Factors Affecting Midwives' Decision to Offer Complementary and Alternative Medicine/Nonpharmacological Pain Relief Methods for Labor and Birth

by

Joyce Hyatt, DNP, CNM

Dissertation Committee

Margaret Kilduff, Ph.D., Chair
Elaine Diegmann, CNM, ND, FACNM
Virginia Cowen, Ph.D.

Approved by the Dissertation Committee

Submitted in Partial Fulfillment
of the requirements for the degree of
Doctor of Philosophy in Health Sciences
Rutgers University
2014

Table of Contents

List of Figures

List of Tables

Acknowledgements

This research project would not have been possible without the contributions of several individuals, and I am truly grateful for all the assistance I received from everyone who has been a part of this journey. First, I want to thank God for the perseverance that he has given me during this period, and throughout my life: "I can do all things through Him who gives me strength." (Philippians 4: 13). I would like to extend my sincere appreciation to the Dr. Meg Kilduff, my chair, for her support, guidance, advice throughout this program, as well as her painstaking effort in proofreading and editing the drafts; Dr. Elaine Diegmann – this would not have been possible without her support, expert midwifery knowledge, and wisdom; Dr. Virginia Cowen for the many hours she spent with me during the analysis of my data – she made statistics seem easy. My appreciation also to Dr. Peijia Zha for her assistance with my data analysis.

I would also like to thank my colleagues and friends for their support and encouragement. I owe a debt of gratitude to my parents, husband, daughters and grandson, without their support and prayers I would not have completed this project. Of course, this would not have been possible without the participation of the American College of Nurse-Midwives (ACNM) research committee and the responding midwives. Thank you.

Finally, to the memory of Theresa Marsico, the visionary nurse-midwife who encouraged me to start the Doctor of Philosophy in Health Sciences program several years ago, and left me with the charge that if I believe in myself and believe in the creator that I could walk on water. Thank you Theresa, your words continue to generate an internal energy that conquers discouragement, and transcends barriers.

Abstract

Complementary and alternative medicine (CAM), which includes evidence-based nonpharmacological pain relief methods, are known to be effective in reducing labor pain and should be available for women who desire them. Unfortunately, these methods are not always offered as options to women in some birth settings. The purpose of this study is to examine how factors/characteristics of the birth setting environment influence a midwife's decision to offer CAM/nonpharmacological pain relief methods to their patients in labor.

Extensive literature review indicates that certain factors/characteristics in the birth setting environment (policies/protocols, the level of technology, knowledge and beliefs of healthcare providers, and the relationship of the midwife with the collaborating obstetrician) influence a midwife's decision to offer CAM/nonpharmacological pain relief methods in labor and birth.

A convenience sample of midwives (n=520), members of the American College of Nurse-Midwives (ACNM), were surveyed via Survey Monkey using a Likert-scale type 51-item questionnaire developed for this study. Midwives were assigned to one of three primary birth settings for data analysis: hospital, birthing center, home birth. Findings indicate that knowledge and beliefs of other healthcare providers (nurses, physicians/residents, midwives) most influence the midwives' decision to use CAM/nonpharmacological pain relief methods in labor in all three birth settings. Midwives working in settings with high technology use report that such an environment influences their decision to use CAM/nonpharmacological pain relief in labor. A midwife's relationship with the collaborating obstetricians was not seen as a major influence on the use of CAM/nonpharmacological pain relief methods in labor and birth. There are statistically significant differences in the use of specific

CAM/nonpharmacological pain relief methods and specific pharmacological pain relief methods across the three birth settings.

The findings indicate that although some factors/characteristics of the birth setting environment influence a midwife's decision to offer CAM/nonpharmacological pain relief methods in labor, they do not prevent midwives from using most of these alternatives during labor and birth. It would appear that the midwives' philosophy of care more than the factors/characteristics of the birth setting environment influence their decision to use CAM/nonpharmacological pain relief methods in labor and birth.

Chapter I: Introduction and Background

Labor pain management is an important aspect of care for childbearing women of all races and cultures. While some women believe that pain of any type should be treated with pharmacological agents including narcotics, others accept labor pain as a natural experience and may desire simple complementary and alternative medicine (CAM) or nonpharmacological methods for labor pain relief. For this reason, many women benefit from the midwifery model of care which emphasizes the treatment of labor and birth in low risk pregnancy as a normal physiologic process and promotes the incorporation of CAM/nonpharmacological methods into midwifery practice (Nurse-Midwives, 2007).

The midwifery model of care guided by the American College of Nurse-Midwives (ACNM) Core Competencies and Philosophy document also stresses the importance of the woman's involvement to empower her to make safe, informed choices. Thus, in an effort to provide safe, competent, cost-effective care and at the same time enhance patients' satisfaction, midwives tend to limit the use of medical interventions and high technology procedures. Instead, they are usually trained to utilize less invasive CAM/nonpharmacological methods to provide comfort such as positioning and mobility (walking, standing, sitting, squatting, hands and knees, use of birthing balls, birthing stools), continuous labor support, and CAM pain relief strategies (relaxed breathing, hydrotherapy (bath and or shower, massage and touch to name a few).

These noninvasive, technology-limited strategies have been shown to reduce the perception of pain in labor and at the same time decrease cost and improve patients' satisfaction (Benfield, 2002; Cluett, Nikodem, McCandlish, & Burns, 2009; da

Silva, de Oliveira, & Nobre, 2009 ; Devane, et al., 2010; Smith, Levett, Collins, & Crowther, 2011; Smith, Levett, Collins, & Jones, 2012). Evidence has also shown that women desire choices but feel limited in their choices of CAM/nonpharmacological approaches for pain management while giving birth (Troy. Carlton, Callister, & Stoneman, 2005; Declercq, Sakala, Cory, & Applebaum, 2006).

Despite the evidence, CAM/nonpharmacological approaches are not always offered to laboring women in all birthing facilities in the United States (Declercq, et al., 2006). Even when midwives are involved in the birthing process they may offer these choices (Everly, 2012a). The question becomes: why do midwives not offer women a choice for pain management that includes CAM/nonpharmacological pain relief methods? This research is based in Greipp's model of ethical decision-making and proposes that a midwife's decision regarding the selection of pain relief methods to offer to patients in labor entails a complex decision-making process that is affected by several factors related to the birth setting environment in which the midwives provide care.

Major factors include the type of policies/protocols in the birth setting environment addressing the use of CAM/nonpharmacological pain relief strategies in labor, the use of technology available in the birth setting environment, the knowledge and beliefs of the healthcare providers or health team (obstetricians, nurses, and midwives themselves), and the relationship of the midwife with the collaborating obstetrician (Troy Carlton, Callister, Christiaens, & Walker, 2009; Everly, 2012b; Greipp, 1992a; Roets, Moru, & Nel, 2005; Stark & Miller, 2009).

Research Aims, Questions, and Hypotheses

The purpose of this study is to examine how factors/characteristics of the birth setting environment influence whether midwives decide offer

CAM/nonpharmacological pain relief to their patients in labor. The research is aimed at exploring how the birth setting environment as a whole affects the decision-making as well as the influence of four major factors in the birth setting environment (policies/protocols, the use of technology, providers knowledge and beliefs, and the midwives-collaborating obstetrician relationship). This study aims to determine how certain factors in the birth setting environment affect the decision-making processes of midwives regarding the offering of evidence-based CAM/nonpharmacological labor pain relief strategies.

The study proposes a major hypothesis and four sub-hypotheses. The major hypothesis is: A midwife's decision to offer CAM/nonpharmacological pain relief methods during labor and birth is affected by the birth setting environment. Specifically, CAM/nonpharmacological pain relief methods are less likely to be offered in a hospital and more likely to be offered in a birthing center or home birth. The four sub-hypotheses for this study are:

1. A midwife's decision to offer CAM/nonpharmacological pain relief methods during labor and birth is affected by the policies/protocols of the birth setting environment. Specifically, the policies/protocols of the hospital birth setting are less supportive of CAM/nonpharmacological pain relief methods than are those in either the birthing center or home births. Therefore, CAM/nonpharmacological pain relief methods are less likely to be offered in a hospital and more likely to be offered in a birthing center or home birth.

2. A midwife's decision to offer CAM/nonpharmacological pain relief methods during labor and birth are affected by the use of technology in the birth setting environment. Specifically, the use of technology in the hospital birth setting is

extensive and correspondingly less supportive of CAM/nonpharmacological pain relief methods than is the use of technology in either the birthing center or home births. Therefore, CAM/nonpharmacological pain relief methods are less likely to be offered in a hospital and more likely to be offered in a birthing center or home birth.

3. A midwife's decision to offer CAM/nonpharmacological pain relief methods during labor and birth is affected by the providers knowledge and beliefs in the birth setting environment. Specifically, the providers knowledge and beliefs in the hospital birth setting are less supportive of CAM/nonpharmacological pain relief methods than are the providers knowledge and beliefs in either the birthing center or home births. Therefore, CAM/nonpharmacological pain relief methods are less likely to be offered in a hospital and more likely to be offered in a birthing center or home birth.

4. A midwife's decision to offer CAM/nonpharmacological pain relief methods during labor and birth is affected by the midwives-collaborating obstetrician's relationship in the birth setting environment. Specifically, the midwives-collaborating obstetrician's relationship in the hospital birth setting is less supportive of CAM/nonpharmacological pain relief methods than is the midwives-collaborating obstetrician's relationship in either the birthing center or home births. Therefore, CAM/nonpharmacological pain relief methods are less likely to be offered in a hospital and more likely to be offered in a birthing center or home birth.

The dependent variable or the outcome being examined is the decision to offer CAM/nonpharmacological pain relief strategies by a midwife in the list of options for labor pain management. The proposed independent variables are the birth setting environment characteristics. Midwives usually work in one of three birth setting environments: hospital, birthing center, or a patient's home (home birth). The birth setting environment characteristics of interest in this study are: policies/protocols, use of technology, providers knowledge and beliefs, and midwives-collaborating obstetricians relationship.

In the home and birthing center environments, policies and protocols are developed by the midwives, and technology use is limited to absolute necessity. The hospital birth setting environment, however, is usually high technology-driven and medically-oriented. The birth setting environment in which midwives practice very often influences the type of care implemented during labor and birth, and can either support or hinder the offering and subsequently the use of evidence-based practices including CAM/nonpharmacological pain management strategies. A qualitative study found that there were several limitations to providing the midwifery model of care in hospital-based birthing facilities compared to midwifery controlled birthing centers (Everly, 2012a). Midwives in another study reported that, although they practiced in a facility that had high technology use, they were able to use research evidence to make decisions based on the desires of their patients (Freeman, Adair, Timperley, & West, 2006). In the latter situation the midwives had a more autonomous collaborative relationship with their participating physician and thus more control over their environment.

The lack of adoption or development of policies and protocols based on scientific research was found to hinder evidence-based patient care management by

nurses and medical staff (Sleutel, Schultz, & Wyble, 2007). The culture of the birth setting environment (facilities with increased cesarean and epidural rate; increased use of technology) was reported by nurses to present barriers to the use of hydrotherapy – a CAM/nonpharmacological pain relief method (Stark & Miller, 2009). Although these two studies referred to nurses and/or physicians, they hold similar implications for the decisions of midwives regarding the provision of CAM/nonpharmacological pain relief management.

Nurses, physicians, and midwives often work as a team in the management of labor and delivery patients. As suggested by Greipp's ethical framework, each provider is equipped with knowledge, experiences and beliefs that can be "learned potential inhibitors" in the offering of pain management techniques (Greipp, 1992b). Nurses' attitudes and knowledge regarding pain management were reported to change for the better after educational intervention in one study (Erkes, Parker, & Carr, 2001). The attitude of some healthcare providers including physicians and residents toward CAM may be negative. These attitudes will no doubt impact midwives' decisions in the offering of CAM/nonpharmacological pain relief in labor.

Collaboration with obstetricians/gynecologists is often necessary for the midwives who practice in a hospital-based birthing facility depending on state regulations. It has been proven that collaborative practices between physicians and midwives with low-technology and increased CAM/nonpharmacological support such as touch resulted in superb maternity care (Shaw-Battista, et al., 2011). The ACNM position statement known as the "Joint Statement of Practice Relations Between Obstetrician-Gynecologists and Certified Nurse-midwives/Certified Midwives" indicates that the working relationship between the collaborating obstetrician and the midwife should exemplify trust, mutual/shared respect, professional accountability and

responsibility ("ACOG Practice Bulletin: 36, July, 2002, Obstetrics Analgesia and Anesthesia," 2002). Needless to say, obstetricians who agree to collaborate with midwives in a birthing center are usually familiar with the midwifery model of care and most likely embrace the midwifery philosophy and practices. On the other hand midwives practicing in a physician dominated hospital-based unit may not have the same relationship with the attending obstetrician and thus may not have the same midwifery autonomy that exists in mutually-respected relationships.

Significance of the Study

As midwives continue to assume a greater role as healthcare providers for women, they have the potential to influence patients to make informed choices regarding their care during labor and the birthing process. Midwives are responsible for providing safe, competent, evidence-based care while emphasizing labor and birth as a normal part of life's cycle ("Our Care of Philosophy, American College of Nurse Midwives," 2010). A major aspect of this healthcare involves offering pain relief methods in collaboration with the women. One hallmark of the midwifery care model stresses the importance of midwives working with women to empower them to make informed choices in all aspect of their care including pain management ("Core Competencies for Basic Midwifery Practice; American College of Nurse-Midwives ", 2007; Rooks, 1997). Pain management includes the use of CAM/nonpharmacological pain management strategies if the laboring woman desires methods.

CAM/nonpharmacological pain relief methods including positioning and mobility (walking, standing, sitting, squatting, hands and knees, use of birthing balls, birthing stools, rocking chair), continuous labor support, and CAM pain relief strategies such as hydrotherapy (shower and bath), massage and touch, and music therapy

have been shown to be effective ways to decrease pain either by itself, or may be used to complement other less effective pain relief methods (Benfield, 2002; Mei-Yueh Chang, Chen, & Huang, 2006; da Silva, et al., 2009 ; Davim, Torres, & de Melo, 2007; Geissbuhler & Eberhard, 2002; Liu, Chang, & Chen, 2010; Phumdoung & Good, 2003; P. Simkin & Bolding, 2004; Smith, et al., 2011; Smith, et al., 2012; Taavoni, Abdolahian, Haghani, & Neysani, 2011b; Thoni, Zech, & Ploner, 2007).

Midwives are responsible for offering these CAM/nonpharmacological methods of pain relief strategies to women in labor, but they are often faced with barriers that limit these provisions especially in hospital-based practices (Everly, 2012). Frequently the different birth setting environments do not have policies/protocols that support the use of these CAM/nonpharmacological methods in labor. In addition, high technology use, knowledge and beliefs of the participating provider team (physicians and nurses) or the midwife him/herself, as well as the relationship that the midwife has with the collaborating obstetrician, can have an impact on the midwives' decision to offer CAM/nonpharmacological pain relief strategies in labor.

Because midwives (like other healthcare providers) are responsible for promoting the implementation of safe evidence-based strategies that are effective and economically advantageous, and since midwives are constantly faced with the demands of making decisions regarding labor pain management, but may be hindered from offering and subsequently using research-proven CAM/nonpharmacological pain relief modalities, it is crucial to understand the characteristics in the different birth setting environments that influence the midwives' decision-making process and to determine whether there are factors that may be perceived as potential barriers that can prevent the offering of CAM/nonpharmacological approaches in labor and birth.

Surprisingly, little research has examined the midwives' decision-making process and even less has been conducted to evaluate the midwives' decision making-process as it relates to the offering of CAM/nonpharmacological pain relief methods in labor. Since labor pain management is an essential aspect of care for the childbearing woman and often times her family, and because of the lack of scientific literature addressing midwives' decision-making regarding CAM/nonpharmacological pain relief strategies in labor, it is of paramount importance that this topic be studied.

Conducting this study provides scientific evidence of the midwives' decision-making process in general and specifically as it relates to CAM/nonpharmacological pain management, which adds to the body of well needed knowledge. The results of this study reinforce the fact that research evidence exists that supports the use of CAM/nonpharmacological pain relief methods in labor, and brings to light factors in the birth setting environment that influence the offering of these methods. The findings serve as a guide to make recommendations for improvement in knowledge and beliefs gaps regarding the use of CAM/nonpharmacological pain relief modalities, and promote the increased offering of and subsequent utilization of these modalities in every, or most birthing facilities. The study is, however, limited by the methodological issues (non-randomized designs and some data limitations). Another limitation of this study is that it is a convenience sample of midwives and the sample may not be reflective of the entire midwifery population.

Chapter II: Review of the Literature

The theoretical framework guiding this study is Greipp's (1992a, 1992b) model of ethical decision-making regarding choices a provider makes in the management of a patient's pain. Although this model addresses the potential decision-making barriers and inhibitors influencing the use of pharmacological therapy (narcotics) for the treatment by nurses of a patient's chronic pain, this study assumes that the model is applicable to the use of CAM/nonpharmacological measures for labor pain management by nurse midwives. Because of the complexity of pain management and the controversy regarding the use of CAM/nonpharmacological pain management in labor, the application of this model should be useful in identifying the reasons that midwives do not use CAM/nonpharmacological pain management for labor pain management. CAM/nonpharmacological pain management therapies are more consistent with midwifery philosophy than pharmacological ones.

Greipp's model of ethical decision-making states that patients experiencing pain need pain relief and that the nurse acts as "data analyst/decision-maker" in providing pain management in collaboration with the patient. See Figure 1. This study focuses on that aspect of the midwife's decision-making that defines the list of pain management options that the midwife decides to offer to the laboring woman in pain before a discussion with the patient occurs. This study, therefore, focuses on the education, code of ethics, and learned potential inhibitors (personal experiences, professional experiences, culture, and belief systems) of the midwife. Of particular interest in this study is the effect of the learned potential inhibitor variables on the midwife's decision to include CAM/nonpharmacological pain management options on the list of pain management options offered to a patient.

