2019

The Effect of Integrative Medicine Practices on the Use of Obstetric Intervention in Labor and Delivery

Rachel Cochran
Bethel University

THE EFFECT OF INTEGRATIVE MEDICINE PRACTICES ON THE USE OF OBSTETRIC INTERVENTION IN LABOR AND DELIVERY

A MASTER'S PROJECT
SUBMITTED TO THE GRADUATE FACULTY
OF THE GRADUATE SCHOOL
BETHEL UNIVERSITY

BY
Rachel Cochran

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
MASTER OF SCIENCE IN NURSE-MIDWIFERY

The Effect of Integrative Medicine Practices on the Use of Obstetric Intervention in Labor and Delivery

Rachel Cochran

May 2019

Project Advisor Name: Timothy Bredow, MSN, APRN

Project Advisor Signature: Tim Bredow

Second Reader Name: Jane Wrede, PhD, APRN, CNM

Second Reader Signature: Jane Wrede

Director of Nurse-Midwifery Program Name: Jane Wrede, PhD, APRN, CNM

Director of Nurse-Midwifery Program Signature: Jane Wrede

Acknowledgments

To all my family and friends, I thank you all so much for the endless love you have shown me as I have been journeying through this Nurse Midwifery program. Specifically to my parents who had supported and encouraged me even in the times when I didn't believe in myself. Also to my wonderful husband who has walked alongside me since the first moment we met while listening to my dreams and loving me with a sacrificial love that I could never deserve. My abundant support system has been such a pivotal piece in getting me to where I am today. I couldn't feel more blessed or joyful when thinking about a future career walking alongside women through providing midwifery care.

Lastly, I would like to express sincere appreciation to the entire Bethel faculty who work incredibly hard every day to uphold this graduate program supporting myself and all of my cohort throughout this journey. I would also like to thank my capstone advisor Timothy Bredow, MSN, APRN and second reader Jane Wrede, Ph.D, APRN, CNM of the Bethel University faculty. The knowledge, support, and encouragement you gave me throughout creating this project allowed me to feel confident in the passion behind the work I was doing. Thank you for your continual insight each and every time I came to you with questions.

Abstract

Background/Purpose: The purpose of this paper is to review scholarly writings to discern if the use of integrative medicine practices affects the use of obstetric intervention in labor and delivery.

Theoretical Framework: The Theory of Human Caring by Jean Watson will be used as the theoretical structure of this literature review. Watson's theory places caring at the center of all activities, decisions, and practices within the discipline of nursing and emphasizes a journey of caring for the whole person.

Methods: Nineteen research articles were critically reviewed with the purpose of determining whether the use of specific integrative medicine practices affects the use of obstetric intervention in labor and delivery.

Results/Findings: Integrative medicine practices reviewed showed decreased pain levels in labor and less pharmacological pain intervention used, shorter length of labor, reduced need to use pitocin for induction or augmentation, as well as a decreased rate of operative vaginal and cesarean deliveries.

Conclusion: The findings of this critical review support the use of integrative medicine practices including yoga, breathing techniques, acupuncture, and acupressure to reduce the use of obstetric intervention during labor and delivery. More studies are needed in each area with a more extensive trial size to provide additional data and support for these interventions.

Implications for Research and Practice: Nurse Midwives have the opportunity and responsibility to care for maternal and fetal health by being knowledgeable about the benefits and harm of all kinds of obstetric interventions. Also, providing resources to women so that they can be educated and learn about beneficial interventions. They also can educate women about the

benefits of using integrative medicine practices used antenatally and during labor and delivery to reduce the potential use of obstetric interventions.

Keywords: Keywords that have been utilized in the database searches included: obstetric intervention, birth outcomes, epidural, induction, operative delivery, cesarean section, integrative therapies, acupressure, acupuncture, mind-body intervention, yoga, breathing techniques, and non-pharmacologic intervention.

Table of Contents

Chapter I: Introduction

Maternity care today is focused on the safety of both the mother and the infant as well as pain relief in labor. With this focus, there have been many medical and technological advances within obstetrics that have helped to reduce maternal and infant mortality. These obstetric interventions have become the norm and include interventions such as the routine use of epidural analgesia, pitocin induction or augmentation, and operative births (Simkin, 2017). When used appropriately, these interventions can be very beneficial and even life-saving; however, routine use without valid indications can transform childbirth into a medical or surgical procedure instead of the normal physiologic process and beautiful family life event that it is (American College of Nurse Midwives [ACNM], 2013). It is also essential to recognize that the use of one intervention can lead to another, causing a domino effect of interventions.

Obstetric interventions sometimes occur because a woman did not receive proper education concerning the benefits and risks of the different interventions. This lack of education does not allow these women to advocate for themselves nor does it allow them to obtain other complementary comfort skills or integrative medicine practices that could replace the need for these obstetric interventions (ACNM, 2013). Currently, most births occur in hospitals; as such, most prenatal education is conducted in a hospital or clinical setting. Hospital-sponsored classes may favor practices that are common in that particular hospital, excluding teaching about specific obstetric interventions, with little to no time devoted to teaching about other choices, integrative medicine and labor support (Simkin, 2017). Yet, there is evidence that if childbirth education includes an explanation and rehearsal of additional complementary comfort and self-help measures including integrative medicine, it could decrease obstetrical interventions.

The National Center for Complementary and Integrative Health defines integrative medicine as a diverse group of medical practices and products that are not generally considered conventional medicine (NCCIH, 2011). Integrative medicine practices are divided into five domains; mind-body medicine including yoga, tai chi, meditation, and relaxation techniques; manipulation including chiropractic, massage, and cranial sacral therapy; biologically based practices including herbal, botanical, and supplements; energy medicine including reiki, reflexology, acupressure and acupuncture; whole medical systems including Ayurveda, traditional Chinese medicine, and homeopathy (King & Brucker, 2011). The goal of integrative medicine is to take care of the whole person including body, mind, and spirit. For many years these practices have been used, and within recent decades their use has risen steadily in pregnancy. Current integrative medicine research within pregnancy has focused on mind-body medicine and energy medicine. The American College of Obstetricians and Gynecologists (ACOG) and American College of Nurse-Midwives (ACNM) support the use of specific integrative practices within these two categories not only for pregnancy symptoms but also for use during labor to decrease pain and shorten labor (Simkin, 2017).

Statement of Purpose

This literature review analyzed current research to discern if the use of specific integrative medicine practices affects the use of obstetric intervention in labor and delivery. The specific integrative medicine practices focused on in this review will include the mind-body practices of yoga and breathing techniques as well as the energy practices of acupuncture and acupressure. This literature review explores the impact these integrative measures have on the rate of these obstetric interventions: epidural analgesia, pitocin inductions or argumentation, and operative births. With this purpose in mind, this paper addresses the following research question:

During labor and delivery, will there be a difference in the rates of obstetric interventions including epidural analgesia, pitocin inductions or augmentation, and operative births between the women who use specific integrative medicine practices that include the mind-body practices of yoga and breathing techniques as well as the energy practices of acupuncture and acupressure versus women who do not use these practices?

Evidence Demonstrating a Need for the Critical Review

Within the United States, the cesarean rate has climbed steadily from 20.9% in 1995 to a high of 32.9% in 2009, before starting to decline again to 32.0% in 2017 (Martin, Hamilton, Osterman, Driscoll, & Drake, 2018). Even with the slight decrease in the cesarean rate within the last couple years, there is a goal to continue to decrease this rate as well as work to reduce the rate of other obstetric interventions used during labor and delivery. Leading organizations in American maternity care, including the American College of Obstetricians and Gynecologists, Society for Maternal Fetal Medicine, American College of Nurse-Midwives, Association of Women's Health, and Obstetric and Neonatal Nursing, are calling for the identification and implementation of evidence-based maternity care practices to further reduce cesarean rates (Simkin, 2017).

The link between the use of obstetric interventions in labor and delivery and their effect on birth outcomes is not always clear; yet according to research, there appears to be a distinct correlation between the two (Simkin, 2017). Normal physiologic labor and birth are defined as "one that is powered by the innate human capacity of a woman and fetus" (ACNM, 2013). The use of obstetric interventions results in an interruption of the normal physiologic process of labor and delivery and can cause additional stress to the mother and the baby. Therefore obstetric interventions such as epidural analgesia, pitocin inductions or augmentations, and operative

births can cause an increase in this stress and be correlated to poor birth outcomes. When considering interventions, it is also essential to recognize that one intervention can lead to another, causing a domino effect of interventions. Creating practices for optimal birth outcome would focus on decreasing the use of obstetric interventions and stopping the progression of this domino effect. Some of the most notable obstetric interventions that warrant evaluation include the use of epidural analgesia, pitocin for induction or augmentation and operative births.

Epidural analgesia. Within the *National Vital Statistics Report*, the data showed that 61 percent of women who had a vaginal singleton birth in the United States in 2011 received epidural or spinal analgesia (Osterman & Martin, 2011). According to ACOG, an epidural is a combination of analgesic and anesthetic medication given through a tube placed in the lower back. During labor, the purpose of this medication is to help in providing pain relief yet allow the patient to remain awake and alert during delivery (ACOG, 2017). Labor and delivery is an extremely painful experience; therefore, the use of epidural analgesia can lead to a more comfortable birth experience. However, there are side effects from this medication that can impact the course of labor and delivery. Epidural or spinal analgesia has been shown to be associated with a prolonged second stage of labor, fetal distress, fetal malposition, and increased risk of operative delivery with a vacuum or forceps (Osterman & Martin, 2011). Other side effects of epidural analgesia can include headache, maternal hypotension, maternal infection, and urinary issues.

Pitocin inductions or augmentations. ACOG defines a labor induction as the use of medication or other methods to bring on or induce labor (2017). The rate for induction of labor has been known to fluctuate, ranging from 8 to 44 percent depending upon the location within the United States. Despite the difference in the rate of induction, overall the rate has increased

and is continuing on an upward trend. In 1990, the mean rate for induction was 9.5% within the United States, which more than doubled to 23% by 2008 (Chauhan & Ananth, 2012).

Although there are advantages to induction of labor, it comes with potential risks for both the mother and the baby (Chauhan & Ananth, 2012). Pitocin, which is often used for the induction of labor, is labeled as a high-alert medication with a black box warning, and therefore, should be administered with great caution (Gu et al., 2016). Literature and evidence-based trials show risk factors for inductions and the use of pitocin, which include an increased risk of infection, use of epidural analgesia, an increased length of labor, an increase in perineal trauma, tachysystole, an increased rate of operative vaginal deliveries and cesarean section as well as an increased risk of postpartum hemorrhage. For the baby, effects could include fetal intolerance to labor, infection, and respiratory distress syndrome. All of these risk factors are also present for women who are given pitocin for augmentation of labor (Chauhan & Ananth, 2012).

