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