Greipp's model of Ethical Decision Making model (removed) copyright material removed

The adaptation and extension of Greipp's model to midwives in this study places emphasis on the personal experiences, professional experiences, culture, and belief systems (learned potential inhibitors) that the nurse midwife experiences in the birth setting environment. See Figure 2. In the birth setting, these learned potential inhibitor variables are represented by the birth setting's policies/protocols and technology use

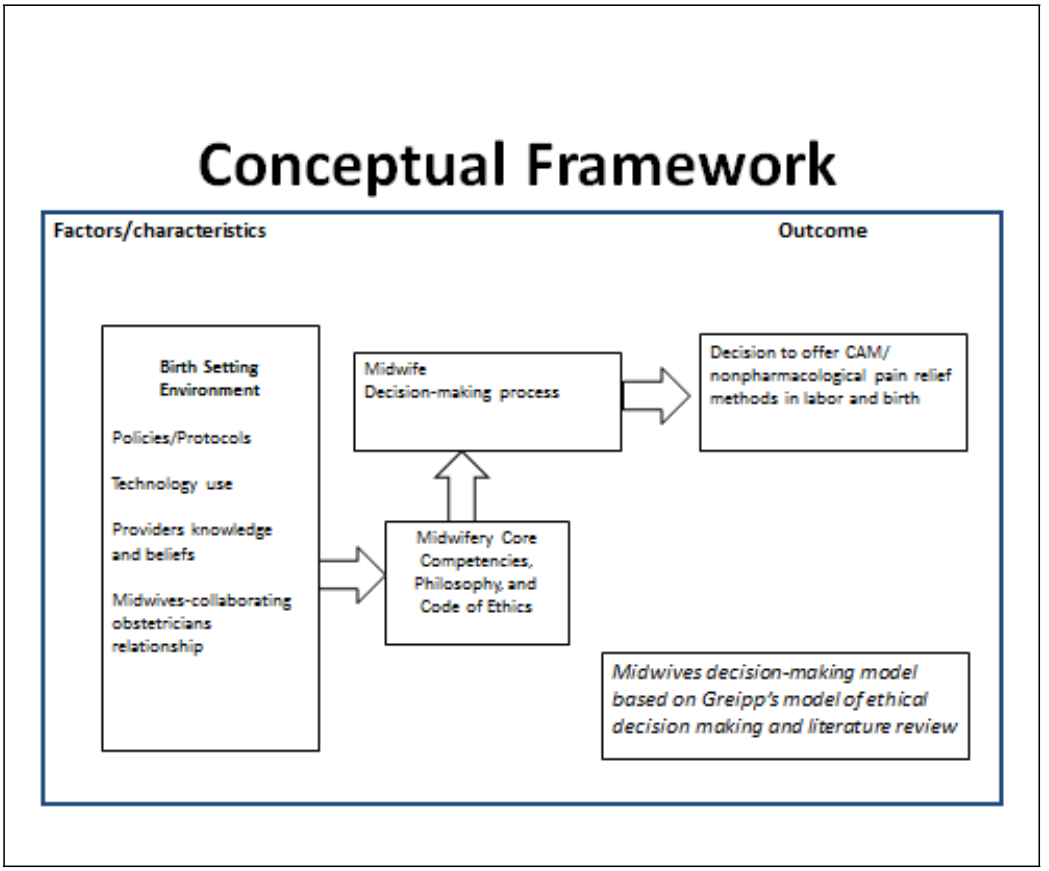

Figure 2. Midwives ethnical decision-making model for pain management based on Greipp's model and literature review

as well as the knowledge and beliefs of providers (i.e., obstetricians, nurses, midwives) and the relationship between the midwife and the collaborating obstetrician. The birth setting environments in which a midwife practices are a hospital, birthing center, or the patient's home (home birth). The conceptual framework indicates that there are certain factors/characteristics (learned potential inhibitors) in the birth setting environment that may facilitate or inhibit a midwife's decision to use CAM/nonpharmacological pain relief methods in labor and birth. These learned potential inhibitor variables are filtered by Midwifery Core Competencies and Philosophies which guide the professional practice of midwifery.

The main purpose of this study is to examine how the learned potential inhibitor variables of the birth setting (policies/protocols, technology use, providers knowledge and beliefs, midwives-collaborating obstetricians relationship) influence the decision of midwives to offer CAM/nonpharmacological pain relief methods in labor. This review identifies literature that addresses midwives' decision-making process and factors that influence the offering or provision of CAM/nonpharmacological pain relief management in laboring women in the three different birth settings. Literature supporting the effectiveness and cost-effectiveness of specific CAM/nonpharmacological pain relief methods (hydrotherapy, position and mobility/birthing ball, music therapy, relaxation, touch and massage) are also explored.

Sources and Search Strategies Used for the Literature Review

An extensive electronic search was conducted to identify all relevant studies regardless of publication status (i.e., published, unpublished, in-press and in-progress) from 1996 to 2012 using the following databases: MEDLINE (1996 to December, 2012), CINAHL (1996 to December, 2012), Journals at OVID, HealthSTAR (1996 to December, 2012), Dissertation Abstracts (1996 to December, 2012) Google, and Google Scholar.

Reference lists of relevant studies were further reviewed and cross-referenced to identify additional research articles. Additional references suggested by advisors were also included. The search terms and keywords labor pain, labor therapy, midwives, home births, birthing centers, hospital birth, birth environment, nonpharmacological, obstetrics, barriers, inhibitors to pain management, complementary and alternative medicine, comfort measures, hydrotherapy, massage

and touch, position and movement, birthing ball, ethical decision-making, beliefs and knowledge, were mapped to MeSH terms and then combined.

Inclusion and Exclusion Criteria

Experimental and quasi-experimental research designs, qualitative, descriptive studies and review articles relevant to and supporting the study topic were included in the review. Articles were limited to English language, published after 1995, and using human subjects. Studies that focused primarily on barriers or facilitators to offering the CAM/nonpharmacological pain relief methods of hydrotherapy, position and mobility/birthing ball, and massage and touch in labor were of particular importance. Articles addressing the effectiveness and or cost-effectiveness of specific CAM/nonpharmacological labor pain management therapies and studies that examined the decision-making relative to pain management choices were also explored.

Labor and Birth Pain Management Strategies in the United States

Prior to the 20th century, labor and birth were considered a normal process and managed with non-invasive, non-interventional techniques. Labor and birth took place at home where continuous labor support (emotional support, information, comfort measures) and other CAM/nonpharmacological pain relief methods were provided by female friends, family members or midwives. In the early 1900s, with the introduction of new technological interventions and the advent of pharmacological labor pain management, labor and birth became “medicalized” and women were relocated from the community/home to hospital-based facilities to give birth (Zwelling, 2008). Once in the hospitals, labor and birth practices became doctor-dominated and pharmacological

pain therapy became the norm for labor pain management. There was a corresponding decrease in the long-used CAM-nonpharmalogical approaches.

A wide variety of labor pain management options are available to women in the United States today including; pharmacological; systemic/parenteral analgesia (opioids), neuraxial anesthesia/analgesia (epidural, spinal, or combined epidural and spinal) ("ACOG Practice Bulletin: 36, July, 2002, Obstetrics Analgesia and Anesthesia," 2002; Brennan, Carr, & Cousins, 2007; Briggs & Wan, 2006; Nelson & Eisenbach, 2005), and CAM/nonpharmacological methods including relaxation and deep breathing, mobility/position change, touch and massage and hydrotherapy (Mei-Yueh Chang, et al., 2006; da Silva, et al., 2009 ; P. Simkin & Bolding, 2004; P. P. Simkin & O'Hara, 2002; Taavoni, et al., 2011b; Thoni, et al., 2007; Tournaire & Theau-Yonneau, 2007). Parenteral analgesics commonly used to manage the pain of labor and birth include Merperidine, Fentanyl, Nalbuphine, Butorphanol, and Morphine. These medications usually cross the placental barrier and may have adverse effects on the mother as well as the fetus (Bricker & Lavender, 2002; Nelson & Eisenbach, 2005). In addition, they do not always achieve complete pain relief and may need to be complemented with other pain relief methods.

Randomized control trials have established that neuraxial anesthesia (epidural/ spinal) provides the most effective relief from labor pain when compared to other methods of pharmacological pain relief. (Bricker & Lavender, 2002; Wong, et al., 2005). It is therefore no wonder that despite the concerns that there is an association between neuraxial analgesia and an increase in the frequency of cesarean section, increase in labor second stage duration, increase in maternal temperature and instrumental deliveries (Leeman, Fontaine, King, Klien, & Ratliffe, 2003; Nystedt, Evardsson, & Willman, 2004), epidural analgesia is one of the most commonly utilized

pain management strategies in the United States. American College of Obstetrics and Gynecology (ACOG) guidelines suggested that epidural anesthesia should not be withheld from women because of the degree of cervical dilation, but should be available to women who desire relief from pain at any stage of labor and so epidural can be given at any stage of labor.("ACOG Practice Bulletin: 36, July, 2002, Obstetrics Analgesia and Anesthesia," 2002)

Pain management guidelines from the Joint Commission on Accreditation of Healthcare (JCAHO) recommend the use of individualized pain control methods while emphasizing the need for provision of pharmacological as well as CAM/nonpharmacological pain relief strategies (Berry & Dahl, 2000; "Joint Commission on Accreditation of Healthcare Organization & National Pharmaceutical Council Inc. Pain: Current Understanding of Assessment, Management and Treatment.," 2001). CAM/nonpharmacological approaches including hydrotherapy (shower and bath), positioning and mobility (walking, standing, sitting, squatting, hands and knees, birthing ball, stool), labor support (including doulas and family members), massage and touch, have been shown to decrease the pain perception in labor and at the same time cut cost and improve patients' satisfaction (Benfield, 2002; Mei-Yueh Chang, et al., 2006; Cluett, et al., 2009; da Silva, et al., 2009 ; Devane, et al., 2010; Taavoni, et al., 2011b).

The effect of a women's position on labor pain reduction has been studied for more than two decades and has been proven to decrease labor pain intensity. Melzack, Belanger, & Lacroix (1991) examined the effect of maternal position on back and front pain during labor and reported that women experienced less pain when they labored in the sitting or standing position compared to the supine or side-lying position. More recent systematic reviews have also agreed with these findings. (Melzack,

Belanger, & Lacroix, 1991; P. Simkin & Bolding, 2004; P. P. Simkin & O'Hara, 2002). Adachi, Shimada, & Usui (2003) studied the effect of maternal position on labor pain during cervical dilation from six to eight centimeters. They concluded that laboring women who assumed the sitting position at six to eight centimeters cervical dilatation had significantly less back pain than women who assumed the supine position (Adachi, Shimada, & Usui, 2003). Women have also been using birthing balls for several years and have attested to the fact that it facilitates mobility, position change, and promotes comfort and pain reduction in labor (Taavoni, Abdolahian, Haghani, & Neysani, 2011a)

Bathing/hydrotherapy, continuous labor support by a trained lay person, intradermal water block position change, touch/massage were all found to be effective, safe methods of pain relief for many women in labor (P. P. Simkin & O'Hara, 2002). A follow-up review examined additional CAM/nonpharmacological methods including breathing and relaxation, childbirth education, aromatherapy and music. The authors reported that many CAM/nonpharmacological pain relief methods were superior or comparable to parenteral opioids in reducing labor pain (P. Simkin & Bolding, 2004). Other studies concluded that women who delivered using water birth required less pain medication than those who had bed or traditional birth (Eberhard, Stein, & Geissbuehler, 2004; Thoni, et al., 2007). A more recent review has also confirmed that relaxation and breathing techniques reduce pain intensity (Smith, et al., 2011).

Massage was found to be a cost-effective intervention that decreased pain and anxiety in labor. Massage was also found to effectively reduce labor pain intensity during the first and second phases of cervical dilatation during labor, and the use of ice massage on acupressure energy meridian point was found to be a safe, effective method on reducing labor pain (Mei-Yueh Chang, et al., 2006; Mei-Yueh Chang,

Wang, & Chen, 2002; Waters & Raisler, 2003). Music and relaxation techniques were also found to be effective in reducing labor pain (Liu, et al., 2010; Phumdoung & Good, 2003; Smith, et al., 2012). Obviously these applications may require more personnel involvement. Hospital-based facilities tend to use more pharmacological pain relief methods, while the birthing centers and home births utilize more natural or CAM/nonpharmacological methods of pain relief.

Overview of the Birth Setting Environment

Given the effectiveness of CAM/nonpharmacological pain relief, the question becomes one of why it is not used more frequently. The major hypothesis of this study is that it is because of the birth setting environment. Midwives usually practice in a variety of settings including a hospital, a birthing center, and the patient's home (home birth). A birthing center can be either freestanding or at the site of an acute care hospital (Walsh & Downe, 2004). Hospitals are physician-controlled, high-technology-use facilities. The birth setting environment in which a woman gives birth can be influential in determining the management of her labor and the type of pain management options offered (Marmor & Krol, 2002; Miller & Skinner, 2012).

Home birth offers labor and birth to low risk women in the comfort of the patient's home (usually a midwifery-controlled setting) with little or no medical intervention. Birthing centers in the United States may be midwifery-directed or managed jointly by midwives and obstetricians (Miller & Skinner, 2012). These birthing centers offer a home-like environment that provides care to low risk pregnant and laboring women. Policies/protocols in the birthing centers and in homes are geared towards labor and birth as a normal process with the availability for medical collaboration, consultation, and emergency care if the need arises. The hospital

birthing unit on the other hand, offers a more medically-focused environment where policies/protocols, strict liability considerations, and requirements from insurance companies can hinder or interfere with the midwifery model of care (Everly, 2012a).

Learned Potential Inhibitor Variable: Policies/Protocols in the Birth Setting Environment

Most healthcare providers including midwives practice under the guidance of the institution's (for which they work) policies/protocols, but often there are no policies/protocols supporting CAM/nonpharmacological pain relief methods in labor, particularly in the hospital-based facilities. Lack of these policies/protocols to support these modalities can affect the midwives' decision to offer CAM/nonpharmacological pain relief methods. Sleutel, Schultz and Wyble (2007) examined nurses' views of factors that hindered intrapartum care and noted that failure to implement research-informed policies inhibited the provision of evidence-based practices including the use of CAM/nonpharmacological pain management in labor.

Institutional policies or the lack of institutional policies addressing CAM/nonpharmacological pain relief methods were also seen as influencing the use of these approaches for labor and birth in another study (Roets, et al., 2005). Based on the results of this study, the midwives admitted that providing CAM/nonpharmacological pain management options were limited because of factors including hospital policies and culture. The authors recommended that policies should be formulated to maximize the use of CAM/nonpharmacological pain relief methods especially in early labor.

Regulatory guidelines and current literature regarding use of CAM/nonpharmacological strategies for pain management in labor are not usually part

of hospital policy. Furthermore, JCAHO which accredits most hospital-based birth facilities, mandates that pain of any type be assessed, treated and again assessed to ensure complete relief from pain ("Joint Commission on Accreditation of Healthcare Organization & National Pharmaceutical Council Inc. Pain: Current Understanding of Assessment, Management and Treatment.," 2001). This, along with the lack of protocols supporting CAM/nonpharmacological pain management further complicate the midwives' and patient's autonomy on decisions regarding CAM/nonpharmacological pain relief in labor.

A qualitative study that explored the factors affecting midwives' labor management decisions in hospital and freestanding birth centers identified that the difference in practice guidelines (policies/protocols) impacted the decision-making processes of the midwives. It was reported that midwives were able to practice like midwives or used the midwifery model of care in the birthing centers, but adherence to the hospital guidelines left them feeling pressured into practicing more like obstetricians than midwives (Everly, 2012a).

Of course, one of the factors driving the development of policies/protocols in healthcare and subsequently the culture of the hospital-based healthcare facility is the need for cost reduction. Thus, the advent of managed care and its complex payment system (in an effort to reduce cost) also influences the policies/protocols of the birth facility and, subsequently, the midwife's decision-making process regarding any recommendation to use CAM/nonpharmacological pain relief methods.

It is ironic however, that in an attempt to reduce healthcare cost, women experiencing labor and birth are expected to spend as short a time as possible in the healthcare facility in which they give birth (usually two days for a natural vaginal birth and about three to four days for a cesarean birth). This emphasis on decreasing cost

may have the opposite effect, as the use of interventions to promote fast “turnover” may, in fact, prolong hospital stay and thereby increase cost. The increased rate in cesarean sections can be attributed to this fact. It is, therefore, important to point out that the use of CAM/nonpharmacological pain management methods and midwifery management have been proven to be cost effective (Devane, et al., 2010; Herman, Craig, & Caspi, 2005; Khunpradit S, et al., 2011; Russo, 2010) and safe.

It is also interesting to note that scientific literature tend to focus on pharmacologic pain relief in labor, and medical organizations including the American College of Obstetrics and Gynecology (ACOG) have developed formal guidelines (policies/protocols) for the use of pharmacological therapy in labor ("ACOG Practice Bulletin: 36, July, 2002, Obstetrics Analgesia and Anesthesia," 2002), but no guidelines have been identified for the offering or support the use of CAM/nonpharmacological approaches.

Learned Potential Inhibitor Variable: Technology Use in the Birth Setting Environment

Stark & Miller (2009) investigated barriers to the use of a CAM/nonpharmacological method (hydrotherapy) by nurses during a patient’s labor, and found that the environment had more effect on the nurse’s decision to offer this method than the nurse’s individual characteristics. The authors concluded that the culture of the facility; high technology hospital versus low technology birthing centers influenced the use of alternative pain management approaches in labor (Stark & Miller, 2009). This study supports the previous findings by Sleutel et al (2007) that the hospital environment and its culture (including technology and intervention level) influences labor and birth management practices.

The use of technology and medical interventions differ in the different types of birth setting environments. Routine use of continuous fetal monitoring in hospitals allows for less movement on the part of the laboring women, while in the birthing centers (and home environment) women are monitored intermittently allowing for freedom of movement when not being monitored. Birth setting environments with high technological, high epidural use and medical interventions have been identified as factors affecting the use of the midwifery model of care, and thus the provision of CAM/nonpharmacological pain management in labor (Everly, 2012b; Sleutel, et al., 2007; Stark & Miller, 2009).

The non-interventional, waiting, individualized pain management approach used by midwives can be time consuming, and may not satisfy the requirements of the insurance companies to get women in and out of the delivery room as quickly as possible. Everly (2012), reports that time constraints are more rigid in the hospital compared to the birthing center, thus midwives feel rushed or hurried into making decisions regarding labor management in an effort to speed up labor and birth.