Operative births. When a provider must assist in the birth process by using instruments, this would create an interruption of a natural birth instead resulting in an operative birth. Operative births can be divided into two different categories, vaginal assisted births with the use of forceps or vacuum extraction or cesarean births through surgical means. Within the United States, the cesarean rate climbed steadily from 20.9% in 1995 to a high of 32.9% in 2009, which was in large part attributed to advancing maternal age. Women 40 years old and older were more than twice as likely to delivery by cesarean as women under 20 years old. This number minimally declined to 32.0% in 2015 (Martin at el, 2018). Cesarean sections can be a lifesaving procedure for a mother and a baby, but they also come with multiple risks. The most significant risks with a cesarean section include the risk of infection, postpartum hemorrhage, need for a

blood transfusion, and risk to injury of organs. For the baby, risks include respiratory issues, low Apgar scores, and physical injury (Simkin, 2017).

In the United States, 3.1% of all deliveries in 2015 were accomplished using an operative vaginal approach. Forceps deliveries accounted for 0.56 percent of vaginal births, and vacuum deliveries accounted for 2.58 percent of vaginal births. Risks of operative vaginal deliveries include trauma to the perineum, injury to the bowel or bladder, uterine rupture and increased risk of postpartum hemorrhage. For the baby, risks include facial or skull injuries, the risk of brain bleeds, the risk of seizures, neonatal jaundice and shoulder dystocia (Martin et al., 2018).

Significance to Nurse-Midwifery

Midwives recognize pregnancy and birth to be normal physiologic and developmental processes (ACNM, 2012). Another hallmark of midwifery is advocating for non-intervention in normal processes in the absence of complications. Therefore, the midwife philosophy promotes a strong drive to search for opportunities that will help reduce the need for obstetric interventions when unnecessary. A consensus statement released by the American College of Nurse Midwives (ACNM), the Midwives Alliance of North America (MANA) and the National Association of Certified Professional Midwives (NACPM) promotes and identifies what is essential in supporting a healthy and normal physiologic childbirth (ACNM, 2013). According to this consensus statement, several factors can cause a disruption in normal physiological childbirth. These include the use of pitocin, epidural analgesia or general anesthesia, operative vaginal delivery by vacuum or forceps, and cesarean births. This statement goes on to recommend that policies be introduced including education and integrative therapies promoting normal physiologic birth (ACNM, 2013).

The American College of Obstetricians and Gynecologists (ACOG) issued a second consensus statement about prenatal education. Within this statement, Simkin (2017) noted that when ACOG compared the benefits of different approaches to childbirth education, there was little insight gained, as there was too much diversity in the trials and the educational curriculum itself. However, the statement went on to say that even with the difficulties in comparing the benefits to different approaches to childbirth education, we can still gain useful knowledge by examining findings of published trials of integrative therapies and their effects on birth outcomes (Simkin, 2017). There is evidence that if childbirth education includes explanation and training on integrative medicine practices and self-help measures it could improve birth outcomes (Simkin, 2017).

Theoretical Framework

The Theory of Human Caring developed in 1975 by Jean Watson is applied as the theoretical structure of this literature review. Watson's theory places caring at the center of all activities, decisions, and practices within the discipline of nursing (Watson, 2012). Her emphasis is to look beyond technology and curing of the physical alone towards embracing the intersect of art, science, humanities, and spirituality when seeking to care for the whole person.

Watson's theory is based on the notion that caring is only effective when practiced relationally. Also, effective care consists of actions that result in the satisfaction of specific human needs such as the need for love, hope, knowledge, or self-worth. Furthermore, a healthy environment of caring accepts the person for who they are and allows them to choose the best actions for himself or herself at the given time. Finally, Watson's theory emphasizes that the practice of caring integrates biophysical knowledge with knowledge of human behavior and need, in order to promote health and growth (Watson, 2012).

The science behind caring is holistic, and complementary to the science of curing (Watson, 2012). Medical practices that observe caring from the same lens as Watson's theory include holistic medicine. Integrative medicine is a branch of holistic medicine and is defined as a group of diverse medical systems, practices, and products that are generally not considered to be part of conventional medicine (NCCIH, 2011). The concept of integrative medicine is a unique approach that takes into account the whole person including the body, mind, spirit, and community.

When applying the Theory of Caring to pregnancy, the goal is to encourage a therapeutic relationship between all different kinds of medicine practices, both conventional and integrative, in order to deliver the best care. Utilizing integrative medicine when working with a woman encourages her to help herself by using her energy and can cultivate a beautiful environment (Ozan, Okumuş, & Lash, 2015). This environment is one that can intentionally work to meet her natural needs for love, hope, knowledge, or self-worth as described by Watson. Furthermore assimilating integrative medicine practices into the environment would allow her to choose the best actions for herself when presented with multiple options focusing on every part of her, not just a scientific birth process. When modern science might be pointing towards greater use of conventional medical interventions, integrative medicine can be applied to the Theory of Human Caring to enhance the connection between science and caring to positively impact birth outcomes for women (Watson, 2012).

Summary

When looking historically at integrative medicine practices, many have been components of healthcare systems for centuries. There are written references to medicinal herbs and acupuncture in some of the earliest recorded records around the world, including the Christian

Bible (Eisenberg, Davis, & Ettner, 1999). Even so, integrative medicine practices today are often pushed aside in light of the continued increase in medical and technological advances within obstetrics. These advances have caused obstetric intervention to become the norm, yet many large maternal health organizations have now begun to recognize that more intervention is not necessarily a good thing.

With a call for lower cesarean rates as well as the use of fewer obstetric interventions in labor and delivery, midwives are well positioned to help reduce these numbers. Midwives, as well as other providers, can continue to work with women to educate them on all of their options in childbirth including education with an explanation and rehearsal of additional complementary comfort and self-help measures including integrative medicine.

Chapter II: Methods

Chapter two presents the process that was used to evaluate and select articles for this literature review. This literature review assessed the rate of obstetric interventions between women who use specific integrative medicine practices that include the mind-body practices of yoga and breathing techniques as well as the energy practices of acupuncture and acupressure versus women who do not use these practices. The databases used during this process are presented as well as the keywords used to search within these databases. Details are provided on how the relevant studies were selected, including criteria for inclusion, exclusion and a summary of the chosen studies. Lastly, specifics are given regarding the mechanism that was used to determine the level and quality of the evidence.

Search Strategies

This literature review included articles from academic journals published between 2005 and 2018. The databases searched were CINAHL, PubMed, Cochran Database of Systematic Reviews and EBSCOhost. Keywords used in the searches were: obstetric intervention, birth outcomes, epidural, induction, operative delivery, cesarean section, integrative therapies, acupressure, acupuncture, mind-body intervention, yoga, breathing techniques, and non-pharmacologic intervention.

Criteria for Inclusion and Exclusion

This literature review selected studies that involved the use of specific integrative medicine practices including the mind-body practices of yoga and breathing techniques as well as the energy practices of acupuncture and acupressure. Articles had to include the use of one or more of these integrative medicine practices, but there were no restrictions regarding whether the practice was done during the antenatal period or during labor and delivery. Inclusion articles had

data looking at the results of obstetric interventions including pharmacologic pain analgesia, the use of pitocin, and operative births (vaginal or cesarean).

Exclusion criteria included articles that looked at other integrative medicine practices such as herbs, hypnobirthing, water immersion or massage. Articles were excluded if they only assessed how the use of integrative medicine practices affected pregnancy instead of the impact during labor and delivery. Research assessing other obstetric outcomes such as outcomes about birth weight, preterm labor or pre-eclampsia were not included as the focus of this review was to look at outcomes from the use of obstetric interventions during labor and delivery including epidural analgesia, pitocin use, and operative births. Finally, research regarding some specialty populations was rejected due to the inability to apply these results in the general population.

Summary of Selected Studies

An initial search produced 76 articles with possible relevance to this topic. After inclusion and exclusion criteria were used to evaluate the articles, 19 articles were chosen for inclusion in this literature review. The articles included randomized controlled trials, systematic reviews with and without meta-analysis, and quasi-experimental trials. The research was completed in various countries, including Australia, Brazil, Denmark, Egypt, India, Iran, Taiwan, Thailand and throughout the United States.

Evaluation Criteria

After articles were selected based on inclusion and exclusion criteria, the articles were evaluated for strength and quality using the John Hopkins Research Evidence Appraisal Tool (Dearholt & Dang, 2012). The level of evidence in an article was evaluated based on its strength and was placed on a scale of I to V. Research grade was evaluated based on quality and was divided into three sections categorized as A, B or C.

The highest level of scientific evidence was evaluated as level I and included experimental studies of randomized controlled trials as well as systematic reviews of randomized controlled trials. Next, level II contains quasi-experimental studies. Finally, level III includes non-experimental and qualitative studies (Dearholt & Dang, 2012). Only levels I, II and III were evaluated for this literature review.

Research quality was divided into the three categories of A, B or C, descending from high to low quality. For an article to be considered high quality (A), it must have consistent generalizable results with sufficient sample size for study design with adequate control resulting in definitive conclusions as well as consistent recommendations that are based on a thorough literature review that includes references to scientific evidence (Dearholt & Dang, 2012). Good quality research (B) consists of the same elements as a high-quality level; however, the elements are not as active. There are reasonably consistent results with a sufficient sample size for the study design, some control with fairly definitive conclusions and reasonably consistent recommendations based on a fairly comprehensive literature review that includes some scientific evidence (Dearholt & Dang, 2012). Finally, low quality (C) articles have little evidence with inconsistent results, an insufficient sample size for the study design, and no conclusions can be drawn from the results (Dearholt & Dang, 2012). Table 1 presents a breakdown of the nineteen articles that were selected for this literature review based on their quality and strength.

Table 1

Articles Quality and Strength

		Quality/Grade		
Strength/ Level		**A**	**B**	**C**
	I	2	11	4
	II	0	2	0
	III	0	0	0

Summary

A literature search of the CINAHL, PubMed, Cochrane Database of Systematic Reviews and EBSCOhost databases was done to identify articles relevant to the chosen topic. Nineteen articles were chosen after applying the inclusion and exclusion criteria. These articles were then evaluated using the Johns Hopkins Research Evidence Appraisal Tool and placed within a matrix, which can be found in Appendix I.

Chapter III: Literature and Analysis

Synthesis of the Matrix

A matrix was used to consolidate the research articles and assess the difference in the use of the obstetric interventions such as epidural analgesia, pitocin use for induction or augmentation and operative births between the women who use specific integrative medicine practices during labor and those who do not use these practices (Appendix I). Within the matrix, relevant column headings used included: purpose, sample, design, level, and quality, results/conclusions as well as strengths and limitations. The research studies were evaluated for strength and quality using the Johns Hopkins Research Evidence Appraisal Tool (Dearholt & Dang, 2012). Articles were organized by the strength of research and then compiled alphabetically.