Learned Potential Inhibitor Variable: Providers Knowledge and Beliefs in the Birth Setting Environment

The birthing environment and its resources including the employees' (administration and staff) attitudes/beliefs have been indicated as barriers to the provision of evidence-based non-interventional labor management in a study conducted by Sleutel et al., (2007). The knowledge and beliefs of healthcare providers (midwives, physicians, and nurses) influence the use of CAM/nonpharmacological pain relief in labor. According to Greipp (1992), providers are equipped with beliefs, training, and professional experiences that may be potential

inhibitors or facilitators in the utilization of various pain relief methods (Greipp, 1992a). Few studies address midwives' knowledge and beliefs relative to CAM/nonpharmacological pain relief methods in labor. One study, however, reports that only 85% of midwives in Lesotho (a country surrounded by South Africa) were knowledgeable about CAM/nonpharmacological pain management options (Roets, et al., 2005).

Based on the recommendations of the Midwifery Core Competencies, most midwives in the United States should have training in CAM/nonpharmacological pain management strategies ("Core Competencies for Basic Midwifery Practice; American College of Nurse-Midwives ", 2007). A prospective descriptive study which examined the provision of CAM/nonpharmacological approaches by certified nurse-midwives (CNMs), and how they gained knowledge regarding CAM/nonpharmacological approaches, contradicted this reasonable assumption. Results indicate that, although 78% of CNMs in this study offered CAM/nonpharmacological approaches in their practices when possible, the majority (51%) gained knowledge through workshops or self-study while 58% did not have any formal training (Hastings-Tolsma & Terada, 2009).

An interesting finding in this study is that 64% of CNMs admit that, although their midwifery education provided some form of training in CAM/nonpharmacological approaches, it did not provide specific CAM/nonpharmacological content, and for the programs that did provide specific CAM/nonpharmacological content, 81% stated that the content was integrated into coursework. This study brings to light the possibility that not all midwifery programs provide standardize CAM/nonpharmacological pain relief education. Therefore, some midwives may have limited or no knowledge of some areas of CAM/nonpharmacological pain management methods, which would no

doubt influence their ability to provide informed choices for pain management to patients. Lack of knowledge would also compromise their commitment to offering these strategies and ultimately their commitment to evidence-based practice.

Hall, McKenna & Griffiths (2012), conducted a systematic review and found that midwives who incorporated CAM/nonpharmacological approaches into their practices believed that these modalities were safe alternatives to pharmacological and technology interventions, that they promote a woman's autonomy and involvement in her care, and also improved their own professional autonomy. The authors also found that while there is considerable support for the use of CAM/nonpharmacological management practices, educational opportunities for CAM/nonpharmacological approaches and research regarding CAM/nonpharmacological use in midwifery are limited (Hall, McKenna, & Griffiths, 2012). This lack of educational opportunity no doubt results in lack of knowledge which could affect a midwife's decision to offer these approaches.

As with midwifery knowledge, there is a paucity of literature that addresses an obstetrician's knowledge and beliefs regarding CAM/nonpharmacological pain relief methods in labor especially in the United States. Attitudes may range from being positive (acceptance and practice) to negative/skepticism. Only recently has CAM/nonpharmacological content been introduced into some medical education and some medical students have been found to be skeptical about the proficiency of providers/practitioners of CAM/nonpharmacological approaches (Ditte, Schulz, Ernst, & Schmid-Ott, 2011). Although this was not specific to obstetrics, similar reaction can be seen by obstetricians, residents and medical students doing their obstetric rotation. Negative attitudes by obstetricians will no doubt have an impact on the midwives' decision to offer CAM/nonpharmacological pain management approaches in labor.

In a study examining the general attitudes toward CAM/nonpharmacological approcahes in gynecologic oncology physicians, it was determined that female doctors showed more positive attitudes toward the use of CAM/nonpharmacological approaches versus male physicians. Discrepancies regarding attitudes toward CAM/nonpharmacological use existed between different physicians, leading the authors to recommend education of physicians regarding CAM/nonpharmacological methods in order to improve healthcare (Rhode, et al., 2008).

Although positive attitudes toward CAM/nonpharmacological approaches were observed by some obstetrics/gynecologic physicians and their patients in a significant study, the views of efficacy of these therapies differed between patients and the physicians. Limitation of formal CAM academic programs in the United States and the need for physicians to educate themselves about CAM/nonpharmacological approaches is cited as contributory factors to these discrepancies between physicians and patients (Furlow, Patel, Sen, & Liu, 2008). While these studies did not specifically address labor pain management, similar problems exist in the obstetrics arena, which will influence the decision-making process regarding CAM/nonpharmacological strategies for pain management in labor and birth.

Like many patient care providers, nurses' knowledge and beliefs toward CAM/nonpharmacological labor pain management vary. Nursing students and nurses had limited knowledge of CAM in several studies (Laurenson, MacDonald, McCready, & Stimpson, 2006; Uzun & Tan, 2004; Yildirim, et al., 2010). Attitudes of some nurses were noted to vary depending on their beliefs, roles and practices (Rojas-Cooley & Grant, 2009). Although most midwives in the United States are nurses, their roles are somewhat different. Midwives in the United States are usually responsible (in collaboration with the patient) for deciding the type of pain relief approach to offer,

while the nurse usually carries out the prescribed approach or physician's order. Nurses' beliefs and knowledge do affect the way they practice and their willingness to provide CAM/nonpharmacological pain relief methods.

With the increase use of CAM/nonpharmacological methods in general, it is important for academic institutions to develop appropriate educational courses that will prepare healthcare providers with adequate knowledge to provide informed choices to patients. This will decrease the lack of provider knowledge that may be considered a barrier. A comparison of medical and nursing students' knowledge and attitudes to CAM, showed that nurses attitudes toward CAM were more positive than medical students but that both groups of students had limited knowledge about CAM modalities (Yildirim, et al., 2010).

Learned Potential Inhibitor Variable: Midwives-Collaborating Obstetricians Relationship in the Birth Setting Environment

As with most advanced practice nurses (APN), some midwives are expected to practice with a collaborating physician. The relationship of the midwife with this collaborator can affect how he/she practices in labor and delivery, which will in-turn affect the decision to offer or not to offer CAM/nonpharmacological pain management approaches. In 2011, a joint committee formed between American Congress of Obstetricians and Gynecologists (ACOG) and the American College of Nurse-Midwives (ACNM) approved an agreement entitled the "Collaborative Practice Between Obstetricians and Midwives". It was the expectation that this agreement would foster mutual collaboration between the two disciplines (Waldman & Kennedy, 2011) .

High quality perinatal outcomes and cost-savings have been cited as some benefits of obstetrician-midwifery collaborative efforts, but clarity regarding who has authority for a midwifery-managed patient has been challenging at times (Darlington, McBroom, & Warwick, 2011; DeJoy, et al., 2011; Shaw-Battista, et al., 2011). It was thought that having a distinct collaborative agreement between the involved practitioners might alleviate this problem.

A good collaborative relationship between midwives and obstetricians fosters more autonomy for the midwives which will in turn enhance patient outcomes. A survey done in Germany, where obstetricians oversaw patient care, indicated that although CAM/nonpharmacological methods were largely used by midwives, but not by the obstetricians, the midwives' belief in the modalities and perception of their effectiveness, along with patients' demands and the type of working relationship with the obstetricians resulted in the wide use of CAM/nonpharmacological methods in labor and delivery (Münstedt, Brenken, & Kalder, 2009). Although the obstetricians did not use CAM/nonpharmacological methods, their support was necessary for the midwives' autonomy.

In United States hospital-based facilities, attending obstetricians are usually assigned to be the medical personnel "in charge" of labor and delivery. If the obstetrician working on a particular day is considered "midwifery friendly" or supportive of the use of CAM/nonpharmacological pain relief methods for labor pain management, then practicing the midwifery model is usually possible and the midwife may be allowed enough autonomy to offer CAM/nonpharmacological pain management options. On the other hand if the obstetrician's knowledge, beliefs, and attitudes toward CAM/nonpharmacological methods are negative, or if there is minimal support for the midwifery model of care, the midwife's decision-making ability is

compromised and the application of midwifery care pain management techniques (including CAM/nonpharmacological methods) is limited (Everly, 2012).

Obstetricians who voluntarily choose to collaborate with midwives in a birthing center or home birth are usually comfortable with the midwifery model of care and tend to share a special relationship. This relationship allows for a level of autonomy on the part of the midwives (Everly, 2012a). In the hospital, however, midwives may not have that shared relationship and collaboration with the obstetricians and thus may have limited or no control over the labor pain management decisions. Of course, there are some obstetric-midwifery collaborative practices that are very successful, but these practices report that there has to be open lines of communication, mutual trust and respect, understanding and accepting each profession's differences in philosophies, and using detailed practice agreements (DeJoy, et al., 2011; Shaw-Battista, et al., 2011; Skinner & Foureur, 2010).

Similarities and Differences in the Decision-Making Processes and Factors of Midwives Versus Obstetricians Regarding the Choice of Pain Medication

The fact that obstetricians and midwives have differing views on the concept of labor and birth may be a contributing factor to the differences in their decision-making processes regarding pain management. As previously indicated, midwives and the midwifery model of care subscribe to the concept that labor and birth are part of life's normal cycle (in women) and the goal is to work with women to maintain normalcy, avoiding unnecessary medical interventions and at the same time promoting patient satisfaction ("Our Care of Philosophy, American College of Nurse Midwives," 2010). The focus is on maintaining a normal birth process. Alternatives to interventions are often utilized by midwives in order to promote normal, safe, patient-centered and family-oriented care.

On the other hand obstetricians usually subscribe to a medical model of care focusing the possibility of deviations from the norm (in the form of complications). With the medical model, the focus is on expecting and being ready to act as soon as possible when deviation occurs (Adams, 2006). Thus, obstetricians tend to use much more intervention even when the birth is proceeding normally and are more likely to use pharmacological interventions versus CAM/nonpharmacological methods.

In examining existing decision-making theories and their usefulness to midwifery practice as well as midwifery education, Jefford Fahey, and Sundin (2011) suggest that Hypothetico-Deductive Theory is the most dominant clinical decision-making approach used by the health science disciplines. Medical clinical reasoning is based on this approach and is the one most often used by doctors, which includes obstetricians. Based on empirical testing and rationality, this model seeks to rationally connect clinical presentations with illnesses and illnesses with interventions or treatments (Jefford, Fahy, & Sundin, 2011). While this approach is relevant for disease focus conditions, it may not be appropriate for normal physiologic events such as labor and childbirth. The authors surmise that in using this medical clinical reasoning decision-making process, doctors'/obstetricians' emotions and patients' feelings and/or thoughts are usually excluded from their decision-making processes which may lead to less than optimal decisions.

Midwives, on the other hand believe that the emotions/thoughts and feelings of the laboring woman, her partner or other family members are relevant and should not be excluded during the midwifery decision process. The suggested dominant approach used by midwives (most of whom are nurses) is Patricia Benner's Intuitive-Humanistic Theory. This model focuses on intuition and how knowledge gained from experience can guide the decision-making process. Benner found that the nurse with

less clinical experience used more hypothetico-deductive reasoning than nurses who are considered experts (Benner, 1984) .

Because midwifery care goes beyond nursing care however, midwives tend to use some aspects of medical clinical reasoning and hypothetico-deductive reasoning in order to make decisions. Jefford et al. (2011) admits that existing nursing or medical theories do not satisfy the decision-making needs of the midwives (Jefford, et al., 2011). Some organizations including the International Confederation of Midwives (ICM) and the Australian Nursing Midwifery Council (ANMC) have provided framework or flowchart for midwifery care, but they do not clearly define the decision-making process for labor pain management. In addition, no studies have been found that focused specifically on midwives' decision-making strategies in the management of labor pain.

Porter et al (2007) examined midwives' decision-making strategies in the use of technology. They found that instead of adopting the "new professional" (midwifery) approach which stressed shared decision-making control between the patient and the professional/midwife or the "classical professional control" (control by the midwives with little or no input from the patients), that the major approach to decision-making used by midwives in the use of technology was the bureaucratic method, which meant that they adhered to the institution's written procedures and policies (Porter, Crozier, Sinclair, & Kernohan, 2007). Similarly, midwives tend to follow hospital protocols with regard to pain management.

Hypotheses

When making decisions regarding the offering of CAM/nonpharmacological approaches for pain management in labor and birth, midwives are influenced by

several factors in the birth setting environment. The major ones are the learned potential inhibitor variables of policies/protocols, use of technology, providers knowledge and beliefs, and the midwife-collaborating obstetrician relationship. Since labor pain management is an essential aspect of care to the woman and often times her family, and because of the lack of scientific literature addressing midwives decision-making regarding CAM-nonpharmacological, it is extremely important that this topic be studied. The following major hypothesis and four sub-hypotheses are examined in this study.

Major Hypothesis

A midwife's decision to offer CAM/nonpharmacological pain relief methods during labor and birth is affected by the birth setting environment. Specifically, CAM/nonpharmacological pain relief methods are less likely to be offered in a hospital and more likely to be offered in a birthing center or home birth.

Sub-Hypotheses

The learned potential inhibitor variables in the birth setting environment affect a midwife's decision to offer CAM/nonpharmacological pain relief methods during labor and birth. There are four sub-hypotheses for this study.

1. A midwife's decision to offer CAM/nonpharmacological pain relief methods during labor and birth is affected by the policies/protocols of the birth setting environment. Specifically, the policies/protocols of the hospital birth setting are less supportive of CAM/nonpharmacological pain relief methods than are those in either the birthing center or home births. Therefore, CAM/nonpharmacological pain relief methods are less likely to be offered in a hospital and more likely to be offered in a birthing center or home birth.

2. A midwife's decision to offer CAM/nonpharmacological pain relief methods during labor and birth are affected by the use of technology in the birth setting environment. Specifically, the use of technology in the hospital birth setting is extensive and correspondingly less supportive of CAM/nonpharmacological pain relief methods than is the use of technology in either the birthing center or home births. Therefore, CAM/nonpharmacological pain relief methods are less likely to be offered in a hospital and more likely to be offered in a birthing center or home birth.

3. A midwife's decision to offer CAM/nonpharmacological pain relief methods during labor and birth is affected by the providers knowledge and beliefs in the birth setting environment. Specifically, the providers knowledge and beliefs in the hospital birth setting are less supportive of CAM/nonpharmacological pain relief methods than are the providers knowledge and beliefs in either the birthing center or home births. Therefore, CAM/nonpharmacological pain relief methods are less likely to be offered in a hospital and more likely to be offered in a birthing center or home birth.

4. A midwife's decision to offer CAM/nonpharmacological pain relief methods during labor and birth is affected by the midwives-collaborating obstetrician's relationship in the birth setting environment. Specifically, the midwives-collaborating obstetrician's relationship in the hospital birth setting is less supportive of CAM/nonpharmacological pain relief methods than is the midwives-collaborating obstetrician's relationship in either the birthing center or home births. Therefore, CAM/nonpharmacological pain relief methods are less

likely to be offered in a hospital and more likely to be offered in a birthing center or home birth.

Chapter III: Methods

A survey was developed based on expert recommendations and the protocol was approved by the Rutgers University Institutional Review Board. See Appendices. The subjects in this study were members of the American College of Nurse-Midwives (ACNM) who attended births within the past twelve months. Permission was sought from the ACNM Research Committee to conduct the survey. Emails inviting midwives to participate in the online survey were sent by ACNM to all 4,700 active ACNM members.

Instrumentation (Survey) and Data Collection

A 51-item Likert scale questionnaire was developed to explore how the characteristics of the birth setting influence a midwife's decision to offer CAM/nonpharmacological pain relief methods. Midwives were also asked about their practice setting: hospital, birthing center, and patient's home (home birth). A set of questions was asked about the different variables that could promote or serve as barriers to CAM/nonpharmacological pain relief in the different settings.

A list of eleven CAM/nonpharmacological therapies was developed to provide evidence of access to or use. The list included: deep breathing/relaxation techniques, massage, acupressure, mobility (ambulation, birthing ball, rocking chair, birthing bar, birthing stool), and hydrotherapy. Additional information was sought about collaboration with labor support (doula) and relationships with colleagues (other healthcare providers) in the three facilities.

In order to reach a diverse sample of midwives across the United States, Survey Monkey (an internet survey platform) was used to administer this survey. The

survey instrument was pilot tested by a panel of expert midwives for readability prior to the survey distribution by ACNM. The data collected via Survey Monkey were coded with special identification numbers to protect anonymity. The respondents completed the survey online between August 12, 2014 and September 30, 2014.

Variables and Operational Definitions

The following terms/variables are defined operationally/conceptually in the study:

Midwives

Midwives refer to the sample/participants being studied. They include nurse-midwives (CNM) and certified midwives (CM) who are trained to care for pregnant women throughout their pregnancies, during labor and birth, up to six weeks post-partally. The CNMs have additional training as a nurse and can care for women throughout the lifespan, offering gynecological care, preconception care, and other care. The definition of a midwife according to the International Confederation of Midwives (ICM), states that a midwife is an individual who has successfully completed a recognized course of study and obtained the requirements to be legally registered or licensed to practice midwifery in the designated country/area.

The midwife is expected to be equipped with the knowledge and skills to take care of women throughout the life cycle which includes prenatal care and labor. A midwife can conduct birth and delivery independently, give postpartum care, and be able to care for the neonate/infant. Midwife responsibilities also include providing preventive care, offering counseling and health education to mother and family, detecting abnormal conditions in mother and baby, procuring medical aid, and providing emergency management when needed. Midwives focus on the normalcy of

pregnancy, labor and birth, and may practice in settings including the home, community, hospitals, birthing units, and clinics (Midwives, 2011).

Nurses

Nurses are primarily registered nurses (RNs) and some licensed practical nurses (LPNs) who are trained to work in labor and delivery providing nursing care to women in labor.

Obstetricians

Obstetricians are physicians: medical doctors (MDs) or doctors of osteopathic medicine (DOs) who are trained to provide obstetrical and gynecological care to women and their families.

Birth Setting Environment

Birth setting environment refers to the environment in which the woman gives birth. This includes hospital-based facilities with tight obstetrics control and high technology, high epidural, high intervention use with more “medicalized births”. Birthing centers on the other hand offer a more relaxed, home-like environment and are usually midwifery-controlled with less technology use and more supportive care. Home birth occurs in the home environment with similar control as the birthing center.

Providers Knowledge and Beliefs

Providers knowledge and beliefs refers to the providers (obstetricians, nurses, midwives) knowledge (which can be defined as the information or understanding acquired from education or experience) and beliefs (feeling of certainty or a conviction the an idea or phenomena is true) (Merrian-Webster).

Midwives-Collaborating Obstetricians Relationship

Midwives-collaborating obstetricians’ relationship refers to the working association between the two professionals. This association may be one of mutual

understanding and respect in which case the working relationship is considered favorable and midwives have some control over the pain management decisions. On the other hand there may be minimal trust and/or respect between the two in which case midwives' decision autonomy relative to pain management approaches is limited or non-existent. The ACNM's "Joint Statement of Practice Relations Between Obstetrician-Gynecologists and Certified Nurse-midwives/Certified Midwives" suggest that the working relationship between the collaborating obstetrician and the midwife should be one of trust, mutual/shared respect, professional accountability and responsibility ("ACOG Practice Bulletin: 36, July, 2002, Obstetrics Analgesia and Anesthesia," 2002).

Core Competencies for Basic Midwifery Practices

Core Competencies for Basic Midwifery Practices are the guiding principles that influence midwifery practices. The core competencies explain the basic knowledge, behaviors, and skill sets expected from a beginning practitioner.

Midwifery Code of Ethics

Midwifery Code of Ethics is documentation describing the moral obligations or ethical principles that guide midwifery practices.

Midwifery Philosophy

The *Midwifery Philosophy* of care is a set of beliefs that affirm women's strength and power and the normalcy of childbirth.

CAM/Nonpharmacological Pain Relief Methods

Complementary and alternative medicine (CAM) is defined by the National Center for Complementary and Alternative Medicine (NCCAM) is a set of various health and medical practices that includes the use of products that are not usually used in conventional medicine. Complementary medicine may be used with conventional medicine, but alternative medicine usually replaces conventional medicine. CAM is usually categorized into groups and includes natural products, manipulative and body-based methods, and mind and body therapy (NCCAM, 2008)**.** CAM methods considered for labor pain management for this study include massage and touch, relaxation and distraction, and hydrotherapy (emersion in water). Mobility (using the birthing ball and assuming positions) to facilitate labor and reduce pain may also be considered as CAM.

Nonpharmacological pain relief methods are usually non-drug, non-invasive strategies that midwives, nurses, and sometimes family members and/or the patients can implement. They may be used as alternatives (P. Simkin & Bolding, 2004) or as an adjunct to conventional medicine and include methods such as massage and touch, imagery, biofeedback, music, progressive muscle relaxation, and therapeutic touch to name a few (Chlan, 2002). "Nonpharmacological pain relief methods" is a term often used interchangeably with "complementary and alternative medicine" (CAM).

Decision-Making

Decision-making can be defined as the process of choosing options aimed at problem resolution and goal achievement (Kerrigan, 1991). Decision-making can be seen as "choice-based" or "rule-based" according March & Heath (1994). Choice-based decision-making is making choices by logically choosing from available alternatives based on evaluation or preferences. Rule-based decision-making is making choices by pursuing or adhering to rules appropriate for the situation encountered (March & Heath, 1994).

Methodological Assumptions and Limitations of the Study Method

The survey is new and, although piloted for readability, may not always accurately measure the intended concepts (factors in the birth settings that influence midwives decision to offer CAM/nonpharmacological pain relief methods in labor) and thus may pose a threat to internal validity. The design is non-experimental which usually has its own inherent risk for threats to internal and external validity.

Survey Participant Demographics

A total of 4,700 ACNM members who are either certified nurse-midwives (CNMs) or certified midwives (CMs) were eligible to participate in the study in 2013. Of the 4,700 midwives (members of ACNM) who were sent the survey request via email, 21 emails were returned undelivered/address not found and 642 of the remaining 4,679 ACNM members (13.7%) responded. Of these, 142 surveys were incomplete so the data from these participants were excluded from the analysis. A total of 520 (11.1%) of all ACNM members answered all questions and were included in the analyses.

The general characteristics of the midwives whose returned surveys were included in the analyses are largely similar to the general characteristics of ACNM members as a whole when using a 2011 ACNM annual data population survey for comparison (Schuiling, Sipe, & Fullerton, 2013). See Table 1. Respondents are also equally distributed geographically across the United States. Only one respondent reports an address outside of the United States. Of the remaining 519 respondents, 125 (24 percent) report being from Census Region 1 (Northeast), 114 (22 percent) are from Census Region 2 (Midwest), 134 (26 percent) are from Census Region 3 (South), and 146 (28 percent) are from Census Region 4 (West).

Assignment of a Birth Setting Environment

Because midwives often work in multiple settings, respondents were asked to indicate the percentage of their work that was typically performed in hospitals, birthing centers, and patient homes (home birth) (Questions 9 and 10). Respondents were then assigned a primary birth setting group using the following guidelines: 1) those midwives who practiced 90% or more in the hospital birth setting were assigned to the hospital group; 2) those remaining were assigned to either the birthing center group or home birth group depending on the site in which they reported the largest number/percentage of births. These guidelines resulted in 430 respondents (82.7%) in the hospital group, 51 respondents (9.8%) in the birthing center group, and 39 respondents (7.5%) in the home birth group.

Table 1. Survey participant demographics compared to ACNM membership demographics

Demographic Variable	**Survey Participants (n=520)**	**ACNM Membership (n=2230)**
Age in Years		
Mean (Standard Deviation)	48.7 (11.6)	51.2 (11.3)

Minimum - Maximum	25 - 72	24 - 86
Years Certified as a Midwife		
Mean (Standard Deviation)	13.9 (9.9)	16.1 (10.5)
Minimum - Maximum	1 - 41	0 - 61
Gender: n (percent)		
Female	515 (99.0)	2186 (98.0)
Male	5 (1.0)	29 (1.3)
Race/Ethnicity: n (percent)		
White	492 (94.6)	2034 (91.2)
Black/African American	9 (1.7)	81 (3.6)
Asian/Pacific Islander	4 (0.8)	4 (0.2)
Other	8 (1.5)	45 (2.0)
Mixed-race	7 (1.3)	0 (0.0)
American Indian/Alaskan Native	0 (0.0)	13 (0.6)
Highest Level of Education: n (percent)		
Certificate/diploma	9 (1.7)	0 (0.0)
Associate's Degree	1 (0.2)	35 (1.6)
Bachelor's Degree	20 (3.8)	116 (5.2)
Master's Degree	444 (85.4)	1824 (81.8)
Doctorate	44 (8.5)	208 (9.3)

Chapter IV: Results

Frequency statistics were used to analyze data relevant to the major hypothesis and four sub-hypotheses. Chi Square analysis and analysis of variance (ANOVA) were used to examine potential relationships between the influential factors, settings, and use of pain relief methods. The sub-hypotheses are analyzed first.

Policies/Protocols of the Birth Setting Environment: Data Analysis

The relevant sub-hypothesis for this analysis is: A midwife's decision to offer CAM/nonpharmacological pain relief methods during labor and birth is affected by the policies/protocols of the birth setting environment. Specifically, the policies/protocols of the hospital birth setting are less supportive of CAM/nonpharmacological pain relief methods than are those in either the birthing center or home births. Therefore, CAM/nonpharmacological pain relief methods are less likely to be offered in a hospital and more likely to be offered in a birthing center or home birth.

Most midwives practice under the guidelines (policies and protocols) established by the birth settings in which they work. The policies/protocols in the birth setting can, therefore, influence midwives' decision to offer CAM/nonpharmacological pain relief during labor. However, only 103 (20%) of total number of respondents felt that policies/protocols most influenced their ability to use CAM/nonpharmacological pain methods in labor (Questions 48 and 49). See Figure 5. Respondents were also asked whether practice setting policies/protocols supported or hindered their ability to offer CAM/nonpharmacological pain relief during labor (Questions 46 and 47).

Respondents were asked "In which of your practice settings are there policies or protocols that support your ability to offer nonpharmacological pain relief during labor?" Responses were available from only 397 (76.3%) of the sample. It is not

known why only 397 midwives responded to this question. All 51 respondents in the Birthing Center Group responded compared to 35 (89.7%) in the Home Birth Group and 311 (72.3%) in the Hospital Group. The response to this question was analyzed by primary birth setting environment group. Respondents could check more than one answer to this question so the total number of responses to this question is 447. See Table 2.

Overwhelmingly, the midwives who responded to this question indicated that they believed that there were policies and protocols in at least one setting that supported the use of CAM/nonpharmacological pain relief during labor. Hospitals were viewed as most supportive although midwives in each group felt their own primary birth setting environment was the most supportive. A statistically significant difference was noted overall among the birth settings in regard to supportive policies and protocols for the use of CAM/nonpharmacological pain relief during labor (χ^2 (8) = 451.2; p = 0.000).

Respondents were also asked “In which of your practice settings are there policies or protocols that hinder your ability to offer nonpharmacological pain relief during labor?” All 520 midwives answered this question. The response to this question was analyzed by primary birth setting environment group. Respondents could check more than one answer to this question so the total number of responses to this question is 522. See Table 3.

Table 2. Birth setting environment policies/protocols support CAM/nonpharmacological pain relief during labor by midwife's primary birth setting environment

Midwife's Primary Birth Setting Environment	Policies and Protocols Support CAM/Nonpharmacological Pain Relief During Labor				Total
	Hospital Supportive	Birthing Center Supportive	Home Birth Supportive	No Setting Supportive	
Hospital Group: n (percent)	228 (72.6%)	1 (0.3%)	1 (0.3%)	84 (26.8%)	314 (100.0%) Responses from 311 Respondents
Birthing Center Group: n (percent)	28 (32.6%)	36 (41.8%)	11(12.8%)	11 (12.8%)	86 (100.0%) Responses from 51 Respondents
Home Birth Group: n (percent)	10 (21.3%)	5 (10.6%)	24 (51.1%)	8 (17.0%)	47 (100.0%) Responses from 35 Respondents
Total: n (percent)	266 (59.5%)	42 (9.4%)	36 (8.1%)	103 (23.0%)	447 (100.0%) Responses from 397 Respondents
χ^2 **(8) = 451.2;** p **= 0.000**					

Only about one third of the midwives believed that there were policies and protocols in at least one setting that hindered the use of CAM/nonpharmacological pain relief during labor. It is important to note that there were some respondents who acknowledged the potential impact of policies and protocols for home births. About 5 percent of midwives in the Home Birth group felt that policies and protocols hindered them from offering CAM/nonpharmacological pain relief during labor. A statistically significant difference was noted overall among the birth setting environments in regard to policies and protocols that hinder the use of CAM/nonpharmacological pain relief during labor (χ^2 (8) = 31.0; p = 0.000).

Table 3. Birth setting environment policies/protocols hinder CAM/nonpharmacological pain relief during labor by midwife's primary birth setting environment

Midwife's Primary Birth Setting Environment	Policies and Protocols Hinder Nonpharmacological Pain Relief During Labor				Total
	Hospital Hinders	Birthing Center Hinders	Home Birth Hinders	No Setting Hinders	
Hospital Group: n (percent)	155 (36.0%)	1 (0.2%)	0 (0.0%)	275 (63.8%)	431 (100.0%) Responses from 430 Respondents
Birthing Center Group: n (percent)	18 (35.3%)	1 (2.0%)	0 (0.0%)	32 (62.7%)	51 (100.0%) Responses from 51 Respondents
Home Birth Group: n (percent)	15 (37.5%)	1 (2.5%)	2 (5.0%)	22 (55.0%)	40 (100.0%) Responses from 39 Respondents
Total: n (percent)	188 (36.0%)	3 (0.6%)	2 (0.4%)	329 (63.0%)	522 (100.0%) Responses from 520 Respondents
χ^2 **(8) = 31.0;** p **= 0.000**					

Technology Use in the Birth Setting Environment: Data Analysis

The relevant sub-hypothesis for this analysis is: A midwife's decision to offer CAM/nonpharmacological pain relief methods during labor and birth are affected by the use of technology in the birth setting environment. Specifically, the use of technology in the hospital birth setting is extensive and correspondingly less supportive of CAM/nonpharmacological pain relief methods than is the use of technology in either the birthing center or home births. Therefore, CAM/nonpharmacological pain relief methods are less likely to be offered in a hospital and more likely to be offered in a birthing center or home birth.

In examining the literature, high technology/high intervention use (including high epidural, high intravenous narcotic use which indicates decreased patient mobility) was identified as one of the barriers to providing CAM/nonpharmacological pain relief

during labor. Technology use in the birth setting can, therefore, influence midwives' decision to offer nonpharmacological pain relief during labor. Midwives were asked on the survey how often they used an epidural for labor support (Question 45). They were also asked how often they used intravenous narcotics for labor support (Question 47). Midwives in the Hospital Group are the highest users of technology (epidural and intravenous narcotics) compared to either the Birthing Center Group or the Home Birth Group. See Figure 3.

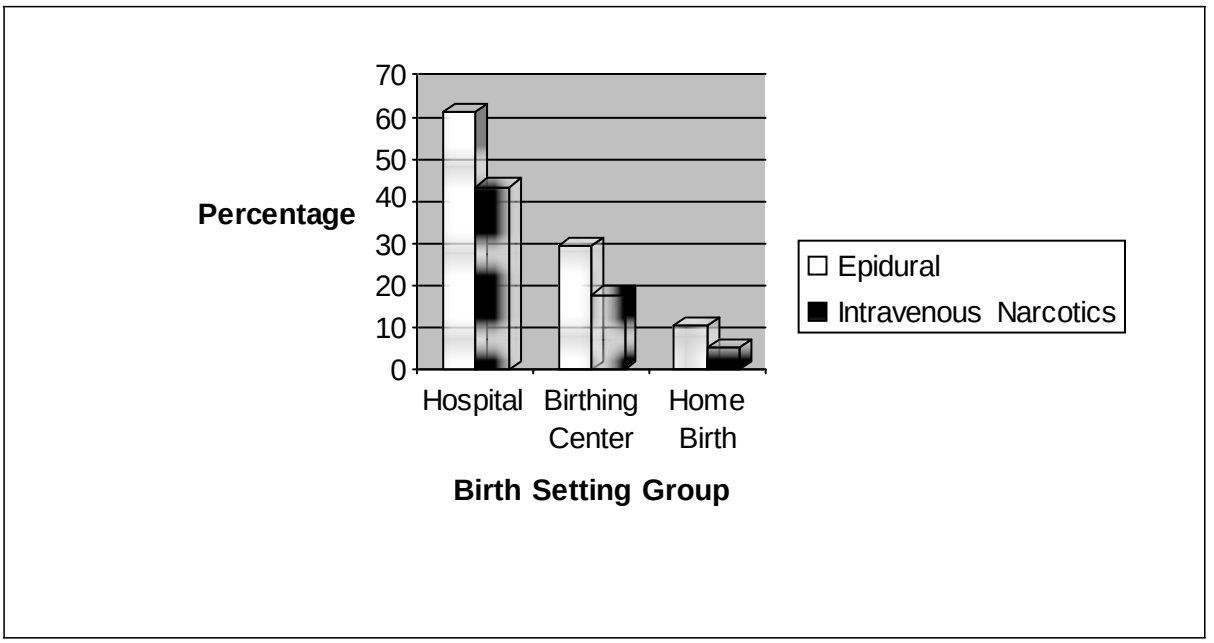

Figure 3. Percentage of midwives in each birth setting group who reported using an epidural or intravenous narcotics for pain relief during labor

A one-way analysis of variance (ANOVA) was used to evaluate the technology use difference across the three birth setting groups. See Table 4. Overall there were significant differences in technology use (use of an epidural or intravenous narcotics) for the three birth setting groups (F (2, 517) = 129; p = 0.000). Furthermore there were significant differences between groups: between the Hospital Group and Birthing Center Group technology use, between the Hospital Group and Home Birth Group,

and between the Home Birth Group and the Birthing Center Group. Technology use is higher in the Hospital Group and lowest in the Home Birth Group.

Table 4. Reported use of an epidural or intravenous narcotics for pain relief during labor by midwife's primary birth setting group

Midwife's Primary Birth Setting Group	n	Mean	Standard Deviation	95% Confidence Interval for Mean	
				Lower Bound	Upper Bound
Hospital Group	430	4.88*	1.14	4.77	4.99
Birthing Center Group	51	3.35*	1.77	2.85	3.85
Home Birth Group	39	1.82*	1.67	1.28	2.36
Total	520	4.50*	1.54	4.37	4.63
*** $p < 0.05$** **F (2, 517) = 129; p = 0.000**					

Although patient homes are not equipped with provisions for either an epidural or intravenous narcotics administration, about 15% of midwives in the Home Birth Group indicated use of either an epidural or intravenous narcotics. The results also indicate that the setting with the highest technology use is also the setting with the lowest CAM/nonpharmacological pain relief method use. The study also identified that the Hospital Group used less CAM/nonpharmacological pain relief methods than either the Birthing Center Group or the Home Birth Group. See Figure 4.

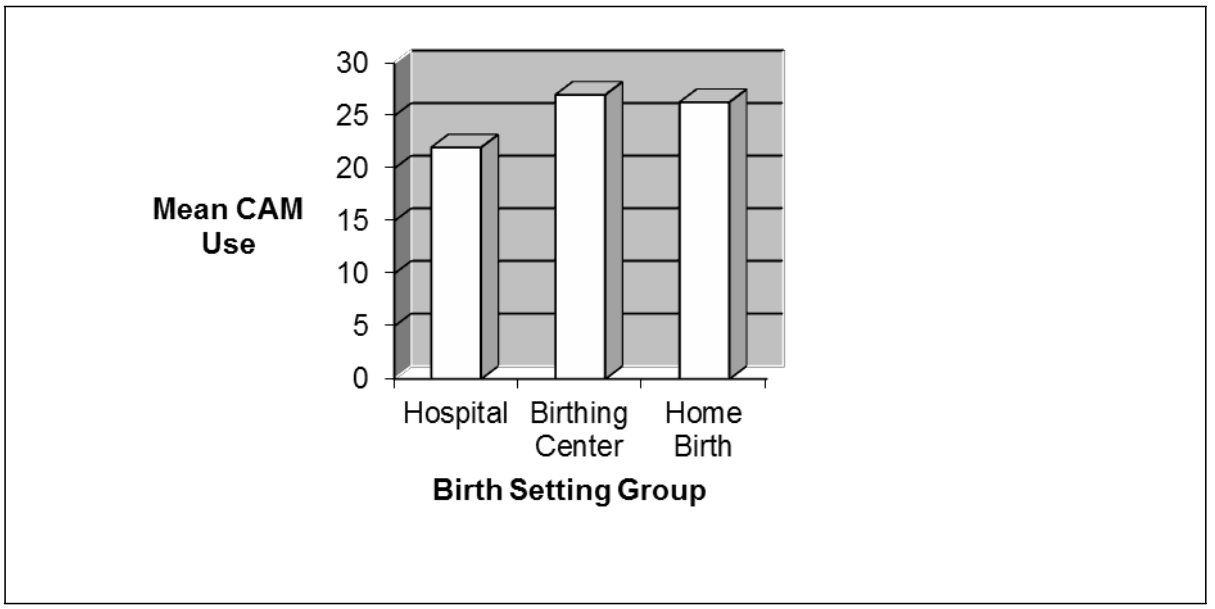

Figure 4. Mean use of CAM/nonpharmacological pain relief methods by midwife's primary birth setting group

Providers Knowledge and Beliefs in the Birth Setting Environment: Data Analysis

The relevant sub-hypothesis for this analysis is: A midwife's decision to offer CAM/nonpharmacological pain relief methods during labor and birth is affected by the providers knowledge and beliefs in the birth setting environment. Specifically, the providers' knowledge and beliefs in the hospital birth setting are less supportive of CAM/nonpharmacological pain relief methods than are the providers knowledge and beliefs in either the birthing center or home births. Therefore, CAM/nonpharmacological pain relief methods are less likely to be offered in a hospital and more likely to be offered in a birthing center or home birth.