Synthesis of the Major Findings

The matrix is comprised of 19 scholarly articles that were chosen for appraisal to assess the impact of specific integrative medicine practices on obstetric interventions during labor and delivery. The integrative medicine practices were derived from two different categories; mind-body practices including yoga and breathing techniques and energy practices including acupuncture and acupressure. This analysis looks at the impact of each of these two categories of integrative medicine on the pain management in labor, pitocin use in labor, duration of labor, and mode of delivery.

Pain management. The subject of pain management during labor is a concern for every mother who is preparing for birth. Mother's desires can range from complete elimination of pain to the complete rejection of any pharmacological intervention. This literature review included 13 studies that examined the differences in pain management with mothers who were using

integrative medicine practices antenatally and in labor and delivery (Akbarzadeh, Masoudi, Hadianfard, Kasraeian, & Zare, 2014; Akbarzadeh, Moradi, Jowkar, Zare, & Hadianfard, 2015; Bagharpoosh & Goodarzi, 2006; Bolanthakodi, Raghunandan, Saili, Mondal, & Saxena, 2018; Borup, Wurlitzer, Hedegaard, Kesmodel, & Hvidman, 2009; Chung, Hung, Kuo, & Huang, 2003; Chuntharapat, Petpichetchian, & Hatthakit, 2008; Citkovitz et al., 2009; Duncan et al., 2017; El Fadeel Abd El Hamid, Obaya, & Gaafar, 2013; Jahdi et al., 2017; Levett, Smith, Bensoussan, & Dahlen, 2016; Smith, Levett, Collins, & Crowther, 2011).

Several different outcomes related to pain were examined within these selected studies, including perceived maternal pain levels during labor and the rate of using epidurals or other pharmacological pain agents. Twelve of the thirteen pain related studies found benefits with the use of integrative medicine practices either with a decreased level of perceived maternal pain and/or with decreased use of epidurals or other pharmacological pain agents.

Jahdi et al. (2017) and Chuntharapat et al. (2008) created studies to assess the use of prenatal yoga and its effects on pain in labor. Both studies identified a significant difference between the pain scores of women in the yoga group verse the control group ($(p=0.01)$, Jahdi et al., 2017) ($(p<0.05)$, Chuntharapat, et al., 2008). In a different study, Bagharpoosh & Goodarzi (2006) evaluated the effect of progressive muscle relaxation techniques during labor on women's perceived pain. The mean pain level in the active phase of labor for women in the intervention group was lower than that in the control group (7.03 vs. 9.12). The difference was statistically significant, $p=0.0001$.

Four different studies were analyzed that assessed the perceived pain outcome after the use of different acupressure interventions. The first of these studies by El Fadeel Abd El Hamid, Obaya, & Gaafar (2013) included 100 women, half of whom were given acupressure at the SP6

point during labor contractions. A statistically significant difference was found between the intervention group and control group regarding labor pain scores immediately after receiving the intervention ($p=0.004$), after 30 minutes ($p=0.002$), after 60 minutes ($p=0.02$) and after 120 minutes ($p=0.03$) (El Fadeel Abd El Hamid et al., 2013). Chung et al. (2003) also found a statistically significant ($p=0.017$) decrease in labor pain during the active phase of the first stage of labor when providing acupressure to LI4 and BL67 points. Another study comparing the effects of maternal supportive care, acupressure, and traditional care revealed significant differences in the three groups regarding the intensity of pain after the intervention at 3-4 cm dilation (Akbarzadeh et al., 2014). In the supportive care group, the reported pain was 3.54+1.328. In the acupressure group, pain was 3.44 + 0.907; in the control group pain, was 9.40+1.010. This difference was statistically significant, ($p<0.001$). Finally, in a study that compared the use of mono-stage and bi-stage acupressure at the GB21 point in labor found that the perceived severity of pain was significantly less ($p<0.001$) between intervention groups immediately, at 30 minutes, and at 60 minutes after the intervention compared with the control group (Akbarzadeh et al., 2015).

Additionally, a Cochrane review including 19 studies and 2519 women was done examining relaxation techniques for pain management in labor (Smith et al., 2011). Within these 19 studies, seven studies looked explicitly at relaxation techniques and yoga for pain relief. Relaxation and yoga compared to usual care provided lowered the intensity of pain when measured on a scale of 0 to 10 with low scores indicating less pain (Smith et al., 2011).

Ultimately, the amount of pain a woman perceives during labor has an impact on epidural usage or other pain analgesics; therefore it is also vital to assess this specific outcome. Bolanthakodi et al. (2018) studied 200 women utilizing yoga in pregnancy. They found

significant reduction in use of epidural analgesia in the study group ($p<0.045$). Duncan et al. (2017) observed the effects of a mindfulness-based childbirth preparation course and saw that 30.8% in the intervention group used an epidural compared to 61.5% in the control group. This showed a trend towards statistical significance ($p=0.12$). Levett et al. (2016) offered a 2-day antenatal course teaching several integrative medicine practices including acupressure, yoga and relaxation techniques. They compared those who participated in the course with those who did not. The study group had a 23.9% epidural use and the control group had a 68.7% epidural use. Statistically this was strongly significant ($p<0.001$). Additionally El Fadeel Abd El Hamid et al. (2013) examined the use of acupressure at the SP6 point. Only 12% of the women in the study group received analgesic pain medication versus 44% in the control group. This was again statistically significant ($p=0.001$). Finally, a study by Borup et al. (2009) evaluated the use of acupuncture in labor and found that the intervention group only received an epidural the 15.7% of the time versus 30.0% in the control group ($p=0.001$).

Use of pitocin. The outcome of induction or augmentation of labor by the use of pitocin was observed in six studies. Most of the studies where integrative medicine practices were implemented did show an impact on decreasing pitocin use (Bolanthakodi et al., 2018; Jahdi et al., 2017; Jain et al., 2017; Levett et al., 2016). Only two studies were unable to identify reduced pitocin use (Borup et al., 2009; Smith et al., 2011).

A study involving 200 women who received seven prenatal sessions of yoga required induction of labor with pitocin statistically ($p<0.044$) less than the control group (Bolanthakodi et al., 2018). Within another study by Jahdi et al. (2017) involving 60 women who participated in prenatal yoga, the percentage of participants in the intervention group undergoing inductions was 29.3%, which was also significantly lower than that in the control group with 56.7%

($p=0.008$). Levett et al. (2016) studied the results of a two-day antenatal complementary therapies course including acupressure, yoga, and relaxation technique education. They too reported a reduced need for pitocin augmentation ($p<0.0001$) compared to the control group. Finally, in a study including 122 women who were educated on breathing exercises prenatally there were fewer inductions (14.8%) than in the control group (24.6%). This difference in rates of inductions was not statistically significant, however the reduced need for pitocin for augmentation was statistically significant ($p<0.005$). Only 59% of women in the experimental group needed pitocin for augmentation of labor compared to 78% of women in the control group (Jain et al., 2017)

Duration of Labor. Most women dream of a fast labor and swift delivery, but we know that sometimes labors can be very long and exhausting. According to ACOG (2017), a prolonged labor can increase a woman's chance of a cesarean section or need for other obstetric interventions. With this in mind, it is critical to assess the outcome of the duration of labor during this literature review and the impact these integrative medicine practices might have on this outcome.

Eight different studies examined the duration of labor with the use of these specific integrative medicine practices (Bolanthakodi et al., 2018; Borup et al., 2009; Chung et al., 2003; Chuntharapat et al., 2008; El Fadeel Abd El Hamid et al., 2013; Jahdi et al., 2017; Levett et al., 2016; Mafetoni & Shimo, 2015). All but one of the eight studies (Chung et al.,2003) found a statistically significant decrease in the length of time women spent laboring with the use of integrative medicine practices.

Within three different studies involving the use of prenatal yoga, one or all of the stages of labor was significantly shortened in comparison to the control group. Bolanthakodi et al.

(2018) and Chuntharapat et al. (2008) both showed a shortened first stage of labor, as well as a shorter total duration of labor (Bolanthakodi et al., 2018, $p<0.001$) (Chuntharapat et al., 2008, $p<0.05$). Jahdi et al. (2017) showed a shorter duration of the second and third stages of labor ($p=0.04$ and $p=0.01$). The two day antenatal complementary therapies course including acupressure, yoga, and relaxation techniques was correlated with a shorter second stage of labor (60 min vs 92 min) among the participants compared to the control group without extra education ($p=0.05$) (Levett et al., 2016).

Mafetoni & Shimo (2015) studied acupressure administered at the SP6 point which resulted in the average labor duration being significantly shorter for the intervention group (221 minutes compared to 398 minutes, $p=0.0047$). Furthermore, El Fadeel Abd El Hamid et al. (2013) studied acupressure also applied to the SP6 point. Again women in the study group had a shorter duration of labor during both the first and second stages of labor than women in the control group with a mean of 6.02+1.07 hours in the study group compared to a mean of 9.45+2.71 hours in the control group during the first stage ($p=0.002$) and means of 23.42+12.00 minutes and 34.89+9.53 minutes for the study and control groups respectively during second stage ($p< 0.04$) (El Fadeel Abd El Hamid et al., 2013). In the lone study that compared the effect of acupuncture in labor and delivery, there was a significant reduction for the duration of labor in the intervention group, 289 minutes versus 365 minutes in the control group, $p=0.001$(Borup et al., 2009).

Mode of Delivery. Eighteen studies in this review examined the impact of integrative medicine practices on the mode of delivery, comparing either vaginal or operative birth, which included forceps, vacuum extraction, or cesarean delivery. Results varied. Seven of the studies

indicated no statistical significance in normal vaginal versus operative births, but eleven studies did find a decrease in the number of operative births.

Two independent studies were done by Bolanthakodi et al. (n=200), and Jahdi et al. (n=60) reporting a significantly greater number of normal vaginal deliveries as a result of prenatal yoga participation. Within the Bolanthakodi et al. study (2018), 82.6% in the intervention group versus 68% in the control group had normal vaginal deliveries ($p<0.037$). Within the Jahdi et al. study (2017), 86.7% in the intervention group had normal vaginal deliveries compared with 50% in the control group ($p=0.002$). A systemic review done by Beddoe & Lee (2008) assessed the outcomes of 12 trials which involved several different mind-body interventions used during pregnancy and in labor. Five of the trials including a total of 335 women looked at the use of yoga in pregnancy. The intervention groups had a 23% cesarean rate versus 33% for the control group. This difference is clinically relevant regardless of the fact of not attaining statistical significance (Beddoe & Lee, 2008).

In a study that taught breathing exercises to women during pregnancy, there was a 3.28% operative birth rate for the intervention group and 11.48% rate of operative births including cesarean sections and assisted vaginal deliveries in the control group (Jain et al., 2017). Bastani, Hidarnia, Montgomery, Aguilar-Vafaei, & Kazemnejad created a similar trial involving 220 women who, along with routine prenatal care, also received 7-weeks of applied relaxation training sessions (2006). When compared with the control group, there was a significant difference ($p=0.002$) in the mode of delivery; the rate of normal vaginal delivery was 78.8% in the experimental group and 52.9% in the control group (Bastani et al., 2006). Additionally, Levett et al. (2016) created a study looking at the benefits of a two-day antenatal course teaching complementary therapies including acupressure, yoga, and relaxation techniques on the impact

of birth outcomes. This study found a statistically significant difference in cesarean rates between the intervention group 18.2% and the control group 32.5% (p=0.017).

In a meta-analysis of 13 randomized control trials where acupressure was utilized during labor, the mode of delivery was observed. The results showed that acupressure increased the rate of a vaginal delivery when compared with placebo or no intervention (p=0.002) (Makvandi et al., 2016). Within a study by Mafetoni & Shimo (2015) the rate of cesarean section in the intervention group receiving acupressure was 26.9% while the control group was 42.3%. Even though this was not statistically significant, like the study by Beddoe & Lee (2008) it is clinically relevant. Akbarzadeh et al. (2015) compared the use of mono and bi-stage acupressure at the GB21 point verse standard cares and its effect on delivery for women. The results showed that cesarean sections were performed on 1.0% of women from the intervention groups and 10.0% of the women from the control groups (p=0.022). Earlier Akbarzadeh et al. (2014) had compared maternal supportive care, acupressure, and traditional care. Natural vaginal deliveries occurred 94% of the time in the maternal care group, 92% of the time in the acupressure group, and 60% of the time in the control group. Finally a study within the United States was done looking at 45 women who received acupuncture during labor and comparing them to 127 historical control matches. This study found that the women who received acupuncture underwent significantly fewer cesarean sections (7% versus 20%, p=0.004) (Citkovitz et al., 2009).

Summary

Nineteen scholarly articles were chosen for appraisal to determine the use of integrative medicine practices effects on the use of obstetric intervention in labor and delivery. The most prominent type of results was conducted through the use of randomized control trials creating a high level of research, yet the majority of these studies were good or low quality based on the

Johns Hopkins Research Evidence Appraisal Tool and were not rated high. Small sample sizes didn't allow for all of the research to reach statistical significance yet it can all be applied as clinically relevant.

When the body of research was scrutinized, the most profound impact these specific integrative medicine practices had on labor and delivery was seen in decreased level of pain and epidural usage, shorter labors, and increased spontaneous vaginal deliveries. Moreover, although less supported by the current research, these specific integrative medicine practices were also seen to reduce the use of pitocin, increase maternal satisfaction, and present the possibility of significant financial savings for clinical institutes who utilized these practices.

Chapter Four will discuss the current trends in maternity care, including the gaps in the literature regarding integrative practices. Implications for nurse-midwifery practice will be explored as well as recommendations for future research. Finally, a discussion of Dr. Watson's Theory of Human Caring will also be integrated and applied to the benefits seen with the use of specific integrative medicine practices.

Chapter IV: Discussion, Implications, and Conclusions

The purpose of this literature analysis was to discern if among pregnant women during labor and delivery will there be a difference in the use of the obstetric interventions such as epidural analgesia, pitocin use, and operative births comparing women who use specific integrative medicine and those who do not use these practices. Nineteen scholarly writings were selected for critique using the John Hopkins Research Evidence Appraisal Tool. The examination findings revealed current trends in research about integrative medicine practices as well as gaps in the literature. This final chapter will help to identify research findings that are important to integrate into midwifery practice as well as recommended areas of focus for future studies. Watson's Theory of Human Caring will also be integrated and applied to the benefits seen with the use of specific integrative medicine practices.

Literature Synthesis

The fundamental question for this critical literature review was to discern if the use of specific integrative medicine practices including the mind-body practices of yoga and breathing techniques as well as the energy practices of acupuncture and acupressure, affects the use of obstetric intervention in labor and delivery. Many outcome variables were taken into consideration, and the findings did reveal a decrease in obstetric intervention in labor and delivery with the use of integrative medicine practices, but in some cases without statistically significant differences. Primary outcomes showed a profoundly decreased level of pain and epidural usage, shorter labors, and increased spontaneous vaginal deliveries when these integrative medicine practices were utilized. Moreover, there was reduced use of pitocin for inductions as a result of yoga practices and reduced use of pitocin for augmentations as a result of acupressure practices. Additionally although less supported by research, these specific

integrative practices also showed an increase in maternal satisfaction and presented the possibility of significant financial savings for clinical facilities when utilized.

Trends and Gaps

Leading organizations in American maternity care, have called for the identification and implementation of evidence-based maternity care practices to reduce cesarean rates and other obstetric interventions (Simkin, 2017). This has motivated an increase for research on this topic. A systematic review was done by ACOG comparing the benefits of different approaches to childbirth education looking for practices to implement towards meeting this goal. Little insight was gained due to the vast diversity in the trials and the educational curriculum itself (Simkin, 2017). However, through this research useful knowledge was gained through findings of published trials involving integrative medicine practices and their effects on birth outcomes.

Integrative medicine practices have been a subject of study since the 1950s (Simkin, 2017). The initial research was not focused on pregnancy, but within the last several decades the focus has shifted due to increased interest from women and providers. Initially, the comparisons were looking specifically at the impact of integrative medicine practices on patient's reported pain levels and intrapartum analgesia use. These subjects continue to be ongoing areas of significant research yet there has been an expanding lens. The scope of pain studies has expanded to include not only the use of pharmacological interventions and levels of reported pain but also maternal satisfaction in labor. Additionally, research has expanded to look at integrative medicine practice effects on mode of delivery, use of pitocin, length of labor, rate of exclusive breastfeeding, partner satisfaction and cost-saving strategies for labor. This expansion of research is the result of earlier research, which indicated that integrative medicine practices had the potential to bring about more significant benefits (ACNM, 2011).

Despite the valuable knowledge that has been gained regarding integrative medicine practices during pregnancy and birth, many areas still require further investigation. Gaps remain in considering how the use of integrative medicine practices impacts women in a variety of birth settings. Current research focuses on assessments within hospital settings; therefore there is no ability for comparison when these practices are employed outside of the hospital. Also, there is a limited understanding of women's perspective on the use of these integrative medicine practices as well as how provider type and health care team attitudes impact how they are employed. Finally, more studies are needed in each area with a more extensive trial size to provide additional data and support for these interventions.

Recommendations for Future Research

Current research surrounding integrative medicine practices has a solid base for demonstrating the positive effects it can have for women within pregnancy as well as during labor and birth. Further research can provide strength for this platform. Recommendations for future research should focus on expanding the depth of knowledge on all different categories of integrative medicine practices and especially creating studies with larger sample sizes. Also research should assess the use of these integrative medicine practices inside and outside of a hospital setting, the potential improvements for vulnerable populations, and the extent of fiscal implications.

Additionally, there needs to be an expanded examination into the understanding of how provider type and health care team attitudes impact integrative medicine practices use and how this plays into the mother's birthing experience. It is only with a deeper understanding of these details, examined within the context of the emerging birthing trends, that a full comprehension of the potential positive impact of integrative medicine practices can be obtained. Extensive

exploration has not yet occurred concerning the effect of integrative medicine practices on institutional and personal family financial implications. The political landscape and its consequences on health care reimbursement and research cannot be ignored. Ever-rising health care costs, combined with poor maternal and neonatal outcomes, necessitate change. The most impactful research would be to understand the root cause delaying the implementation of integrative medicine practices as a standard practice when they have been identified as effective tools to improve labor and delivery outcomes (Simkin, 2017).

Implications for Nurse-Midwifery Practice

This critical appraisal of the literature surrounding integrative medicine practices provides a comprehensive and succinct evaluation of the available scientific evidence. The midwifery community cannot disregard the positive effects integrative medicine practices have on birth, with no known negative impact. The Core Competencies for Basic Midwifery Practice outline the Hallmarks of Midwifery, which includes the standard for midwives to evaluate and incorporate scientific evidence into clinical practice (ACNM, 2012). Therefore, it is imperative that providers have a comprehensive understanding of the benefits of integrative medicine practices, allowing them to provide guidance and counseling to their patients so they can make educated, informed choices (ACNM, 2012).

Midwives are also responsible for supporting the advancement of national goals and objectives for health promotion. With the use of integrative medicine practices endorsed by the ACNM, ACOG, and SMFM, it is the professional responsibility of midwives to support legislation and policy initiatives that promote the use of these practices. The movement towards institutional practice standards that fund professional training for antenatal education and

integrative medicine practices can help bridge the divide for women who could be utilizing these practices in pregnancy as well as labor and delivery.

Application and Integration of Theoretical Framework

Dr. Watson's Theory of Human Caring clearly defines and explains the value of holistic caring. This theory guides our understanding of how looking at a person's whole self including mind, body, and spirit can allow for a vision of care that cannot be accomplished by the most cutting-edge scientific, technological advances. The Theory of Human Caring integrates both art and science into its framework with the foundation of understanding that caring is outside of curing. In this human caring process, integrative medicine practices can open up an avenue for providers to connect with the mother, her environment, and the universe (Ozan, Okumuş, & Lash, 2015). When providers utilize integrative medicine practices in pregnancy or labor and delivery, they allow for greater choice, power and meaning to be placed into the hands of the pregnant woman.

The significant and authentic human experience that a mother can have when utilizing integrative medicine practices cannot be completely articulated or measured in studies like those reviewed in this paper. There is a greater benefit than simply helping to decrease obstetric intervention. Positive birthing outcomes can come in so many forms when we utilize integrative medicine practices to truly care for women. As well as working to encourage a practice that holds the essence of wholeness including love, trust, respect and a sense of security, Watson's theory provides a wonderful blanket for us to use when providing any kind of midwifery care in the future.

References

Akbarzadeh, M., Masoudi, Z., Hadianfard, M. J., Kasraeian, M., & Zare, N. (2014). Comparison of the effects of maternal supportive care and acupressure (BL32 acupoint) on pregnant women's pain intensity and delivery outcome. *Journal of Pregnancy*. https://doi.org/10.1155/2014/129208

Akbarzadeh, M., Moradi, Z., Jowkar, A., Zare, N., & Hadianfard, M. J. (2015). Comparing the effects of acupressure at the jian jing-gall bladder meridian (GB-21) point on the severity of labor pain, duration and cesarean rate in mono-and bi-stage interventions. *Women's Health Bulletin*, *2*(1). https://doi.org/10.17795/whb-24981

American College of Nurse Midwives. (2012). *Core competencies for basic midwifery practice*. Retrieved from http://www.midwife.org/ACNM/files/ACNMLibraryData/UPLOADFILENAME/000000000050/Core%20Comptencies%20Dec%202012.pdf

American College of Nurse Midwives. (2013). Supporting healthy and normal physiologic childbirth: A consensus statement by ACNM, MANA, and NACPM. *The Journal of Perinatal Education*, *22*(1), 14–18. https://doi.org/10.1891/1058-1243.22.1.14

American College of Obstetricians and Gynecologists. (2017, September). Labor induction. Retrieved from https://www.acog.org/Patients/FAQs/Labor-Induction?IsMobileSet=false#what

American College of Obstetricians and Gynecologists. (2017, May). Medications for pain relief during labor and delivery. Retrieved from https://www.acog.org/Patients/FAQs/Medications-for-Pain-Relief-During-Labor-and-Delivery?IsMobileSet=false#risks

Bagharpoosh, M., & Goodarzi, G. S. M. (2006). Effect of progressive muscle relaxation technique on pain relief during labor. *Acta Medica Iranica*, 187–190.