Survey respondents were asked about the influence of other healthcare providers on their decision to offer CAM/nonpharmacological pain therapies (Questions 48 and 49). Approximately 43% (n = 223) of the total number of survey respondents (n = 520) indicated that the knowledge and beliefs of other healthcare

providers (nurses, physicians/residents, other midwives) had the most influence on their decision to use CAM/nonpharmacological pain relief management. See Figure 5.

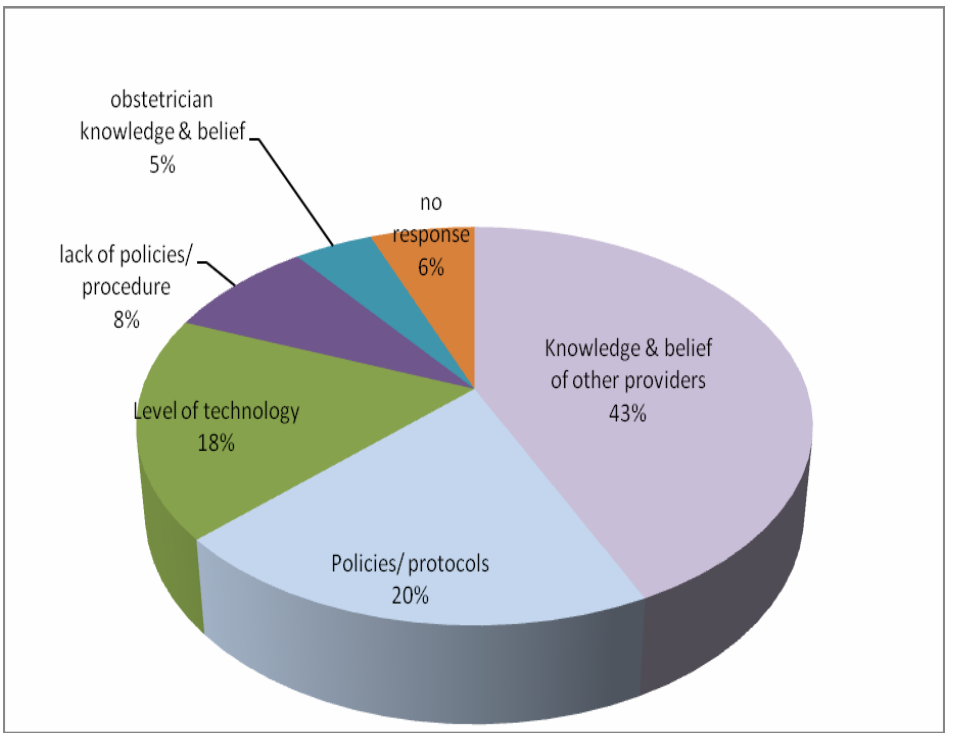

Figure 5. Overall factors that influence use of CAM/nonpharmacological pain relief methods during labor

The three birth setting groups (Hospital Group, Birthing Center Group, and Home Birth Group) were also evaluated individually. The results were consistent with what was found with the group as a whole: the knowledge and beliefs of the healthcare providers were most influential. But unlike the total number of midwives, the Hospital Group midwives felt that technology level was more influential than policy/protocols in their decision to offer CAM/nonpharmacological therapies. See Figure 6.

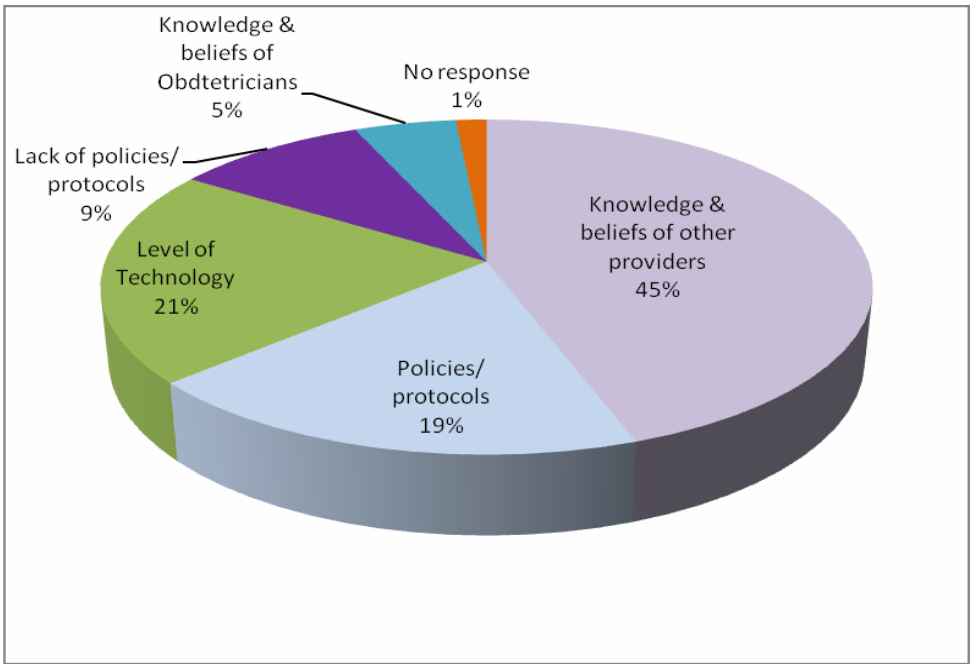

Figure 6. Factors that most influence use of CAM/nonpharmacological pain relief methods during labor in the hospital group

Chi-square analysis indicates that overall there is a significant difference in the influence of healthcare providers on the midwives' decision to use CAM/nonpharmacological pain relief during labor across the three primary birth setting groups (χ^2 (2) =7.4, p = 0.025). Of major importance is the result that 45% (n=194) of the Hospital Group (total n = 430) reported that the knowledge and beliefs of healthcare providers had the most influence on their decision to offer/use CAM/nonpharmacological pain relief methods in labor and birth. This is statistically significant as indicated by Chi-square analysis (χ^2 (5) =118.5, p < 0.001).

Midwives-Collaborating Obstetrician Relationship in the Birth Setting Environment: Data Analysis

The relevant sub-hypothesis for this analysis is: A midwife's decision to offer CAM/nonpharmacological pain relief methods during labor and birth is affected by the

midwives-collaborating obstetrician's relationship in the birth setting environment. Specifically, the midwives-collaborating obstetrician's relationship in the hospital birth setting is less supportive of CAM/nonpharmacological pain relief methods than is the midwives-collaborating obstetrician's relationship in either the birthing center or home births. Therefore, CAM/nonpharmacological pain relief methods are less likely to be offered in a hospital and more likely to be offered in a birthing center or home birth.

The relationship between a midwife and a collaborating obstetrician is important to for the expectant mother and likely to have a substantial influence on what pain relief options are offered during labor in some hospital settings. In this study however, only 4.5% (n= 20) of the total respondents in the Hospital Group indicated that the obstetrician knowledge and beliefs were most influential compared to 5% (n= 2) in the Birthing Center Group (Questions 48 and 49).

A follow-up question was directed only at midwives who worked with a collaborating obstetrician about the level of influence on the midwives' decisions. Of the total respondents (n = 520), approximately 5% (n= 25) indicated that the obstetrician absolutely or significantly influenced the midwives' decisions to offer CAM/nonpharmacological pain relief during labor (Question 50).

CAM/Nonpharmacological and Pharmacological Pain Relief Methods Used by Midwives in a Birth Setting Environment: Data Analysis

The relevant hypothesis for this analysis is the major hypothesis: A midwife's decision to offer CAM/nonpharmacological pain relief methods during labor and birth is affected by the birth setting environment. Specifically, CAM/nonpharmacological pain relief methods are less likely to be offered in a hospital and more likely to be offered in a birthing center or home birth.

As previously discussed, several pain relieving modalities are available to midwives in the different birth settings. To provide insight into what pain relief methods are used by midwives, specific information was sought about eleven CAM/nonpharmacological therapies, labor support, and pharmacological pain relief methods (Questions 20 – 41). The list of therapies was drawn from the literature and included methods requiring equipment (i.e., rocking chair, birthing ball, birthing bar, hydrotherapy tub, birthing stool), supplies (i.e., therapeutic music), hands-on treatments (i.e., massage, acupressure), mental/cognitive approaches (i.e., guided imagery, deep breathing/relaxation) and ambulation. Specific information was also sought about the incorporation of support persons, in particular the used of doulas for labor support (Questions 17 and 18), and separate questions regarding use of pharmacological pain relief (intravenous narcotics and epidurals) were also queried (Questions 42 – 45).

Although several CAM/nonpharmacological therapies appear to have been widely used by midwives, the extent to which they were used varied depending on the settings in which the midwives practiced. Of the midwives in the Hospital Group (n = 430), a large percentage (87%) always and frequently using ambulation for labor support. For those in the Birthing Center Group (n = 51), 96% always and frequently used ambulation, and of the midwives in the Home Birth Group (n = 39), 100% always and frequently used ambulation as a means of CAM/nonpharmacological therapy. The other most widely used method was deep breathing/relaxation technique.

The current study shows that CAM/nonpharmacological therapies requiring equipment such as rocking chairs, and birthing bars were more likely to be used by the Hospital Group or Birthing Center Group compared to Home Birth Group. There is limited use of the rocking chair by the Home Birth Group. The only equipment that

was significantly less utilized by the Hospital Group compared to the other settings was the birthing stool. It should be noted that the use of deep breathing/relaxation techniques and acupressure were not significantly different across the settings, but acupressure was less commonly used. See Table 5.

Therefore, although the setting with high technology use had more available resources or a wider array of CAM/nonpharmacological pain relief modalities (birthing stool, rocking chair, birthing ball), these were not used as frequently by the Hospital Group compared to the Birthing Center Group and Home Birth Group. Interestingly, a large percentage of midwives in the Home Birth Group (67%) acknowledge that they never or seldom used birthing bars, while 29% of those in the Hospital Group and 41% of those in the Birthing Center Group also never used this method.

Table 5. CAM/nonpharmacological and pharmacological methods always or frequently used for labor support

Method	Primary Birth-Setting Group			χ^2	*p*
	Hospital (n=430)	Birthing Center (n=51)	Home Birth (n=39)		
Ambulation	375 (87.2%)	49 (96.1%)	39(100%)	8.9	0.012
Deep Breathing/Relaxation	360 (83.7%)	48 (94.1%)	36 (92.3%)	5.6	0.062
Birthing Ball	297 (69.1%)	44 (86.3%)	29 (74.4%)	6.8	0.034
Hydrotherapy	186 (43.3%)	45 (88.2%)	36 (92.3%	65.2	0.000
Rocking Chair	210 (48.8%)	23 (45.1%)	5 (12.8%)	18.7	0.000
Massage	136 (31.6%)	25 (49.0%)	28 (71.8%)	28.9	0.000
Music Therapy	128 (29.8%)	29 (56.9%)	20 (51.3%)	20.5	0.000
Birthing Bar	127 (29.5%)	10 (19.6%)	4 (10.3%)	8.3	0.015
Guided Imagery	87 (20.2%)	11 (21.6%)	15 (38.5%)	7.0	0.030
Doulas	46 (10.7%)	17 (33.3%)	20 (51.3%)	56.6	0.000
Acupressure	63 (14.7%)	8 (15.7%)	8 (20.5%)	1.0	0.617
Birthing Stool	13 (3.0%)	11 (26.1%)	10 (25.6%)	50.8	0.000
Epidural	267 (61.2%)	15 (29.4%)	4 (10.3%)	53.8	0.000
Intravenous Narcotics	186 (43.3)	9 (17.6%)	2 (5.1%)	31.9	0.000

Guided imagery was seldom or never used by 51% of those in the Hospital Group while the corresponding percentage for those in the Birthing Center Group and Home Birth Group was 27% and 18% respectively. See Figure 6. Doulas were little used by those in the Hospital Group. Acupressure and birthing stools were never or seldom used by midwives in all practice settings. Approximately 63% of midwives in the Hospital Group acknowledged that they never or seldom used acupressure and 81% never or seldom used birthing stools. Approximately 49% of those in the Birthing Center Group never or seldom using acupressure and 35% never or seldom used birthing stools. According to the responses of midwives in the Home Birth Group, 41%

admitted that they seldom or never used acupressure and a similar amount, never or seldom used birthing stools for labor support.

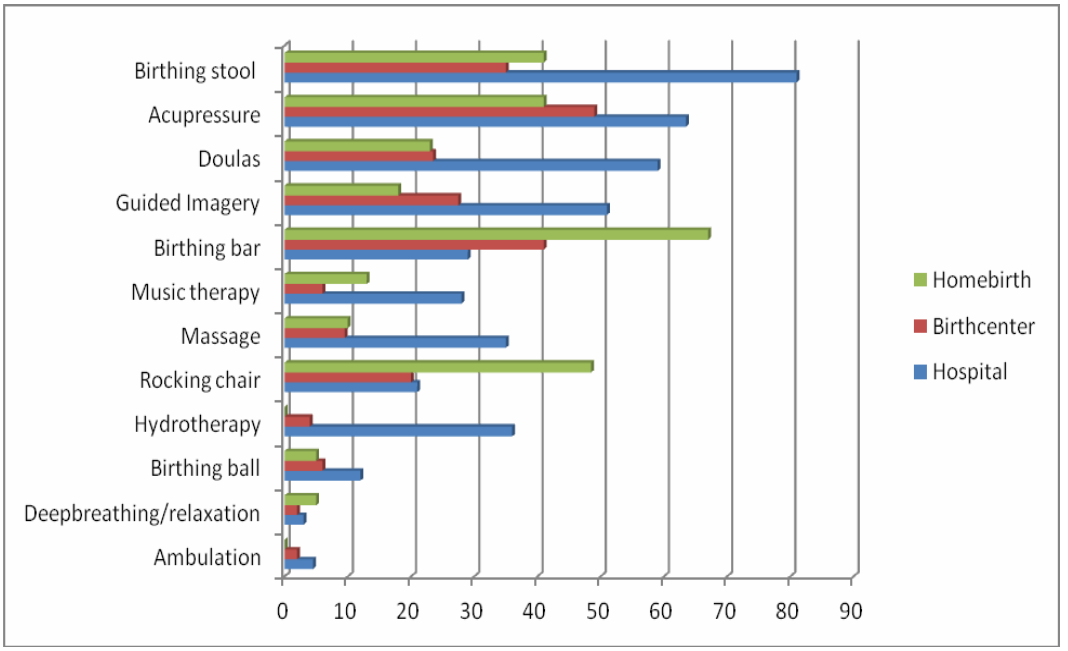

Figure 7. CAM/nonpharmacological therapies seldom and never used for labor support

Summary of Data Analysis Results

Hospitals were viewed as having the most supportive policies/protocols although midwives in each group felt their own primary birth setting environment was the most supportive. A statistically significant difference was noted overall among the birth settings in regard to supportive policies and protocols for the use of CAM/nonpharmacological pain relief during labor. Only about one-third of the midwives believed that there were policies and protocols in at least one setting that hindered the use of CAM/nonpharmacological pain relief during labor. A statistically significant difference was noted overall among the birth setting environments in regard to policies and protocols that hinder the use of CAM/nonpharmacological pain relief during labor.

Overall there were significant differences in technology use (use of epidural or intravenous narcotics) for the three birth setting groups. Furthermore, there were significant differences between groups: between the Hospital Group and Birthing Center Group, between the Hospital Group and Home Birth Group, and between the Home Birth Group and the Birthing Center Group. Technology use is higher in the Hospital Group and lowest in the Home Birth Group. The results also indicate that the setting with the highest technology use is also the setting with the lowest CAM/nonpharmacological pain relief method use. The study also identified that the Hospital Group used less CAM/nonpharmacological pain relief methods than either the Birthing Center Group or the Home Birth Group.

There is a statistically significant difference in the influence of healthcare providers on the midwives' decision to use CAM/nonpharmacological pain relief during labor across the three primary birth setting groups. Of major importance is the statistically significant result that 45% (n=194) of the Hospital Group (total n = 430) reported that the knowledge and beliefs of healthcare providers had the most influence on their decision to offer/use CAM/nonpharmacological pain relief methods in labor and birth.

Although several CAM/nonpharmacological therapies appear to have been widely used by midwives, the extent to which they were used varied depending on the settings in which the midwives practiced. Of the midwives in the Hospital Group (n = 430), a large percentage (87%) always and frequently using ambulation for labor support. For those in the Birthing Center Group (n = 51), 96% always and frequently used ambulation, and of the midwives in the Home Birth Group (n = 39), 100% always and frequently used ambulation as a means of CAM/nonpharmacological therapy. The other most widely used method was deep breathing/relaxation technique.

Therefore, although the setting with high technology use had more available resources or a wider array of CAM/nonpharmacological pain relief modalities (birthing stool, rocking chair, birthing ball), these were not used as frequently by the Hospital Group compared to the Birthing Center Group and Home Birth Group.

Chapter V: Discussion, Conclusions and Recommendations

Overall, the results of the data analysis indicate support for the major hypothesis but did not support two of the four sub-hypotheses.