Bastani, F., Hidarnia, A., Montgomery, K. S., Aguilar-Vafaei, M. E., & Kazemnejad, A. (2006). Does relaxation education in anxious primigravid Iranian women influence adverse pregnancy outcomes?: a randomized controlled trial. *The Journal of Perinatal & Neonatal Nursing*, *20*(2), 138–146.

Beddoe, A. E., & Lee, K. A. (2008). Mind-body interventions during pregnancy. *Journal of Obstetric, Gynecologic, and Neonatal Nursing: JOGNN*, *37*(2), 165–175. https://doi.org/10.1111/j.1552-6909.2008.00218.x

Bolanthakodi, C., Raghunandan, C., Saili, A., Mondal, S., & Saxena, P. (2018). Prenatal yoga: Effects on alleviation of labor pain and birth outcomes. *The Journal of Alternative and Complementary Medicine*, *24*(12), 1181–1188. https://doi.org/10.1089/acm.2018.0079

Borup, L., Wurlitzer, W., Hedegaard, M., Kesmodel, U. S., & Hvidman, L. (2009). Acupuncture as pain relief during delivery: a randomized controlled trial. *Birth (Berkeley, Calif.)*, *36*(1), 5–12. https://doi.org/10.1111/j.1523-536X.2008.00290.x

Chauhan, S. P., & Ananth, C. V. (2012). Induction of labor in the United States: A critical appraisal of appropriateness and reducibility. *Seminars in Perinatology*, *36*(5), 336–343. https://doi.org/10.1053/j.semperi.2012.04.016

Chung, U.-L., Hung, L.-C., Kuo, S.-C., & Huang, C.-L. (2003). Effects of LI4 and BL 67 acupressure on labor pain and uterine contractions in the first stage of labor. *The Journal of Nursing Research: JNR*, *11*(4), 251–260.

Chuntharapat, S., Petpichetchian, W., & Hatthakit, U. (2008). Yoga during pregnancy: effects on maternal comfort, labor pain, and birth outcomes. *Complementary Therapies in Clinical Practice*, *14*(2), 105–115. https://doi.org/10.1016/j.ctcp.2007.12.007

Citkovitz, C., Klimenko, E., Bolyai, M., Applewhite, L., Julliard, K., & Weiner, Z. (2009). Effects of acupuncture during labor and delivery in a U.S. hospital setting: A case–control pilot study. *The Journal of Alternative and Complementary Medicine*, *15*(5), 501–505. https://doi.org/10.1089/acm.2008.0422

Dearholt, S. L., & Dang, D. (Eds.). (2012). *Johns Hopkins nursing evidence-based practice: Model and guidelines* (2nd ed.). Indianapolis, IN: Sigma Theta Tau International

Duncan, L. G., Cohn, M. A., Chao, M. T., Cook, J. G., Riccobono, J., & Bardacke, N. (2017). Benefits of preparing for childbirth with mindfulness training: a randomized controlled trial with active comparison. *BMC Pregnancy and Childbirth*, *17*(1). https://doi.org/10.1186/s12884-017-1319-3

Eisenberg, D., Davis, R., & Ettner, S. (1999). Trends in alternative medicine use in the United States, 1990–1997: Results of a follow-up national survey. Complementary Therapies in Medicine, 7(3), 191-192. doi:10.1016/s0965-2299(99)80132-0

El Fadeel Abd El Hamid, N. A., Obaya, H. E., & Gaafar, H. M. (2013). Effect of acupressure on labor pain and duration of delivery among laboring women attending Cairo University hospital. *Indian Journal of Physiotherapy and Occupational Therapy - An International Journal*, *7*(2), 76. https://doi.org/10.5958/j.0973-5674.7.2.016

Gu, V., Feeley, N., Gold, I., Hayton, B., Robins, S., Mackinnon, A., … Zelkowitz, P. (2016). Intrapartum synthetic oxytocin and its effects on maternal well-being at 2 months postpartum. *Birth*, *43*(1), 28–35. https://doi.org/10.1111/birt.12198

Jahdi, F., Sheikhan, F., Haghani, H., Sharifi, B., Ghaseminejad, A., Khodarahmian, M., & Rouhana, N. (2017). Yoga during pregnancy: The effects on labor pain and delivery outcomes (A randomized controlled trial). *Complementary Therapies in Clinical Practice*, *27*, 1–4. https://doi.org/10.1016/j.ctcp.2016.12.002

Jain, P., Srivastava, H., Goel, N., Khaliq, F., Dewan, P., Sharma, R., & Bhartiya, V. (2017). Effect of antenatal exercises on pulmonary functions and labour outcome in uncomplicated primigravida women: a randomized controlled study. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*, *4*(5), 1478–1484. https://doi.org/10.18203/2320-1770.ijrcog20150732

King, T. & Brucker, M. (Eds.) (2011). Pharmacology for women's health. Sudbury, MA: Jones and Bartlett Publishers.

Levett, K. M., Smith, C. A., Bensoussan, A., & Dahlen, H. G. (2016). Complementary therapies for labour and birth study: a randomised controlled trial of antenatal integrative medicine for pain management in labour. *BMJ Open*, *6*(7). https://doi.org/10.1136/bmjopen-2015-010691

Mafetoni, R. R., & Shimo, A. K. K. (2015). Effects of acupressure on progress of labor and cesarean section rate: randomized clinical trial. *Revista De Saude Publica*, *49*, 9.

Makvandi, S., Mirzaiinajmabadi, K., Sadeghi, R., Mahdavian, M., & Karimi, L. (2016). Meta-analysis of the effect of acupressure on duration of labor and mode of delivery. *International Journal of Gynaecology and Obstetrics: The Official Organ of the International Federation of Gynaecology and Obstetrics*, *135*(1), 5–10. https://doi.org/10.1016/j.ijgo.2016.04.017

Martin, J., Hamilton, B., Osterman, M., Driscoll, A., & Drake, P. (2018). National vital statistics reports. *Center for Disease Control and Prevention*, *67*(1), 1–55.

National Center for Complementary and Integrative Health. (2011). About NCCIH. Retrieved from NCCIH website: https://nccih.nih.gov/about

National Center for Complementary and Integrative Health. (2011, November 11). Complementary, alternative, or integrative health. Retrieved from NCCIH website: https://nccih.nih.gov/health/integrative-health

Osterman, M., & Martin, J. (2011). National vital statistics reports. *Center for Disease Control and Prevention*, *59*(5), 14.

Ozan, Y. D., Okumuş, H., & Lash, A. A. (2015). Implementation of Watson's theory of human caring: A case study. *International Journal of Caring Sciences*, *8*(1), 11.

Simkin, P. (2017). Should ACOG support childbirth education as another means to improve obstetric outcomes? *Birth: Issues in Perinatal Care*, *44*(4), 293–297. https://doi.org/10.1111/birt.12306

Smith, C. A., Collins, C. T., Crowther, C. A., & Levett, K. M. (2011). Acupuncture or acupressure for pain management in labour. *The Cochrane Database of Systematic Reviews*, (7), CD009232. https://doi.org/10.1002/14651858.CD009232

Smith, C. A., Levett, K. M., Collins, C. T., & Crowther, C. A. (2011). Relaxation techniques for pain management in labour. *The Cochrane Database of Systematic Reviews*, (12), CD009514. https://doi.org/10.1002/14651858.CD009514

Watson, J. (2012). *Human caring science: a theory of nursing* (2nd ed.). Sudbury, MA: Jones & Bartlett Learning

Appendix I: Literature Review of Matrix

Source Akbarzadeh, M., Masoudi, Z., Hadianfard, M. J., Kasraeian, M., & Zare, N. (2014). Comparison of the effects of maternal supportive care and acupressure (BL32 acupoint) on pregnant women's pain intensity and delivery outcome. *Journal of Pregnancy*. https://doi.org/10.1155/2014/129208			
Johns Hopkins Evidence Appraisal: Strength: Level I Quality: B (Good Quality)			
Purpose/Sample	**Design (Method/Instruments)**	**Results/Conclusion**	**Strengths/Limitations**
Purpose: To compare the effects of supportive care (use of a doula) and acupressure at the BL32 acupoint on the pain intensity and delivery outcome of pregnant moms. **Sample/Setting:** The trial was conducted in Iran within the delivery ward of the selected educational center of Shiraz University of Medical Sciences. The sample included 150 pregnant women age 18-35 years who were of term gestation with a non-complicated singleton pregnancy. The fetus also must be in vertex presentation.	Design was a randomized controlled trial. The subjects were selected through simple random sampling and were divided into supportive care, acupressure and control groups using stratified block randomization. The study data was collected using interview form (including demographic, health history and pregnancy information), observation form (evaluating contractions, fetal heart rate, labor progress and delivery outcome) and Visual Analogue Scale looking at pain intensity.	There is significant difference among the 3 groups regarding the intensity of pain after the intervention. After the intervention the intensity of pain in the supportive care (3.54 +/- 1.328) and acupressure groups (3.44 +/- 0.907) compared to the control group (9.40 +/- 1.010). This difference was statistically significant ($p < 0.001$). The rate of natural vaginal birth was highest in the supportive group (94%) second being the acupressure group (92%) and only 60% in the control group. Making the highest cesarean rate was in the control group at 40% ($p<0.001$). Both maternal supportive care and acupressure during labor reduced the intensity of pain and improved the delivery outcomes for moms.	**Strengths:** This study described the specific interventions that each group of women would receive and followed these descriptions. The Visual Analogue Scale was used to help obtain information as to the intensity of pain. This trial was registered with the Iranian Registry of Clinical Trials. **Limitations:** This trial only looked at very low risk mothers and was only a sample size of 150 women. Therefore the sample size and characteristics don't allow for the results to be applied to a wide population.

Source
Akbarzadeh, M., Moradi, Z., Jowkar, A., Zare, N., & Hadianfard, M. J. (2015). Comparing the effects of acupressure at the jian jing-gall bladder meridian (GB-21) point on the severity of labor pain, duration and cesarean rate in mono-and bi-stage interventions. *Women's Health Bulletin*, *2*(1). https://doi.org/10.17795/whb-24981

Johns Hopkins Evidence Appraisal:

Strength: Level II

Quality: B (Good Quality)

Purpose/Sample	**Design (Method/Instruments)**	**Results/Conclusion**	**Strengths/Limitations**
Purpose: To compare acupressure at the GB-21 point on the severity of pain and the delivery outcome for women in labor. **Sample/Setting:** Study conducted with 150 nulliparous women between the ages of 18 and 35 years old who had a singleton pregnancy. Women also were considered if they had normal, uncomplicated full term pregnancies between 37-41weeks gestation and the fetus must present in vertex position. This study took place in Iran where women were laboring at Shiraz Hafez and Shoshtari Hospitals.	The design was a quasi-experimental uni-blind study. The subjects were selected through convenient sampling and divided into intervention verse control groups using the table of random numbers and permutation block randomization during research.	Pain severity between the intervened groups compared with the control group at 3-4cm dilation was statically significantly less ($P<0.001$). Also the duration of first stage of labor was less in the mono-stage intervention group (3.06+/-1.02 hours) and bi-stage intervention (2.86 +/-1.08 hours) compared to the control group (3.61+/- 0.67 hours) ($P<0.001$). The rate of cesarean section was less in the intervention groups where only 1.0% of women received a cesarean section versus 10% if the control group ($P<0.001$). Acupuncture, specifically that at the GB-21 point is effective in reducing pain, duration of labor and the rate of cesarean sections. Pain is seen to be reduced in mothers by increasing the frequency of intervention.	**Strengths:** This study looked at comparing both mono-stage and bi-stage intervention of acupressure. The data for this study was analyzed using a SPSS software therefore bias could be removed from the interpretation of results. **Limitations:** This is not a randomized control trial therefore doesn't have as much strength in evidential research

Source Borup, L., Wurlitzer, W., Hedegaard, M., Kesmodel, U. S., & Hvidman, L. (2009). Acupuncture as pain relief during delivery: a randomized controlled trial. *Birth (Berkeley, Calif.)*, *36*(1), 5–12. https://doi.org/10.1111/j.1523-536X.2008.00290.x			
Johns Hopkins Evidence Appraisal: Strength: Level I Quality: B (Good Quality)			
Purpose/Sample	**Design (Method/Instruments)**	**Results/Conclusion**	**Strengths/Limitations**
Purpose: To compare the effect of acupuncture with transcutaneous electric nerve stimulation (TENS) and traditional analgesics for pain relief and relaxation during delivery with respect to pain intensity, birth experience and obstetric outcome. **Sample/Setting:** Trial was conducted in Denmark at a university hospital including 607 women. To be included in the study the women had to be healthy in labor with a normal singleton pregnancy who was term (37-42 weeks). Also the fetus had to be in vertex presentation in order for the women to be eligible	The design was a randomized controlled trial without blinding. Women who presented in labor and those who requested pain relief were asked to take part. After consent they were randomized to receive acupuncture, TENS, or traditional analgesics (sterile water papules, nitrous oxide, warm tub bath, pethidine or epidural analgesia). Pain was assessed using a linear 10-cm visual analog scale.	There was no significant different among the three groups when it come to the pain scores at any time during labor. The use of pharmacological and invasive methods including epidurals, nitrous, pethidine and sterile water papules were significantly lower in the acupuncture group (acupuncture 58.9% vs traditional 83.2%, $p<0.001$; acupuncture 58.9% vs TENS 69.4%, $p=0.031$) Acupuncture reduced the need for pharmacological and invasive methods during delivery. It can be assumed that acupuncture is a good supplement to existing pain relief methods therefore should be taught and offered to women when they are in labor.	**Strengths:** This is the largest study that has been done yet who looking at the use of acupuncture with pregnant women. Yet there can always be larger studies done it is significant to have 607 women participate in this one. This study included both nulliparous and multiparous women in the study not excluding one group therefore evidence can be applied to a wider range of women. **Limitations:** Though this study includes a large number of women there could always be larger studies than these.

Source Chung, U.-L., Hung, L.-C., Kuo, S.-C., & Huang, C.-L. (2003). Effects of LI4 and BL 67 acupressure on labor pain and uterine contractions in the first stage of labor. *The Journal of Nursing Research: JNR*, *11*(4), 251–260.			
Johns Hopkins Evidence Appraisal: Strength: Level I Quality: B (Good Quality)			
Purpose/Sample	**Design (Method/Instruments)**	**Results/Conclusion**	**Strengths/Limitations**
Purpose: To determine the effect of LI4 and BL67 acupressure on labor pain and uterine contractions during the first stage of labor. **Sample/Setting:** This study was done in Taiwan including a total of 127 parturient women who met the following criteria; had an estimated gestational age of the fetus between 37 and 42 weeks, not a high-risk pregnancy, carrying only one fetus and were able to interact verbally in Chinese.	The design was a randomized control trial where women were assigned into one of three different groups. Each group received only one of the following treatments, LI4 and BL67 acupressure, light skin stroking or no treatment/ conversation only. Data was collected using the visual analogue scale (VAS) and external fetal monitoring strips were also used within analysis.	Results indicated that there was a significant difference in decreased labor pain during the active phase of the first stage of labor between the intervention groups. The number was statistically significant ($p=0.017$) decrease in labor pain during the active phase of the first stage of labor when providing acupressure to LI4 and BL67 points. Yet this study reported that there was no significant difference in effectiveness of uterine contractions during the first stage of labor among the groups. Conclusion confirms that using acupressure at the LI4 and BL67 points during the active phase of labor can help to reduce labor pains.	**Strengths:** Being a randomized control trial, allows for blind drawing and placement of women into each intervention group. This helps to remove un-intended bias from the study and create more accurate results. The education provided for the five nurse-midwives participating in the study were thoroughly trained and educated about how to provide acupressure at these specific points. **Limitations:** With a small sample size the results can be more difficult to utilize when applying on a large scale.

Source

Citkovitz, C., Klimenko, E., Bolyai, M., Applewhite, L., Julliard, K., & Weiner, Z. (2009). Effects of acupuncture during labor and delivery in a U.S. hospital setting: A case–control pilot study. *The Journal of Alternative and Complementary Medicine*, *15*(5), 501–505. https://doi.org/10.1089/acm.2008.0422

Johns Hopkins Evidence Appraisal:

Strength: Level II

Quality: B (Good Quality)

Purpose/Sample	**Design (Method/Instruments)**	**Results/Conclusion**	**Strengths/Limitations**
Purpose: To assess clinical effects of acupuncture given during labor and delivery including the incidence of cesarean section, amount of parenteral opioids used, use of epidural anesthesia, and duration of labor **Sample/Setting:** Study was conducted with 45 patients in a New York urban community hospital admitted in labor with a normal term pregnancy (37-41 weeks) with a fetus in vertex position and cervical dilation of 2-5 cm when admission to the hospital occurred. These patients also were required to be between the ages of 18 and 40 years old. `	A case-control pilot study. The patients who received acupuncture were matched with 1-3 patients (127 total historical patients) drawn in reverse chronological orders on the basis of matching parameters from labor and delivery cases completed during the acupuncture study period. Controls were matching according to four parameters deemed most likely to affect the clinical outcomes being studied including, maternal age, gestational age, parity, and use of oxytocin (augmentation and induction were matched separately). Statistical analyses were performed using GLIMMIX macro, SAS Institute, Cary, NC.	Acupuncture patients underwent significantly fewer cesarean sections (7% versus 20%, p =0.004). No significant differences were seen in other clinical end points Concluding that acupuncture is well tolerated by patients and medical staff during labor and delivery with good benefit to reducing the cesarean rates. There is be further evaluation used big study numbers to evaluate acupuncture for its promising potential to reduce the incidence of cesarean section.	**Strengths:** There were five licensed acupuncturists who were trained in an alike manner within Traditional Chinese Medicine acupuncture treatment. The study protocol manual allowed for a standardized approach. **Limitations:** This was a case-control pilot study therefore its ability to remove bias was low. The process of looking at the controlled matches was specific but these results do not completely allow for standardization of results.

Source

El Fadeel Abd El Hamid, N. A., Obaya, H. E., & Gaafar, H. M. (2013). Effect of acupressure on labor pain and duration of delivery among laboring women attending Cairo University hospital. *Indian Journal of Physiotherapy and Occupational Therapy - An International Journal*, *7*(2), 76. https://doi.org/10.5958/j.0973-5674.7.2.016

Johns Hopkins Evidence Appraisal:

Strength: Level II

Quality: B (Good Quality)

Purpose/Sample	**Design (Method/Instruments)**	**Results/Conclusion**	**Strengths/Limitations**
Purpose: To examine the effect of acupressure at sanyinjiao point (SP6) on labor pain and the duration of delivery in primigravida women. **Sample/Setting:** The study was conducted on a labor and delivery unit at Cairo University Hospital, Egypt. Included 100 healthy women in labor, 50 in the study group and 50 in the control group. The women had to be with a singleton fetus, gestational age between 37 and 40 weeks, normal fetal heart rate, intact membranes, in early active acceleration phase (3-4 cm dilation), maternal age between 20-30 years old and could read and write.	This design was a quasi-experimental trial where the women were randomly assigned into either the study group or control group. An official permission acceptance was obtained from all women who met the inclusion criteria and informed them about the purpose of the trial. Data was collected from structured interviewing questionnaire including personal data and obstetrical data, partogarph and visual analogue scale for assessment of pain (VAS): before intervention, immediately after the intervention, 30 minutes, 60 minutes and 120 minutes after intervention.	Results found between intervention group and control group labor pain was lower immediately after (p=0.004), after 30 minutes (p=0.002), after 60 minutes (p=0.02) and after 120 minutes (p=0.03). Also the study group had a shorter duration of labor during both the first and second stages of labor than women in the control group with a mean of 6.02+1.07 hours in the study group compared to a mean of 9.45+2.71 hours in the control group during the first stage (p=0.002) and means of 23.42+12.00 minutes and 34.89+9.53 minutes for the study and control groups respectively during second stage (p< 0.04). SP6 acupressure is effective in reducing labor pains and duration of labor. Therefore acupressure could be used as pain management.	**Strengths:** Within this study results of pain was observed at more than one point; it was studied before, immediately after, as well as 30, 60 and 120 minutes after a women received the intervention. With multiple data points it allows for a broader understand the result of acupressure intervention and stronger conclusion. **Limitations:** A quasi-experimental trial is not as strong as a randomized control trial and doesn't allow for bias reduction to occur. Also a sample size of only 100 women is not a very large study sample.