Policies/Protocols of the Birth Setting Environment: Discussion of Data Analysis Results

The relevant sub-hypothesis for this discussion of data analysis results is: A midwife's decision to offer CAM/nonpharmacological pain relief methods during labor and birth is affected by the policies/protocols of the birth setting environment. Specifically, the policies/protocols of the hospital birth setting are less supportive of CAM/nonpharmacological pain relief methods than are those in either the birthing center or home births. Therefore, CAM/nonpharmacological pain relief methods are less likely to be offered in a hospital and more likely to be offered in a birthing center or home birth.

Although about one-third of responding hospital midwives felt that there were policies/protocols that hindered their use of nonpharmacological pain therapy in labor and birth, overall results of the data analysis indicate that most hospital midwives felt that there were policies/protocols that did support their use of nonpharmacological pain therapy in labor. Therefore this sub-hypothesis was **not supported** by this study. This is a surprising finding as previous studies indicate that policies/protocols in hospital settings were potential barriers to using alternate modalities in labor and birth. It is interesting to note that only about 76% of the participating midwives responded to the question regarding support while the total 520 answered the question about what hindered use of nonpharmacological pain relief methods. It may be that midwives who

felt some hindrances did not answer this question at all because they may have some ambiguity regarding these policies/protocols, or there may be lack of policies/protocols altogether. It might also be that there might be policies that supported in some instances or that there may have been policies that hindered free choices in the use of CAM/nonpharmacological pain relief methods.

Technology Use in the Birth Setting Environment: Discussion of Data Analysis Results

The relevant sub-hypothesis for this discussion of data analysis results is: A midwife's decision to offer CAM/nonpharmacological pain relief methods during labor and birth are affected by the use of technology in the birth setting environment. Specifically, the use of technology in the hospital birth setting is extensive and correspondingly less supportive of CAM/nonpharmacological pain relief methods than is the use of technology in either the birthing center or home births. Therefore, CAM/nonpharmacological pain relief methods are less likely to be offered in a hospital and more likely to be offered in a birthing center or home birth.

The result of this data analysis supports this sub-hypothesis that the use of technology is higher in the hospital setting than in the birthing center and home birth settings and that this difference is significant. There is also evidence that there is less use of CAM/nonpharmacological pain management methods in the hospital setting than in the birthing center and home birth settings. This is not an unexpected finding since the use of technology (epidural and narcotics) limits mobility and thus affects the ability to do mobility dependent activities such as ambulation, use of birthing ball, hydrotherapy among other nonpharmacological modalities.

Providers Knowledge and Beliefs in the Birth Setting Environment: Discussion of Data Analysis Results

The relevant sub-hypothesis for this discussion of data analysis results is: A midwife's decision to offer CAM/nonpharmacological pain relief methods during labor and birth is affected by other providers' knowledge and beliefs in the birth setting environment. Specifically, the providers' knowledge and beliefs in the hospital birth setting are less supportive of CAM/nonpharmacological pain relief methods than are the providers' knowledge and beliefs in either the birthing center or home births. Therefore, CAM/nonpharmacological pain relief methods are less likely to be offered in a hospital and more likely to be offered in a birthing center or home birth.

Based on the results of the data analysis, midwives were most influenced by the knowledge and beliefs of other healthcare providers (nurses, physicians, other midwives). Not surprising is the finding that more midwives in the hospital settings felt that providers' knowledge and beliefs significantly influenced their decision to use CAM/nonpharmacological pain management for labor support. This is supportive of the sub-hypothesis and in keeping with other studies that suggest that other providers' knowledge and beliefs may be associated with constraints in the use of CAM/nonpharmacological pain relief for labor and birth. It is interesting to note that although nurses were not singled out in this study, they are usually the most significant "other provider" that midwives usually interact with during labor and birth. Therefore it may be safe to say that the knowledge and beliefs of others including the nurses do affect the use of CAM/nonpharmacological pain relief methods in labor.

Midwives-Collaborating Obstetrician Relationship in the Birth Setting Environment: Discussion of Data Analysis Results

The relevant sub-hypothesis for this discussion of data analysis results is: A midwife's decision to offer CAM/nonpharmacological pain relief methods during labor and birth is affected by the midwives-collaborating obstetrician's relationship in the birth setting environment. Specifically, the midwives-collaborating obstetrician's relationship in the hospital birth setting is less supportive of CAM/nonpharmacological pain relief methods than is the midwives-collaborating obstetrician's relationship in either the birthing center or home births. Therefore, CAM/nonpharmacological pain relief methods are less likely to be offered in a hospital and more likely to be offered in a birthing center or home birth.

Surprisingly, the data analysis did not support this sub-hypothesis. The majority of midwives did not see the midwives-collaborating obstetrician's relationship in the hospital birth setting as less supportive of CAM/nonpharmacological pain relief methods than in the other two birth settings. As a matter of fact, results showed that only 5% of both the total number of responding midwives and the total number of hospital midwives agreed that obstetricians' knowledge and beliefs influenced their decision to use CAM/nonpharmacology pain relief methods. This is an unexpected finding, but may be attributed to the fact that midwives may select collaborative obstetricians who share their philosophy of care.

CAM/Nonpharmacological and Pharmacological Pain Relief Methods Used by Midwives in a Birth Setting Environment: Discussion of Data Analysis Results

The relevant hypothesis for this discussion of data analysis results is the major hypothesis: A midwife's decision to offer CAM/nonpharmacological pain relief methods during labor and birth is affected by the birth setting environment.

Specifically, CAM/nonpharmacological pain relief methods are less likely to be offered in a hospital and more likely to be offered in a birthing center or home birth.

This hypothesis was partially supported as results indicate that there are significant differences in the use of CAM/nonpharmacological pain relief methods across all settings. Particularly, the hospital midwives used significantly more epidural and intravenous narcotics/technology and less CAM/nonpharmacological pain relief options than the birthing center and home birth midwives. Knowledge and beliefs of other healthcare providers were also found to significantly influence midwives use of CAM/nonpharmacological pain relief methods in labor and birth. Two of the sub-hypotheses were not supported as most midwives felt that there were policies/protocols that supported, more than hindered, their use of CAM/nonpharmacological pain methods in labor and birth. Midwives' relationship with obstetricians were also not seen as significantly influencing midwives decision to use CAM/nonpharmacological pain relief methods in labor.

An interesting finding is that the knowledge and beliefs of healthcare providers more than the other factors in the birth settings significantly influence the use of nonpharmacological pain relieving methods. This is in keeping with the Greipps' model of ethical decision-making in pain management that emphasizes personal and professional experiences (knowledge), culture, and belief systems as major "learned potential inhibitors" to pain management in labor.

Limitations of the Study

There are several limitations to this study. First, this was a convenience sample of midwives. It is likely that midwives who answered the survey questions are ones who are interested in this topic and do use CAM/nonpharmacological pain relief

methods in labor. Those midwives who do not use these modalities may not have been interested in responding to the survey. Second, the instrument developed for this survey is a new survey and, although piloted for readability, it is not an established tool. Third, there were some questions that had multiple answers resulting in the inability to separate the birth setting to which the answer applied. Fourth, the three groups of midwives (Hospital Group, Birthing Center Group, Home Birth Group) were unevenly distributed and fifth, there is potential for non-responders' bias as no follow-up was made with non- responders.

Generalizability of the Study

Although this survey used a convenience sample, the respondents were representative of the ACNM membership. Therefore, the general findings of this study can be considered representative and generalizable across all midwifery birth settings. On the other hand, as indicated in the limitations, the midwives who responded to the survey may be only the ones who are interested in using CAM/nonpharmacological pain relief methods and thus missing the ones who have no interest in using these alternate therapies. This bias could affect the generalizability of the study.

Summary

Characteristics in the birth setting environment influence, but do not present a significant obstacle to, the midwives decision to offer CAM/nonpharmacological in labor and birth. Midwives report that they do decide to offer a wide variety of CAM/nonpharmacological pain relief methods for labor and birth across all birth setting environments. It appears that the midwives' philosophy of care/birth process influences their decision to use CAM/nonpharmacological pain relief methods in labor

and birth more than the birth setting environmental variables of policy/protocols, use of technology, providers knowledge and beliefs, and the midwives-collaborating obstetrician relationship.

Several factors could account for this outcome. The fairly recent collaborative practice agreement between obstetricians and midwives approved in 2011 by ACOG and ACNM (Waldman & Kennedy, 2011) may contribute to a more mutually respected relationship between midwives and obstetricians allowing for more midwifery autonomy. Although the patient factor was not examined during this study (since the study was more concerned about offering choices to women who wanted CAM/nonpharmacological pain relief in labor), it could also be that the request/desires of the patients influenced the midwives decision-making ability more than the characteristics in the birth setting environment. This would be in keeping with a study in which midwives who worked in a high technology labor environment were able to make decisions based on their patients' desires rather than being influenced by the available technology (Freeman, et al., 2006).

There are some important factors that were identified during this study including the fact that there are significant differences in the use of CAM/nonpharmacological pain relief methods across all settings. The midwives in the Hospital Group used significantly more epidural and intravenous narcotics and less CAM/nonpharmacological pain relief methods than midwives in either the Birthing Center Group or the Home Birth Group. Although hospitals seem to have more CAM/nonpharmacological equipment (more choices for women) than home births, they may not be utilized due to the culture of the institution. No doubt the culture of the hospital birth setting environment (high technology, low CAM/nonpharmacologal use) may be accepted or embraced by some midwives.

Some respondents, but not the majority of respondents, acknowledged that they feel hindered by policies/protocols in offering CAM/nonpharmacological pain methods in labor. Some even acknowledged that they felt supported (more than hindered) by policies/protocols. It is possible that today's midwives feel more accepted in their birth setting environments and have a certain level of autonomy to work with their patients in a manner suited to their training and philosophy. This is an unexpected finding based on previous studies that reported that policies/protocols are significant barriers to implementing care in labor and delivery by midwives and nurses (Everly, 2012; Roets, Moru, & Nel, 2005; Sleutel et al., 2007). Less critical were the lack of policies/protocols at all.

The level of technology/medical intervention defined in this study as high epidural, high intravenous narcotics use were reported by midwives to significantly influence their use of CAM/nonpharmacological pain relief methods in labor and birth. The midwives who work in high technology/high intervention settings are inclined to use less CAM/nonpharmacological pain management, although they have more access to an array of options (e.g., birthing bars and rocking chairs). No previous studies have examined the effects of technology/medical interventions on midwives' decision to offer CAM/nonpharmacological therapies in labor, but this study's finding that high technology/high intervention influences CAM/nonpharmacological use is consistent with previous research that found that the culture of the birth setting environment using high technology/high intervention influenced nurses' decision to offer CAM/nonpharmacological methods in labor (Stark & Miller, 2009).

The perception that the knowledge and beliefs of other healthcare providers significantly influences the use of CAM/nonpharmacological remedies in labor and delivery may be a sign that some of the other members of the healthcare team may

not be supportive of midwives or the midwifery model of care. Although support from other team members may be lacking, it is rewarding to know that there is perceived good relationship with collaborating obstetricians which is essential for good collaborative management. This finding agrees with one study that suggests that collaborating physicians who work with midwives are usually comfortable with the midwifery care and this may account for the perception that they (collaborating obstetricians) have less influence on their decision to use CAM/nonpharmacological pain relief methods (Everly, 2012).

In this sample of midwives, the findings indicate that overall the four identified workplace/birth-setting characteristics did influence their decisions to offer CAM/nonpharmacological pain relief in labor to some extent. Overall, the knowledge and beliefs of other health care provider were identified as the major influencing characteristics followed by the level of technology used in the hospital group. The lack of policies and protocols, and the relationship with the obstetrician did not seem to have as much influence on their decision to offer the alternative pain relief methods.

Conclusions, and Suggestions for Future Research

The findings of this survey suggest that the characteristics in the birth setting environment can influence the types of pain relief therapies which midwives decide to offer during labor and birth, but that these characteristics are not significant barriers to the offering of CAM/nonpharmacological modalities. Midwives still manage to use a wide variety of CAM/nonpharmacological pain relief methods in labor though they were used less in the hospital than in the birthing center and home settings. Similar to the Greipps model of ethical decision making theory (Greipps, 1992), the knowledge

and beliefs of healthcare providers were identified as one of the most substantial influences on the midwives decision to offer pain medication in labor.

Because respondents in this survey worked in a variety of birth settings, most frequently in the hospital setting (which is comparable to the ACNM membership as a whole), it can be reasonably assumed that these results are applicable to the wider midwifery arena. Therefore, the healthcare curriculum including midwifery educational programs should include CAM/ nonpharmacological pain relief education in their to improve knowledge and promote positive attitudes to the use of evidence-based CAM/nonpharmacological pain relief methods in labor and birth. It is especially important to ensure that midwives learn an array of pain relief methods so that they can empower their patients to make informed choices for labor pain management.

Of course, the perception that the hospital-based setting overall has higher technology use and less use of CAM/nonpharmacological pain relief methods in labor is not a new finding. Previous studies suggested that hospitals with high epidural and high cesarean rates present more barriers to using CAM/nonpharmacological pain relief methods in labor. One study reports, however, that there are less barriers in these same facilities when midwives attend most of the births as compared to the situation when the physicians were in attendance (Stark and Miller, 2009).

It is reasonable to conclude from this study that midwives decide to offer a wide array of CAM/nonpharmacological pain relief methods to women in labor and birth despite being influenced by the birth setting environmental variables of policies/protocols, use of technology, providers' knowledge and beliefs, and the midwives-obstetricians relationship. It is interesting to note that, contrary to previous findings that indicate that the lack of policies/protocol hindered evidence-based pain management by medical staff and nurses and influenced midwifery management of

women in labor ((Roets, et al., 2005; Sleutel, et al., 2007), this study finds that lack of policies/protocols did not seem to be a substantial influence on the use of these CAM/nonpharmacological therapies. It is also pleasing to note that the obstetricians in this study are viewed more as allies than foes as midwives feel that obstetricians did not meaningfully influence the midwives decisions to support labor with CAM/nonpharmacological pain relief methods.

The initial study assumption was that there are many barriers to a midwife's decision to offer CAM/nonpharmacological methods of pain relief. The study found, however, that there are factors which influence the decision to some extent, but no real barriers. Based on the results of this study, the primary influence on the midwives decision are the knowledge and beliefs of other healthcare providers. Future studies should aim to gain more insight into the knowledge, beliefs, and attitudes of midwives who offered CAM/nonpharmacological pain management in labor versus those who do not offer them. Midwives have an exceptional opportunity to offer a variety of pain relief methods to women in labor and birth. The midwifery model of care emphasizes involvement of the woman and her family and giving the woman informed choices which include alternatives CAM/nonpharmacological pain management for labor and birth.

References

ACOG Practice Bulletin: 36, July, 2002, Obstetrics Analgesia and Anesthesia. (2002). *International Journal of Gynecology & Obstetrics, 78*(3), 321-335. doi: 10.1016/s0020-7292(02)00268-0

Adachi, K., Shimada, M., & Usui, A. (2003). The Relationship Between the Parturient's Positions and Perceptions of Labor Pain Intensity. *Nursing Research, 52*(No 1).

Adams, J. (2006). An exploratory study of complementary and alternative medicine in hospital midwifery: Models of care and professional struggle. . *Complementary Therapies in Clinical Practice, 12* 40-47.

Benfield, R. D. (2002). Hydrotherapy in Labor. *Journal of Nursing Scholarship, 34* (4,), 347-352. doi: 10.1111/j.1547-5069.2002.00347.x

Benner, P. (1984). *From Novice to Expert: Excellence and Power in Clinical Nurse Practice*. Menlo Park, CA: Addison wesley.

Berry, P. H., & Dahl, J. L. (2000). The new JCAHO pain standards: implications for pain management nurses. . . *Pain Management Nursing, 1* (1), 3-12.

Brennan, F., Carr, D. B., & Cousins, M. (2007). Pain management: a fundamental human right. *Anesthesia and Analgesia, 105*(1), 205–221. .

Bricker, L., & Lavender, T. (2002). Parenteral opioids for labor pain relief: a systematic review. . *American Journal of Obstetrics & Gynecology,, 186*((5 Suppl Nature)), S94-109.

Briggs, G. G., & Wan, S. R. (2006). Drug Therapy During Laor and Delivery, Part 2. *American Journal pf Health-Systems Pharmacists, 63*(12), 1131-1139.

Carlton, T., Callister, L. C., Christiaens, G., & Walker, D. (2009). Nurses' Perceptions in Caring for Childbearing Women in Nurse-Managed Birthing Units. *Maternal Child Nursing (MCN), 34*(1), 50-56

Carlton, T., Callister, L. C., & Stoneman, E. (2005). Decision Making in Laboring Women Ethical Issues for Perinatal Nurses. *Journal of Perinatal and Neonatal Nursing, 19* (2), 145-154.

Chang, M.-Y., Chen, C.-H., & Huang, K.-F. (2006). A Comparison of Massage Effects on Labor Pain Using the McGill Pain Questionnaire. *Journal of Nursing Research, 14*(3), 190-197.

Chang, M.-Y., Wang, S.-Y., & Chen, C.-H. (2002). Effects of massage on pain and anxiety during labour: a randomized controlled trial in Taiwan. *Journal of Advanced Nursing, 38*(1), 68-73. doi: 10.1046/j.1365-2648.2002.02147.x

Chlan, L. (2002). Integrating Nonpharmacological, Adjunctive Interventions Into Critical Care Practice: A Means To Humanize Care? *American Journal of Critical Care, 11*(1), 14-16.

Cluett, E. R., Nikodem, C. V., McCandlish, R. E., & Burns, E. (2009). Immersion in water in pregnancy, labour and birth. *Editorial Group: Cochrane Pregnancy and Childbirth Group* Retrieved November 5, 2011, 2011, from Cochrane Pregnancy and Childbirth Group

Core Competencies for Basic Midwifery Practice; American College of Nurse-Midwives (2007, January 15, 2008) Retrieved May 26, 2012, 2012, from http://www.midwife.org/siteFiles/descriptive/core_Competencies_6_07_000.pdf.

da Silva, F. M. B., de Oliveira, S. M. J. V., & Nobre, M. R. C. (2009). Title A randomised controlled trial evaluating the effect of immersion bath on labour pain. *Midwifery., 25*(3), 286-294.

Darlington, A. C. N. M., McBroom, K. C. N. M., & Warwick, S. M. D. (2011). A Northwest Collaborative Practice Model. *Obstetrics & Gynecology, 118*(3), 673-677.

Davim, R., Torres, G., & de Melo, E. (2007). Non-pharmacological strategies on pain relief during labor: pre-testing of an instrument. *Revista Latino-Americana de Enfermagem, 15*(6), 1150- 1156.

Declercq, E. R., Sakala, C., Cory, M. P., & Applebaum, S. (2006). Listening to mothers II: Report of the Second National U.S. Survey of Women's Childbearing Experiences Retrieved November, 2011, 2011, from http://www.childbirthconnection.org/pdfs/LTMII_ExecutiveSum.pdf

DeJoy, S. C. N. M. P., Burkman, R. T. M. D., Graves, B. W. C. N. M. M. P. H., Grow, D. M. D., Sankey, H. Z. M. D., Delk, C. M. D., et al. (2011). Making It Work: Successful Collaborative Practice. *Obstetrics & Gynecology, 118*(3), 683-686.

Devane, D., Brennan, M., Begly, C., Clarke, M., Walsh, D., Sandall, J., et al. (2010). Socoiecomomic Value of the Midwife; a systemic review, meta-analysis, meta-synthesis, and economic analysis of midwife-led models of care. Retrieved august 24, 2011, 2011, from http://www.rcm.org.uk/college/campaigns-events/value-of-the-midwife/

Ditte, D., Schulz, W., Ernst, G., & Schmid-Ott, G. (2011). Attitudes towards complementary and alternative medicine among medical and psychology students. *Psychology Health & Medicine, 16*(2), 225-237.

Eberhard, J., Stein, S., & Geissbuehler, V. (2004). Experience of pain and analgesia with water and land births. *Journal of Psychosomatic Obstetrics & Gynecology, 26*(2), 127–133.

Erkes, E. B., Parker, V. G., & Carr, R. L. (2001). An Examination of Critical care Nurses' Knowledge and Attitudes Regarding pain Management in Hospitalized Patients. *Pain Management Nursing, 2*(2), 47-53.

Everly, M. C. (2012a). Facilitators and Barriers of Independent Decisions by Midwives During Labor and Birth. *Journal of Midwifery & Women's Health, 57*(1), 49-54. doi: 10.1111/j.1542-2011.2011.00088.x

Everly, M. C. (2012b). Facilitators and Barriers of Independent Decisions by Midwives During Labor and Birth. *Journal of Midwifery & Women's Health, 57*(1), 49-54. doi: 10.1111/j.1542-2011.2011.00088.x

Freeman, L. M., Adair, V., Timperley, H., & West, S. H. (2006). The influence of birthplace and models of care on midwifery practice for the management of women in labor. . *Women and Birth, 19*, 97-105.

Furlow, M. L., Patel, D. A., Sen, A., & Liu, J. R. (2008). Physician and patient attitudes towards complementary and alternative medicine in obstetrics and gynecology. *JOGNN,* Retrieved June 21, 2012

Geissbuhler, V., & Eberhard, J. (2002). [Alternative obstetrics: bed, chair or tub? Have alternative birthing methods become established?]. *Therapeutische Umschau, 59*(12), 689-695.

Greipp, M. E. (1992a). Greipp's model of ethical decision making. *Journal of Advanced Nursing, 17*, 734-738.

Greipp, M. E. (1992b). Undermedication for pain: An ethical model. *Advances in Nursing Science, 15*(1), 44-53.

Hall, H. G., McKenna, L. G., & Griffiths, D. L. (2012). Midwives' support for Complementary and Alternative Medicine: A literature review. *Women and Birth, 25*(1), 4-12. doi: 10.1016/j.wombi.2010.12.005

Hastings-Tolsma, M., & Terada, M. (2009). Complementary medicine use by nurse midwives in the U.S. *Complementary Therapies in Clinical Practice, 15* 212–219.

Herman, P. M., Craig, B. M., & Caspi, O. (2005). Is complementary and alternative medicine (CAM) cost-effective? a systematic review. *BMC Complementary and Alternative Medicine* Retrieved November 5, 2011, 2011, from http://www.biomedcentral.com/1472-6882/5/11

Jefford, E., Fahy, K., & Sundin, D. (2011). Decision-making theories and their usefulness to the midwifery profession both in terms of midwifery practice and the education of midwives. *International Journal of Nursing Practice, 17*(3), 246-253. doi: http://dx.doi.org/10.1111/j.1440-172X.2010.01900.x

. Joint Commission on Accreditation of Healthcare Organization & National Pharmaceutical Council Inc. Pain: Current Understanding of Assessment, Management and Treatment. (2001) Retrieved November 28, 2010, 2010 from http://www.npcnow.org/resources/PDFs/painmonograph.pdf

Kerrigan, K. (1991). Decision making in today's complex environment. *Nursing Administration Quarterly, 15*(4), 1-5.

Khunpradit S, Tavender E, Lumbiganon P, Laopaiboon M, Wasiak J, & RL, G. (2011). Non-clinical interventions for reducing unnecessary caesarean section (Review). *Cochrane Database of Systematic Reviews.* Issue 6. Art. No.: CD005528. Retrieved November 5, 2011, 2011

Laurenson, M., MacDonald, J., McCready, T., & Stimpson, A. (2006). Student nurses' knowledge and attitudes toward CAM therapies. *British Journal of Nursing, 15*(11), 612-615.

Leeman, L., Fontaine, P., King, V., Klien, M. C., & Ratliffe, S. (2003). The Nature and Management of Labor Pain: Part II. Pharmacologic Pain Relief. *Am Fam Physician., 68:*(6), 1115-1120.

Liu, Y.-H., Chang, M.-Y., & Chen, C.-H. (2010). Effects of music therapy on labour pain and anxiety in Taiwanese first-time mothers. [Multicenter Study Randomized Controlled Trial Research Support, Non-U.S. Gov't]. *Journal of Clinical Nursing, 19*(7-8), 1065-1072.

March, J. G., & Heath, C. (1994). *A Primer on Decision Making. How Decision Happen*. New York: The Free Press Simon & Schuster Inc.

Marmor, T. R., & Krol, D. M. (2002). Labor pain management in the United States: Understanding patterns and the issue of choice. *American Journal of Obstetrics and Gynecology, 186*(5, Supplement), S173-S180.

Melzack, R., Belanger, E., & Lacroix, R. (1991). Labor pain: effect of maternal position on front and back pain. [Clinical Trial Controlled Clinical Trial Research Support,

Non-U.S. Gov't]. . *Journal of Pain & Symptom Management, 6*(8), 476-480.

Merrian-Webster. Belief definition Retrieved October, 2, 2012, from http://www.merriam-webster.com/

Midwives, I. C. o. (2011). ICM Intermnational Definition of the Midwives Retrieved September, 29, 2012 from: http://www.internationalmidwives.org/Portals/5/2011/Definition%20of%20the%20Midwife%20-%202011.pdf

Miller, S., & Skinner, J. (2012). Are First-Time Mothers Who Plan Home Birth More Likely to Receive Evidence-Based Care? A Comparative Study of Home and Hospital Care Provided by the Same Midwives. [Article]. *Birth: Issues in Perinatal Care, 39*(2), 135-144.

Münstedt, K., Brenken, A., & Kalder, M. (2009). Clinical indications and perceived effectiveness of complementary and alternative medicine in departments of

obstetrics in Germany: A questionnaire study. *European Journal of Obstetrics & Gynecology and Reproductive Biology, 146*(1), 50-54.

NCCAM, N. C. f. C. a. A. M. (2008, July, 2011). What is Complementary and Alternative Medicine? Retrieved September 29, 2012, from: http://nccam.nih.gov/health/whatiscam

Nelson, K. E., & Eisenbach, J. C. (2005). Intravenous Butorphanol, Meperidine, and Their Combination Relieve Pain and Distress in Women in Labor . *Anesthesiology,, 102*(5), 1008-1013.

Nystedt, A., Evardsson, D., & Willman, A. (2004). Epidural analgesia for pain relief in labour and childbirth- a review with a systematic approach. . *Journal of clinical nursing, 13*(455-466.), 455.

Our Care of Philosophy, American College of Nurse Midwives. (2010) Retrieved May 26, 2012, 2012, from http://www.midwife.org/index.asp?bid=18

Phumdoung, S., & Good, M. (2003). Music reduces sensation and distress of labor pain. [Clinical Trial Randomized Controlled Trial Research Support, Non-U.S. Gov't]. *Pain Management Nursing, 4*(2), 54-61.

Porter, S., Crozier, K., Sinclair, M., & Kernohan, G. W. (2007). New midwifery? A qualitative analysis of midwives' decision-making strategies. *Journal of Advanced Nursing, 60*(5), 525–534.

Rhode, J. M., Patel, D. A., Sen, A., Schimp, V. L., Johnston, C. M., & Liu, J. R. (2008). Perception and use of complementary and alternative medicine among gynecologic oncology care providers. *International Journal of Gynecology & Obstetrics, 103*(2), 111-115.

Roets, L., Moru, M., & Nel, M. (2005). Lisotho midwives' utilization of non-

pharmacological pain management methods during the first stage of labour. *Curationis, 28*(3), 73-77.

Rojas-Cooley, M. T., & Grant, M. (2009). Complementary and alternative medicine: oncology nurses' knowledge and attitudes. [Research Support, Non-U.S. Gov't]. *Oncology Nursing Forum, 36*(2), 217-224.

Rooks, J. P. (1997). *Midwifery and Childbirth in America*. Philadelphia, PA: Temple University Press.

Russo, J. (2010, 2011). Massage vs music therapy to relieve labor pain. *The C.A.M Report Complementary and Alternative Medicine*

Retrieved November, 28, 2011, from http://www.thecamreport.com/2011/05/massage-vs-music-therapy-to-relieve-labor-pain/

Shaw-Battista, J. C. N. M. P., Fineberg, A. M. D., Boehler, B. C. N. M., Skubic, B. C. N. M., Woolley, D. C. N. M. P., & Tilton, Z. M. D. (2011). Obstetrician and Nurse-Midwife Collaboration: Successful Public Health and Private Practice Partnership. *Obstetrics & Gynecology, 118*(3), 663-672.

Simkin, P., & Bolding, A. (2004). Update on Nonpharmacologic Approaches to Relieve Labor Pain and Prevent Suffering. [systematic review]. *Journal of Midwifery & Women's Health, 49*(6), 489-504.

Simkin, P. P., & O'Hara, M. (2002). Nonpharmacologic relief of pain during labor: Systematic reviews of five methods. *American Journal of Obstetrics and Gynecology, 186*(5), S131-S159.

Skinner, J. P., & Foureur, M. (2010). Consultation, referral, and collaboration between midwives and obstetricians: lessons from New Zealand. [Research Support, Non-U S Gov't]. *J Midwifery Womens Health, 55*(1), 28-37.

Sleutel, M., Schultz, S., & Wyble, K. (2007). Nurses views of factors that help and hinder their intrapartum care. *Journal of Obstetric, Gynecologic, & Neonatal Nursing, 36*, 203-211.

Smith, C. A., Levett, K. M., Collins, C. T., & Crowther, C. A. (2011). Relaxation techniques for pain management in labour. [Meta-Analysis Review]. *Cochrane Database of Systematic Reviews, 12*, CD009514.

Smith, C. A., Levett, K. M., Collins, C. T., & Jones, L. (2012). Massage, reflexology and other manual methods for pain management in labour. [Meta-Analysis Research Support, Non-U.S. Gov't Review]. *Cochrane Database of Systematic Reviews, 2*, CD009290.

Stark, M. A., & Miller, M. G. (2009). Barriers to the Use of Hydrotherapy in Labor. *JOGNN,, 38*, 667-675. doi: 10.1111/j.1552-6909.2009.01065.x

Taavoni, S., Abdolahian, S., Haghani, H., & Neysani, L. (2011a). Effect of Birth Ball Usage on Pain in the Active Phase of Labor: A Randomized Controlled Trial. *The Journal of Midwifery & Women's Health, 56*(2), 137-140.

Taavoni, S., Abdolahian, S., Haghani, H., & Neysani, L. (2011b). Effect of Birth Ball Usage on Pain in the Active Phase of Labor: A Randomized Controlled Trial. *The Journal of Midwifery & Women's Health, 56*(2), 137-140.

Thoni, A., Zech, N., & Ploner, F. (2007). Giving birth in the water: experience after 1,825 water deliveries. Retrospective descriptive comparison of water birth and traditional delivery methods. *Gynakologisch-Geburtshilfliche Rundschau . 47*(2), 76-80.

Tournaire, M., & Theau-Yonneau, A. (2007). Complementary and Alternative Approaches to Pain Relief During Labor. *Evidence-based Complementary and*

Alternative Medicine: eCAM, 4(4), 409-417. Retrieved from http://www.medscape.com/index/list_4775_0

Uzun, Ö., & Tan, M. (2004). Nursing students' opinions and knowledge about complementary and alternative medicine therapies. *Complementary Therapies in Nursing and Midwifery, 10*(4), 239-244.

Waldman, R. N. M. D., & Kennedy, H. P. C. N. M. P. (2011). Collaborative Practice Between Obstetricians and Midwives. *Obstetrics & Gynecology, 118*(3), 503-504.

Walsh, D., & Downe, S. M. (2004). Outcomes of Free-Standing, Midwife-Led Birth Centers: A Structured Review. *Birth, 31*(3), 222-229.

Waters, B. L., & Raisler, J. (2003). Ice Massage for the Reduction of Labor Pain. *Journal of Midwifery and Women's Health., 48*, 317-321.

Wong, C. A., Scavone, B. M., Peaceman, A. M., McCarthy, R. J., Sullivan, J. T., Diaz, N. T., et al. (2005). The Risk of Cesarean Delivery with Neuraxial Analgesia Given Early versus Late in Labor,. *The New England Journal of Medicine, 352*(655-65.), 655.

Yildirim, Y., Parlar, S., Eyigor, S., Sertoz, O. O., Eyigor, C., Fadiloglu, C., et al. (2010). An analysis of nursing and medical students' attitudes towards and knowledge of complementary and alternative medicine (CAM). [Comparative Study]. *Journal of clinical nursing, 19*(7-8), 1157-1166.

Zwelling, E. (2008). The Emergence of High-Tech Birthing. *Journal of Obstetrics, Gynecologic, & Neonatal Nursing, 37*, 85-93.

Appendix A (Survey)

Please tell us about yourself:

1. Sex
   ___Male
   ___Female

2. How old are you today (in years)?
   ___

3. What best describes your race?
   ___American Indian or Alaskan native
   ___Asian or Pacific Islander
   ___Black
   ___White
   ___Mixed-race
   ___Other

4. What are the first two digits of your primary workplace zip code. (Example: 07101 would be written as “07”)?
   ___

5. What is your primary midwifery credential?
   ___CNM
   ___CM
   ___CPM
   ___LM

6. What is your highest level of overall education?
   ___Certificate or Diploma
   ___Associate’s degree
   ___Bachelor’s degree
   ___Master’s degree
   ___Doctorate

7. How many years has it been since you were first certified as a midwife?
   _____years

8. How many years have you worked as a midwife with laboring women?
   _____years

Please tell us about the setting(s) where you practice midwifery:

9. Within the past twelve months, what percent (%) of your work as a midwife has taken place at each of the following facilities (e.g. 75% hospital, 25% birth center, 0% patient's home)
   ___Hospital
   ___Birth Center
   ___Patient's home

Please share some information about the different birth settings where you work. If you work at multiple hospitals or multiple birthing centers, please consider the questions related to the hospital or birthing center where you work the most.

10. How many total births (including vaginal and cesarean deliveries) per year take place in the primary birth setting in which you work?
    ___Hospital
    ___Birth Center
    ___Number of home births you attend on average in a year

11. What percentage (%) of patients deliver by cesarean section in each setting?
    ___Hospital
    ___Birth Center
    ___Patient's home

12. What percentage (%) of patients deliver vaginally in each setting?
    ___Hospital
    ___Birth Center
    ___Patient's home

13. Do you have admission and discharge privileges at any hospitals?
    ___Yes
    ___No

14. If you support laboring women in hospital, what is the level of obstetric care at the facility? (If you work at multiple hospitals, please indicate the hospital with the highest level of obstetric care)
    ___Level 1
    ___Level 2
    ___Level 3
    ___do not know
    ___do not support laboring women in hospitals

15. If you support laboring women in hospital, Who attends **most** of the births at the facility?
    Obstetricians
    Family Practitioners
    Residents
    Midwives
    ___do not support laboring women in hospitals

16. If you support laboring women in a birthing center, Who attends **most** of the births at the facility?
    Obstetricians
    Family Practitioners
    Residents
    Midwives
    ___do not support laboring women in birthing centers

For each of the following questions, please tell us about the availability of pain relief methods and how often you use them in each of the different settings where you work. If you work at multiple hospitals or multiple birthing centers, please consider the question related to the hospital or birthing center where you work the most.