Source Mafetoni, R. R., & Shimo, A. K. K. (2015). Effects of acupressure on progress of labor and cesarean section rate: randomized clinical trial. *Revista De Saude Publica*, *49*, 9.			
Johns Hopkins Evidence Appraisal: Strength: Level 1 Quality: B (Good Quality)			
Purpose/Sample	**Design (Method/Instruments)**	**Results/Conclusion**	**Strengths/Limitations**
Purpose: To analyze the effects of acupressure at the SP6 point on the duration of labor and the cesarean section rates **Sample/Setting:** The study includes 156 patients we are 37weeks gestation or greater who have had a normal pregnancy and they present in labor at least 4cm dilated as well as at least 2 contractions every 10 minutes. Women who were excluded; pre-eclampsia, placenta previa, two or more previous cesarean sections or immediate indication for surgical mode of delivery. These women are at the university hospital in the state of São Paulo, Brazil.	A randomized controlled trail that is double-blind. The participants were allocated using a selection list of random numbers and divided into three groups; acupressure group (SP6G), touch group (placebo group) and control group. For collecting sociodemographic and clinical data a questionnaire was prepared and submitted for validation of content by five judges with experience in both obstetrics and traditional Chinese Medicine. And the quantitative variables were compared between the groups using the Kruskal-Wllis test.	The average labor duration was significantly different between the intervention group who received acupressure at the SP6 point [221.5 min (SD=162.4)] compared to the placebo [397.9 min (SD=265.6)] and compared to the control [381.9 min (SD=358.3)] (P=0.0047) However there was no statistical significance regarding the cesarean section rates and the intervention group. The SP6 acupressure point has proven. Be a good complementary measure to help induce progression in labor and also may shorten the total duration of labor without causing adverse effects to mother or newborn. More research is needed to evaluate the exact response of the SP6 pressure point.	**Strengths:** The researchers responsible for applying the acupression techniques underwent 32 hours of training. Also the interventions given were standardized by the researcher using a cushioned electronic child anthropometric scale in practice until they could securely maintain the pressure and consistency desired for SP6G. **Limitations:** With a sample size it is needed to have additional research in order to be able to generalize the results to the general population. Also there is no ability to apply this information to women who have high risk pregnancies because all were excluded from the study sample.

Source Makvandi, S., Mirzaiinajmabadi, K., Sadeghi, R., Mahdavian, M., & Karimi, L. (2016). Meta-analysis of the effect of acupressure on duration of labor and mode of delivery. *International Journal of Gynaecology and Obstetrics: The Official Organ of the International Federation of Gynaecology and Obstetrics*, *135*(1), 5–10. https://doi.org/10.1016/j.ijgo.2016.04.017			
Johns Hopkins Evidence Appraisal: Strength: Level I Quality: B (Good Quality)			
Purpose/Sample	**Design (Method/Instruments)**	**Results/Conclusion**	**Strengths/Limitations**
Purpose: To summarize and assess the evidence regarding the effects of acupressure on the duration of labor and the mode of delivery within randomized control trials. **Sample/Setting:** Four major databases and Google scholar was searched and found 13 randomized controlled trials that examined the effects of acupressure at any acupoint during childbirth on the duration of labor and /or mode of delivery. Eligible studies could include nulliparous or multiparous women who health full-term pregnancies in the first stage of labor.	A systematic review of randomized controlled trials with a meta-analysis. Data extraction was performed by two independent reviewers using a form that had been specifically designing for this purpose. First author's name, year of publication, country, participants, type of intervention and comparison and outcomes were extracted.	Acupressure increases the chance of vaginal delivery when compared with placebo or no interventions. (Odds ratio 2.329, 95% confidence interval 1.348-4.024, P=0.002; risk difference 8.9%, 95% CI 2.7%-15.0%, P=0.005) Acupressure decreased the duration of the active phase by 1.310 hours (P<0.001) Acupressure could have a great role in reducing the rate of cesarean delivery and decreasing the duration of labor for moms. Yet there is a need for more reliable randomized controlled trials.	**Strengths:** This systematic review allows for us to look at a greater array of trials and evaluate the effect of acupressure instead of just a trial that stands alone. Our n-value is much larger when utilizing this systematic review as well. **Limitations:** The included trials only allowed for lower risk pregnancies. Therefore we have no evidence of what these same intervention could create as result for women who are higher risk. Also there is no conversation as to how these acupressure might be effected by patient bias.

Source Smith, C. A., Collins, C. T., Crowther, C. A., & Levett, K. M. (2011). Acupuncture or acupressure for pain management in labour. *The Cochrane Database of Systematic Reviews*, (7), CD009232. https://doi.org/10.1002/14651858.CD009232			
Johns Hopkins Evidence Appraisal: Strength: Level 1 Quality: B (Good Quality)			
Purpose/Sample	**Design (Method/Instruments)**	**Results/Conclusion**	**Strengths/Limitations**
Purpose: To summarize and assess the evidence regarding the effects of acupressure on the duration of labor and the mode of delivery within randomized control trials. **Sample/Setting:** Four major databases and Google scholar was searched and found 13 randomized controlled trials that examined the effects of acupressure at any acupoint during childbirth on the duration of labor and /or mode of delivery. Eligible studies could include nulliparous or multiparous women who health full-term pregnancies in the first stage of labor.	A systematic review of randomized controlled trials with a meta-analysis. Data extraction was performed by two independent reviewers using a form that had been specifically designing for this purpose. First author's name, year of publication, country, participants, type of intervention and comparison and outcomes were extracted.	Acupressure increases the chance of vaginal delivery when compared with placebo or no interventions. (Odds ratio 2.329, 95% confidence interval 1.348-4.024, P=0.002; risk difference 8.9%, 95% CI 2.7%-15.0%, P=0.005) Acupressure decreased the duration of the active phase by 1.310 hours (P<0.001) Acupressure could have a great role in reducing the rate of cesarean delivery and decreasing the duration of labor for moms. Yet there is a need for more reliable randomized controlled trials.	**Strengths:** This systematic review allows for us to look at a greater array of trials and evaluate the effect of acupressure instead of just a trial that stands alone. Our n-value is much larger when utilizing this systematic review as well. **Limitations:** The included trials only allowed for lower risk pregnancies. Therefore we have no evidence of what these same intervention could create as result for women who are higher risk. Also there is no conversation as to how these acupressure might be effected by patient bias.

Source Bagharpoosh, M., & Goodarzi, G. S. M. (2006). Effect of progressive muscle relaxation technique on pain relief during labor. *Acta Medica Iranica*, 187–190.			
Johns Hopkins Evidence Appraisal: Strength: Level 1 Quality: B (Good Quality)			
Purpose/Sample	**Design (Method/Instruments)**	**Results/Conclusion**	**Strengths/Limitations**
Purpose: To determine the effect of relaxation techniques on pain relief during labor including progressive muscle relaxation. **Sample/Setting:** This study is carried out in the Fatemieh hospital (Hamadan, Iran) with 62 women. The women were between the ages of 20-30 years old, primiparous, educated and without any obstetric complication.	This study was a matched-pairs randomized clinical trial. The 62 women who participated were allocated randomly into two groups, the test and control groups. During labor the test group followed the instructions for relaxation under the supervision of one of the researchers, but the women in the control group did their labor without any supervised relaxation. A standard pain number rating scale was used to assess the severity of pain.	Pain severity between the intervened groups compared with the control group at 3-4cm dilation was statically significantly less ($P<0.001$). Also the duration of first stage of labor was less in the mono-stage intervention group (3.06+/-1.02 hours) and bi-stage intervention (2.86 +/- 1.08 hours) compared to the control group (3.61+/- 0.67 hours) ($P<0.001$). The rate of cesarean section was less in the intervention groups where only 1.0% of women received a cesarean section versus 10% if the control group ($P<0.001$). Acupuncture, specifically that at the GB-21 point is effective in reducing pain, duration of labor and the rate of cesarean sections. Pain is seen to be reduced in mothers by increasing the frequency of intervention (one vs. two stages).	**Strengths:** This study looked at comparing both mono-stage and bi-stage intervention of acupressure. The data for this study was analyzed using a SPSS software therefore bias could be removed from the interpretation of results. **Limitations:** This is not a randomized control trial therefore doesn't have as much strength in evidential research

Source Bastani, F., Hidarnia, A., Montgomery, K. S., Aguilar-Vafaei, M. E., & Kazemnejad, A. (2006). Does relaxation education in anxious primigravid Iranian women influence adverse pregnancy outcomes?: a randomized controlled trial. *The Journal of Perinatal & Neonatal Nursing*, *20*(2), 138–146			
Johns Hopkins Evidence Appraisal: Strength: Level 1 Quality: B (Good Quality)			
Purpose/Sample	**Design (Method/Instruments)**	**Results/Conclusion**	**Strengths/Limitations**
Purpose: To assess whether relaxation education in anxious pregnant women in their first pregnancy affects pregnancy outcomes including birth weight, preterm birth and surgical delivery rate. **Sample/Setting:** The study included 110 low risk primigravida women from Iran who also had high anxiety levels. The control group received standard prenatal care while the experimental group also revived 7 weeks of applied relaxation training sessions.	The design was a randomized controlled trial without blinding. Women who presented in labor and those who requested pain relief were asked to take part. After consent they were randomized to receive acupuncture, TENS, or traditional analgesics (sterile water papules, nitrous oxide, warm tub bath, pethidine or epidural analgesia). Pain was assessed using a linear 10-cm visual analog scale.	A significant reduction in low birth rate (p=.003), cesarean sections (p=.001) and instrumental extractions (p=.001) were found in the experimental group compared with the control group. The finding suggest that there are beneficial effects of relaxation education sessions during the prenatal period on pregnancy outcomes.	**Strengths:** Being a randomized control trial, allows for blind drawing and placement of women into each intervention group. This helps to remove un-intended bias from the study and create more accurate results. The education provided for the five nurse-midwives participating in the study were thoroughly trained and educated about how to provide acupressure at these specific points. **Limitations:** With a small sample size the results can be more difficult to utilize when applying on a large scale.

Source Beddoe, A. E., & Lee, K. A. (2008). Mind-body interventions during pregnancy. *Journal of Obstetric, Gynecologic, and Neonatal Nursing: JOGNN*, *37*(2), 165–175. https://doi.org/10.1111/j.1552-6909.2008.00218.x			
Johns Hopkins Evidence Appraisal: Strength: Level 1 Quality: B (Good Quality)			
Purpose/Sample	**Design (Method/Instruments)**	**Results/Conclusion**	**Strengths/Limitations**
Purpose: To examine evidence from published reviews on the effectiveness of mind-body interventions including psychoeducation, relaxation and yoga on the perceived stress, mood and perinatal outcomes in pregnancy **Sample/Setting:** The review included 12 published intervention studies, all of which investigated a mind-body modality with adult pregnant women, were prospective in design, original research, contained quantitative data, were published in English in peer-reviewed journals, and contained a measured variable related to psychological stress.	A systematic review of mixed studies. A systematic review of randomized controlled trials with a meta-analysis. Data extraction was performed by two independent reviewers using a form that had been specifically designing for this purpose. First author's name, year of publication, country, and participants, type of intervention and comparison and outcomes were extracted.	The outcomes of 12 trials which involved several different mind-body interventions used during pregnancy and in labor. Five of the trials including a total of 335 women looked at the use of yoga in pregnancy. The intervention groups had a 23% cesarean rate versus 33% for the control group. This difference is clinically relevant regardless of the fact of not attaining statistical significance There is evidence that pregnant women have health benefits from mind-body therapies including psychoeducation, relaxation and yoga used in conjunction with conventional prenatal care.	**Strengths:** This systematic review allows for us to look at a greater array of trials and evaluate the effect of acupressure instead of just a trial that stands alone. Our n-value is much larger when utilizing this systematic review as well. **Limitations:** Further research is needed to assert to build on these studies in order to predict characteristics of subgroups that might benefit from mind-body practices and examine cost effectiveness of these interventions on perinatal outcomes.