17. In what settings do you have access to a doula to provide labor support? (please check all that apply)
    ___Hospital
    ___Birth Center
    ___Patient's home

18. How often do you work with a doula to provide labor support?
    ___Always
    ___Frequently
    ___Sometimes
    ___Seldom
    ___Never

19. In what settings do you have access to a permanent tub or pool for hydrotherapy? (please check all that apply)
    ___Hospital
    ___Birth Center
    ___Patient's home

20. In what settings do you have access to a portable tub or pool (requiring assembly) for hydrotherapy? (please check all that apply)
    ___Hospital
    ___Birth Center
    ___Patient's home

21. How often do you use a tub or pool for hydrotherapy?
    ___Always
    ___Frequently
    ___Sometimes
    ___Seldom
    ___Never

22. In what settings are you able to use ambulation during labor? (please check all that apply)
    ___Hospital
    ___Birth Center
    ___Patient's home

23. How often do you use ambulation for labor support?
    ___Always
    ___Frequently
    ___Sometimes
    ___Seldom
    ___Never

24. In what settings do you have access to a birthing ball? (please check all that apply)
    ___Hospital

___Birth Center
___Patient's home

25. How often do you use a birthing ball for labor support?
___Always
___Frequently
___Sometimes
___Seldom
___Never

26. In what settings do you have access to a birthing bar? (please check all that apply)
___Hospital
___Birth Center
___Patient's home

27. How often do you use a birthing bar for labor support?
___Always
___Frequently
___Sometimes
___Seldom
___Never

28. In what settings do you have access to a birthing stool? (please check all that apply)
___Hospital
___Birth Center
___Patient's home

29. How often do you use a birthing stool for labor support?
___Always
___Frequently
___Sometimes
___Seldom
___Never

30. In what settings do you have access to a rocking chair (please check all that apply)
___Hospital
___Birth Center
___Patient's home

31. How often do you use rocking chair for labor support?
___Always

___Frequently
___Sometimes
___Seldom
___Never

32. In what settings are you able to use acupressure? (please check all that apply)
___Hospital
___Birth Center
___Patient's home

33. How often do you use acupressure for labor support?
___Always
___Frequently
___Sometimes
___Seldom
___Never

34. In what settings are you able to perform massage therapy (please check all that apply)
___Hospital
___Birth Center
___Patient's home

35. How often do you use massage therapy for labor support?
___Always
___Frequently
___Sometimes
___Seldom
___Never

36. In what settings are you able to use aromatherapy (please check all that apply)
    ___Hospital
    ___Birth Center
    ___Patient's home

37. How often do you use aromatherapy for labor support?
    ___Always
    ___Frequently
    ___Sometimes
    ___Seldom
    ___Never

38. In what settings do you use music therapy (please check all that apply)
    ___Hospital
    ___Birth Center
    ___Patient's home

39. How often do you use music therapy for labor support?
    ___Always
    ___Frequently
    ___Sometimes
    ___Seldom
    ___Never

40. In what settings do you use guided imagery (please check all that apply)
    ___Hospital
    ___Birth Center
    ___Patient's home

41. How often do you use guided imagery for labor support?
    ___Always
    ___Frequently
    ___Sometimes
    ___Seldom
    ___Never

42. In what settings do you have access to Epidurals (please check all that apply)
    ___Hospital
    ___Birth Center
    ___Patient's home

43. How often do you use Epidurals for labor support?
    ___Always
    ___Frequently
    ___Sometimes
    ___Seldom
    ___Never

44. In what settings do you have access to Narcotics (please check all that apply)
    ___Hospital
    ___Birth Center
    ___Patient's home

45. How often do you use Narcotics for labor support?
    ___Always
    ___Frequently
    ___Sometimes
    ___Seldom
    ___Never

For each of the following questions, please tell us about factors that influence your use of nonpharmacological pain relief during labor. If you work at multiple hospitals or multiple birthing centers, please consider the question related to the hospital or birthing center where you work the most.

46. In which of your practice settings are there policies or protocols that **support** your ability to offer nonpharmalogical pain relief during labor?(check all that apply)
    ___Hospital
    ___Birth Center
    ___Patient's home
47. In which of your practice settings are there policies or protocols that **hinder** your ability to offer nonpharmalogical pain relief during labor?

    ___Hospital
    ___Birth Center
    ___Patient's home

48. What most influences your use of nonpharmaological pain relief for labor support when you attend births in a hospital? (please check only one answer)
    ___policies and procedures
    ___lack of policies and procedures
    ___level of technology available
    ___knowledge and beliefs of other healthcare providers
    ___knowledge and beliefs of the obstetrician
    ___do not work in a hospital

49. What most influences your use of nonpharmaological pain relief for labor support when you attend births in a birthing center? (please check only one answer)
    ___policies and procedures
    ___lack of policies and procedures
    ___level of technology available
    ___knowledge and beliefs of other healthcare providers
    ___knowledge and beliefs of the obstetrician
    ___I do not work in a birthing center

50. If you practice with a collaborating obstetrician how much do they influence your use of nonpharmalogical pain relief during labor?
    ___absolutely
    ___significantly
    ___somewhat
    ___marginally
    ___not at all
    ___I do not work with a collaborating obstetrician

51. In what environment if any, do you feel that you are being hindered MOST from providing alternative methods/techniques for labor support?
    ___Hospital
    ___Birth Center
    ___Patient's home
    ___I do not feel hindered from providing alternative pain relief in any of the settings where I work

Appendix B (Institutional Review Board Approval)

RUTGERS
THE STATE UNIVERSITY OF NEW JERSEY

** This is an auto-generated email. Please do not reply to this email message.
The originating e-mail account is not monitored.
If you have questions, please contact your local IRB office or log into eIRB.Rutgers.edu **

DHHS Federal Wide Assurance Identifier: FWA00003913

IRB Chair Person: Robert Fechtner

IRB Director: Carlotta Rodriguez

Effective Date: 7/23/2013

Study Expiration Date:

eIRB Notice of Approval

STUDY PROFILE

tudy ID: Pro2013002930

itle: Midwives' Perceptions of Barriers to Offering CAM/nonpharmacological Pain Relief Methods for Labor and Birth in Hospital-Based Settings.

Principal Investigator:	Joyce Hyatt	**Study Coordinator:**	Joyce Hyatt
Co-Investigator(s):	Virginia Cowen Elaine Diegmann Joyce Hyatt Margaret Kilduff		
Sponsor:	Department Funded Internal / Institutional Funding		
Risk Determination:	Minimal Risk	**Device Determination:**	Not Applicable

Review Type:	Exempt	**Exempt Category:**	

CURRENT SUBMISSION STATUS

Submission Type:	Modification (Mod2013000511)	**Submission Status:**	Approved
Approval Date:	7/19/2013	**Review Type:**	Exempt

Pregnancy Code:	No Pregnant Women as Subjects	**Pediatric Code:**	No Children As Subjects	**Prisoner Code:**	No Prisoners As Subjects

Protocol:	CAM/NONPHARMACOLOGICAL PAIN RELIEF IN LABOR AND BIRTH PROTOCOL VERSION 3	**Consent:**	onsent form version 2	**Recruitment Materials:**	Recruitment Script version 2 ACNM approval/permission to use mailing list

Modifications:	The investigator submitted a request to update the recruitment flyer to change the date of survey closure from June 30, 2013 to September 30, 2013. Additionally, the following statement has been added to the study flyer and consent form "Solicitation of CNM/CM participants for this study has been approved by ACNM" The consent letter has been revised to state that participants will consent by typing "yes" in the box provided: "After all of your questions have been answered, if you still wish to take part in the study, you will be asked to sign this informed consent form (by typing yes in the box provided)" Lastly, dates for collection of data will be changed - new anticipated dates 8/12/13 through 9/30/13

*** Study Performance Sites:**
RBH
S School of Health Related Professions

ALL APPROVED INVESTIGATOR(S) MUST COMPLY WITH THE FOLLOWING:

1. Conduct the research in accordance with the protocol, applicable laws and regulations, and the principles of research ethics as set forth in the Belmont Report.

4. **Amendments/Modifications/Revisions**: If you wish to change any aspect of this study, including but not limited to, study procedures, consent form(s), investigators, advertisements, the protocol document, investigator drug brochure, or accrual goals, you are required to obtain IRB review and approval prior to implementation of these changes unless necessary to eliminate apparent immediate hazards to subjects.

5. **Unanticipated Problems**: Unanticipated problems involving risk to subjects or others must be reported to the IRB Office (45 CFR 46, 21 CFR 312, 812) as required, in the appropriate time as specified in the attachment online at: http://rbhs.rutgers.edu/hsweb

6. **Protocol Deviations and Violations** : Deviations from/violations of the approved study protocol must be reported to the IRB Office (45 CFR 46, 21 CFR 312, 812) as required, in the appropriate time as specified in the attachment online at: http://rbhs.rutgers.edu/hsweb

7. **Consent/Assent**: The IRB has reviewed and approved the consent and/or assent process, waiver and/or alteration described in this protocol as required by 45 CFR 46 and 21 CFR 50, 56, (if FDA regulated research). Only the versions of the documents included in the approved process may be used to document informed consent and/or assent of study subjects; each subject must receive a copy of the approved form(s); and a copy of each signed form must be filed in a secure place in the subject's medical/patient/research record.

8. **Completion of Study:** Notify the IRB when your study has been stopped for any reason. Neither study closure by the sponsor or the investigator removes the obligation for submission of timely continuing review application or final report.

9. The Investigator(s) did not participate in the review, discussion, or vote of this protocol.

10. Modification: The investigator submitted a request to update the r ecruitment flyer to change the date of survey closure from June 30, 2013 to September 30, 2013. Additionally, the following statement has been added to the study flyer and consent form "Solicitation of CNM/CM participants for this study has been approved by ACNM"

The consent letter has been revised to state that participants will consent by typing "yes" in the box provided: "After all of your questions have been answered, if you still wish to take part in the study, you will be asked to sign this informed consent form (by typing yes in the box provided)"

Lastly, dates for collection of data will be changed - new anticipated dates 8/12/13 through 9/30/13

the intended recipient or have received this email in error, please notify the sender immediately by email and permanently delete all copies of this email including all attachments without reading them. If you are the intended recipient, secure the contents in a manner that conforms to all applicable state and/or federal requirements related to privacy and confidentiality of such information.

Study.PI Name:
Study.Co-Investigators:

Appendix C (Study Consent Form)

CONSENT TO TAKE PART IN A RESEARCH STUDY

TITLE OF STUDY: *Midwives Perception of Barriers to Offering CAM/nonpharmacological Pain Relief Methods in Labor and Birth in Hospital-Based Settings.)*

Principal Investigator: *Joyce Hyatt*

This consent form is part of an informed consent process for a research study and it will provide information that will help you to decide whether you wish to volunteer for this research study. It will help you to understand what the study is about and what will happen in the course of the study.

If you have questions at any time during the research study, you should feel free to ask them and should expect to be given answers that you completely understand.

After all of your questions have been answered, if you still wish to take part in the study, you will be asked to sign this informed consent form (by typing yes in the box provided)

You are not giving up any of your legal rights by volunteering for this research study or by signing this consent form.

Solicitation of CNM/CM participants for this study has been approved by ACNM

Consent Form for Survey:

My name is Joyce Hyatt, I am a DNP, CNM and a PhD candidate at the University of Medicine and Dentistry of New Jersey's School of Health Related Professions. I am conducting a survey about pain management techniques/methods offered by midwives in the management of labor pain in different birth settings. The purpose of this survey is to understand how the settings (hospital, birth centers, home) in which midwives practice influence the offering of pain relieving techniques during labor and birth.

To be eligible to participate in this survey, you must hold a current midwifery license/credential in the United States.

If you choose to participate in this survey, you will be asked to answer questions about how you use different pain management methods to support laboring women. This is an online survey that will take about 30 minutes to complete. As a participant in this survey there is no direct benefit to you, but you will be providing valuable information on midwives' offerings of different pain management techniques in hospitals, birth centers and home births.

If you decide you do not want to participate in the survey, there is no penalty to you. If you want to stop participating in the survey, you can close the survey website. Your answers will not be recorded.

Your participation in this survey is confidential. During the survey you will be asked to

provide some demographic information, but your name or any identifiers will not be recorded.

If you have any questions about this survey or if you have questions about your rights as a research participant, you may contact Joyce Hyatt, DNP, CNM and PhD candidate at 973-972-5386 or e-mail at hyattjs@umdnj.edu or the UMDNJ IRB at telephone # 973-972-3608 or e-mail at eirb@umdnj.edu.

Thank You for taking the time to participate in this survey.

I understand that I have the right to ask questions about this study at any time. I understand that I should not enter the survey until I have had a chance to ask questions and have been given answers to all of my questions.

I have read this entire form, or it has been read to me, and I believe that I understand what has been discussed.

If you agree to participate in this survey, please type “yes” in the box below. After you have typed “yes” click “next” button to enter the survey website.

Appendix D (Permission to Use ACNM Member List)

Kerri D. Schuiling, PhD, CNM, NP-BC, FACNM, FAAN
ACNM
8403 Colesvile Road Ste 1550
Silver Spring, MD
July 12, 2013

Joyce Hyatt
54 East Washington Avenue
Elmwood Park, NJ 07407
973-563-7480

Dear Ms. Hyatt:

We have received your correspondence about your research study: "*Midwives Perception of Barriers to Offering CAM/nonpharmacological Pain Relief Methods in Labor and Birth in Hospital-Based Settings*" and your request to access ACNM members for their participation in the study. Thank you for forwarding the pertinent documents to the ACNM office. The purpose in requesting these documents for the ACNM files is to ensure that the rights of ACNM members as research participants will be adequately safeguarded and that surveys sent to ACNM members are pertinent to the midwifery profession and practice.

I have received and reviewed all of the required documents and am pleased to let you know that your request is approved. **The general statement that ACNM *requires* you to use in your letter to CNMs/CMs or solicitation ads/fliers is: "Solicitation of CNM/CM participants for this study has been approved by ACNM".**

Also included with this approval to access ACNM members is a document titled: *Rights of ACNM Members as Research Subjects* and contact information for our Director of Membership Services, George Hamilton. His email is ghamilton@acnm.org. George will assist you in setting up the email notification to members that you will use to send our members the link to your survey.

Good luck with your study! We look forward to reading about the results of your study.

Sincerely,

Kerri D. Schuiling

Kerri D. Schuiling, PhD, CNM, NP-BC, FACNM, FAAN
Sr. Staff Researcher
ACNM

Appendix E (Permission to Use Image of Greipp's Model of Ethical Decision Making in the Management of Clients' Pain)

WOLTERS KLUWER HEALTH LICENSE
TERMS AND CONDITIONS

Apr 01, 2014

This is a License Agreement between Joyce Hyatt ("You") and Wolters Kluwer Health ("Wolters Kluwer Health") provided by Copyright Clearance Center ("CCC"). The license consists of your order details, the terms and conditions provided by

All payments must be made in full to CCC. For payment instructions, please see information listed at the bottom of this form.

License Number	3360390550646
License date	Apr 01, 2014
Licensed content publisher	Wolters Kluwer Health
Licensed content publication	Advances in Nursing Science
Licensed content title	Undermedication for pain: An ethical model.
Licensed content author	Greipp, Mary; Elizabeth EdD, RN
Licensed content date	Jan 1, 1992
Volume Number	15
Issue Number	1
Type of Use	Dissertation/Thesis
Requestor type	Individual
Portion	Figures/table/illustration
Number of figures/tables/illustrations	1
Figures/tables/illustrations used	Figure 1
Author of this Wolters Kluwer article	No

Title of your thesis / dissertation	Factors Affecting Midwives' Decision to Offer Complementary and Alternative Medicine/Nonpharmacological Pain Relief Methods for Labor and Birth
Expected completion date	May 2014
Estimated size(pages)	110
Billing Type	Invoice
Billing address	54 East Washington Avenue Elmwood Park, NJ 07407 United States
Total	0.00 USD

Terms and Conditions

Terms and Conditions

1. A credit line will be prominently placed and include: for books - the author(s), title of book, editor, copyright holder, year of publication; For journals - the author(s), title of article, title of journal, volume number, issue number and inclusive pages.

2. The requestor warrants that the material shall not be used in any manner which may be considered derogatory to the title, content, or authors of the material, or to Wolters Kluwer.

3. Permission is granted for a one time use only within 12 months from the date of this invoice. Rights herein do not apply to future reproductions, editions, revisions, or other derivative works. Once the 12-month term has expired, permission to renew must be submitted in writing.

4. Permission granted is non-exclusive, and is valid throughout the world in the English language and the languages specified in your original request.

5. Wolters Kluwer cannot supply the requestor with the original artwork or a "clean copy."

6. The requestor agrees to secure written permission from the author (for book material only).

7. Permission is valid if the borrowed material is original to a Wolters Kluwer imprint (Lippincott-Raven Publishers, Williams & Wilkins, Lea & Febiger, Harwal, Igaku-Shoin, Rapid Science, Little Brown & Company, Harper & Row Medical, American Journal of Nursing Co, and Urban & Schwarzenberg - English Language).

8. If you opt not to use the material requested above, please notify Rightslink within 90 days of the original invoice date.

9. Please note that articles in the ahead-of-print stage of publication can be cited and the content may be re-used by including the date of access and the unique DOI number. Any final changes in manuscripts will be made at the time of print publication and will be reflected in the final electronic version of the issue.?Disclaimer: Articles appearing in the Published Ahead-of-Print section have been peer-reviewed and accepted for publication in the relevant journal and posted online before print publication. Articles appearing as publish ahead-of-print may contain statements, opinions, and information that have errors in facts, figures, or interpretation. Accordingly, Lippincott Williams & Wilkins, the editors and authors and their respective employees are not responsible or liable for the use of any such inaccurate or misleading data, opinion or information contained in the articles in this section.

10.1 This permission does not apply to images that are credited to publications other than Wolters Kluwer journals. For images credited to non-Wolters Kluwer journal publications, you will need to obtain permission from the journal referenced in the figure or table legend or credit line before making any use of the image(s) or table(s).

11. In case of **Disease Colon Rectum, Plastic Reconstructive Surgery, The Green Journal, Critical Care Medicine, Pediatric Critical Care Medicine, the American Heart Publications, the American Academy of Neurology** the following guideline applies: no drug brand/trade name or logo can be included in the same page as the material re-used

12. When requesting a permission to translate a full text article, Wolters Kluwer/Lippincott Williams & Wilkins requests to receive the pdf of the translated document

13. “Adaptations of single figures do not require Wolters Kluwer **further** approval if the permission has been granted previously. However, the adaptation should be credited as follows:?Adapted with permission from Lippincott Williams and Wilkins/Wolters Kluwer Health: [JOURNAL NAME] (reference citation), copyright (year of publication)”

Please note that modification of text within figures or full-text articles is strictly forbidden.

14. The following statement needs to be added when reprinting the material in Open Access journals only: 'promotional and commercial use of the material in print, digital or mobile device format is prohibited without the permission from the publisher Lippincott Williams & Wilkins. Please contact

journalpermissions@lww.com for further information”.

15. Other Terms and Conditions:

v1.8

If you would like to pay for this license now, please remit this license along with your payment made payable to "COPYRIGHT CLEARANCE CENTER" otherwise you will be invoiced within 48 hours of the license date. Payment should be in the form of a check or money order referencing your account number and this invoice number RLNK501266742.
Once you receive your invoice for this order, you may pay your invoice by credit card. Please follow instructions provided at that time.

Make Payment To:
Copyright Clearance Center
Dept 001
P.O. Box 843006
Boston, MA 02284-3006

For suggestions or comments regarding this order, contact RightsLink Customer Support: customercare@copyright.com or +1-877-622-5543 (toll free in the US) or +1-978-646-2777.

Gratis licenses (referencing $0 in the Total field) are free. Please retain this printable license for your reference. No payment is required.