Source Bolanthakodi, C., Raghunandan, C., Saili, A., Mondal, S., & Saxena, P. (2018). Prenatal yoga: Effects on alleviation of labor pain and birth outcomes. *The Journal of Alternative and Complementary Medicine*, *24*(12), 1181–1188. https://doi.org/10.1089/acm.2018.0079			
Johns Hopkins Evidence Appraisal: Strength: Level I Quality: B (Good Quality)			
Purpose/Sample	**Design (Method/Instruments)**	**Results/Conclusion**	**Strengths/Limitations**
Purpose: To assess the effect that prenatal yoga exercises have on alleviating labor pain and improving birth outcomes, by comparing pregnant women undertaking yoga with a control group. **Sample/Setting:** The study involved 200 primigravid women of 30 weeks gestation onward who were 20-30 years of age and had no prior yoga experience. The women also had to have an uncomplicated singleton pregnancy. The experiment group consisted of a series of 30 minute sessions at weeks 30, 32, 34, 36, 36, 38, and 39.	A Randomized controlled trial. The study data was collected using interview form (including demographic, health history and pregnancy information), observation form (evaluating contractions, fetal heart rate, labor progress and delivery outcome) and Visual Analogue Scale looking at pain intensity.	The requirement of induction of labor and analgesics was significantly less in the study group ($p<0.044$, $p<0.045$). There was also significantly more normal vaginal deliveries ($p<0.037$) and less Caesarean sections ($p<0.048$), shorter first stage of labor ($p<0.0003$) in the group that participated in yoga The results show that yoga is a great and easy noninvasive mind-body exercise that shows good results in alleviating labor pains, and improving birth outcomes by decreasing the need for obstetrical interventions	**Strengths:** This study described the specific interventions that each group of women would receive and followed these descriptions. The Visual Analogue Scale was used to help obtain information as to the intensity of pain. **Limitations:** This trial only looked at very low risk mothers and was only a sample size of 200 women. Therefore the sample size and characteristics don't allow for the results to be applied to a wide population.

Source Chuntharapat, S., Petpichetchian, W., & Hatthakit, U. (2008). Yoga during pregnancy: effects on maternal comfort, labor pain and birth outcomes. *Complementary Therapies in Clinical Practice*, *14*(2), 105–115. https://doi.org/10.1016/j.ctcp.2007.12.007			
Johns Hopkins Evidence Appraisal: Strength: Level I Quality: B (Good Quality)			
Purpose/Sample	**Design (Method/Instruments)**	**Results/Conclusion**	**Strengths/Limitations**
Purpose: To examine the effects of yoga during pregnancy on that of maternal comfort, labor pain and birth outcomes. **Sample/Setting:** The study included 74 primigravid Thai women from two public hospitals in southern Thailand. The women had to be at least 18 years old, without serious illness and an uncomplicated pregnancy. As the women were without prior experience with. Practicing yoga.	A randomized controlled trial. The yoga program involved six, 1hour sessions at prescribed weeks gestation. The study data was collected using interview form (including demographic, health history and pregnancy information), observation form (evaluating contractions, fetal heart rate, labor progress and delivery outcome) and Visual Analogue Scale looking at pain intensity.	The Experimental group was found to have higher levels of maternal comfort during labor and 2 hours post labor ($p<0.05$). Also the yoga group had shorter duration of first stage of labor (mean= 519.88, SD= 185.68) versus the control group (mean=659.79, SD=272.79) as well as the total time of labor was decreased in the yoga group ($p<0.05$) The finding show that yoga practiced throughout the pregnancy is an effective complementary means for facilitating maternal comfort, decreasing pain during labor and 2 hours post delivery, and shortening the length of labor. Therefore yoga could improve maternal and fetal health overall.	**Strengths:** Within this study results of pain was observed at more than one point; it was studied before, immediately after, as well as 30, 60 and 120 minutes after a women received the intervention. With multiple data points it allows for a broader understand the result of acupressure intervention and stronger conclusion. **Limitations:** A sample size of only 74 women is not a very large study sample. Not allowing for a large amount of bias to be eliminated. Additional research should be done on a larger scale to continue evaluating the benefits of yoga in labor as well as to better elucidate physiological mechanism underlying pain relief during labor and delivery

Source Duncan, L. G., Cohn, M. A., Chao, M. T., Cook, J. G., Riccobono, J., & Bardacke, N. (2017). Benefits of preparing for childbirth with mindfulness training: a randomized controlled trial with active comparison. *BMC Pregnancy and Childbirth*, *17*(1). https://doi.org/10.1186/s12884-017-1319-3			
Johns Hopkins Evidence Appraisal: Strength: Level I Quality: B (Good Quality)			
Purpose/Sample	**Design (Method/Instruments)**	**Results/Conclusion**	**Strengths/Limitations**
Purpose: To assess the benefits of preparing for childbirth with mindfulness training versus standard childbirth preparation and how it affects intrapartum and postpartum attitudes for women **Sample/Setting:** To study included 30 women who were randomly placed in either standard childbirth education or a short time-intensive, 2.5 day mindfulness-based childbirth preparation course. Women were first time moms in the 3rd trimester who had a normal uncomplicated singleton pregnancy	A randomized controlled trial with blind selection. For collecting sociodemographic and clinical data a questionnaire was prepared and submitted for validation of content by five judges with experience in both obstetrics and mindfulness training. And the quantitative variables were compared between the groups using the Kruskal-Wllis test.	The mindfulness-based childbirth education improved women's childbirth related appraisals and psychological functioning compared to standard childbirth education. Also the rate of narcotic use within the mindfulness group was 30.8% versus within the control group it was 61.5%. Despite have a large risk ratio (RR=.50) the difference showed a trend towards statistical significance Mindfulness training that is tailored to address fear and pain in childbirth may lead to important maternal benefits such as mental health and a decrease in use off systemic opioids pain medication. Yet a large scale RCT that captures real time pain during labor and length of labor is neede to provide more definitive results	**Strengths:** Being a randomized control trial, allows for blind drawing and placement of women into each intervention group. This helps to remove un-intended bias from the study and create more accurate results. The education provided for the five nurse-midwives participating in the study were thoroughly trained and educated about how to provide acupressure at these specific points. **Limitations:** With a small sample size the results can be more difficult to utilize when applying on a large scale.

Source Jahdi, F., Sheikhan, F., Haghani, H., Sharifi, B., Ghaseminejad, A., Khodarahmian, M., & Rouhana, N. (2017). Yoga during pregnancy: The effects on labor pain and delivery outcomes (A randomized controlled trial). *Complementary Therapies in Clinical Practice*, *27*, 1–4. https://doi.org/10.1016/j.ctcp.2016.12.002			
Johns Hopkins Evidence Appraisal: Strength: Level I Quality: B (Good Quality)			
Purpose/Sample	**Design (Method/Instruments)**	**Results/Conclusion**	**Strengths/Limitations**
Purpose: To evaluate the effects of an antenatal yoga program on perceived maternal labor pain and delivery outcomes compared it's a control group. **Sample/Setting:** The trail included 60 primigravid women ages 18-35 in the Mirza Koochak Khan hospital Tehran, Iran. the women had to be healthy with an uncomplicated pregnancy. Also the women had to have no prior experience with yoga or other forms of exercise such as Pilates or tai chi	Design was a randomized controlled trial. The subjects were selected through simple random sampling and were divided into supportive care, acupressure and control groups using stratified block randomization.	The participants in the control group reported higher pain intensity compared to experimental group at 3-4 cm dilation (p=0.01) as well as at 2 and 4 hours after the initial assessment (p=0.000). Also the mode of delivery of the intervention group resulted in a lower number of Caesarean sections compared to the control group (p=0.002). Lastly the intervention. Group experienced a shorter duration of the second and third stage in labor. Overall it is seen that women who participate in prenatal yoga may have a decrease in pain intensity during labor as well as have more positive birth outcomes with less caesarean delivery	**Strengths:** This study described the specific interventions that each group of women would receive and followed these descriptions. The Visual Analogue Scale was used to help obtain information as to the intensity of pain. This trial was registered with the Iranian Registry of Clinical Trials. **Limitations:** This trial only looked at very low risk mothers and was only a sample size of 60 women. Therefore the sample size and characteristics don't allow for the results to be applied to a wide population.

Source Jain, P., Srivastava, H., Goel, N., Khaliq, F., Dewan, P., Sharma, R., & Bhartiya, V. (2017). Effect of antenatal exercises on pulmonary functions and labour outcome in uncomplicated primigravida women: a randomized controlled study. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*, *4*(5), 1478–1484. https://doi.org/10.18203/2320-1770.ijrcog20150732			
Johns Hopkins Evidence Appraisal: Strength: Level I Quality: B (Good Quality)			
Purpose/Sample	**Design (Method/Instruments)**	**Results/Conclusion**	**Strengths/Limitations**
Purpose: To determine the effect antenatal exercise on pulmonary function in labor and the resulting outcomes. **Sample/Setting:** This study was done in Taiwan including a total of 127 parturient women who met the following criteria; had an estimated gestational age of the fetus between 37 and 42 weeks, not a high-risk pregnancy, carrying only one fetus and were able to read and write.	The design was a randomized control trial where women were assigned into one of three different groups. Each group received only one of the following treatments, training on breathing techniques or no treatment/ conversation only. Data was collected using the visual analogue scale (VAS) and external fetal monitoring strips were also used within analysis.	Results indicated that there was a significant difference in decreased labor pain during the active phase of the first stage of labor between the intervention groups. The number was statistically significant ($p=0.017$) decrease in labor pain during the active phase of the first stage of labor when providing acupressure to LI4 and BL67 points. Yet this study reported that there was no significant difference in effectiveness of uterine contractions during the first stage of labor among the groups. Conclusion confirms that using acupressure at the LI4 and BL67 points during the active phase of labor can help to reduce labor pains.	**Strengths:** Being a randomized control trial, allows for blind drawing and placement of women into each intervention group. This helps to remove un-intended bias from the study and create more accurate results. The education provided for the five nurse-midwives participating in the study were thoroughly trained and educated about how to provide acupressure at these specific points. **Limitations:** With a small sample size the results can be more difficult to utilize when applying on a large scale.

Source Levett, K. M., Smith, C. A., Bensoussan, A., & Dahlen, H. G. (2016). Complementary therapies for labour and birth study: a randomised controlled trial of antenatal integrative medicine for pain management in labour. *BMJ Open*, *6*(7), e010691. https://doi.org/10.1136/bmjopen-2015-010691			
Johns Hopkins Evidence Appraisal: Strength: Level I Quality: C (Low Quality)			
Purpose/Sample	**Design (Method/Instruments)**	**Results/Conclusion**	**Strengths/Limitations**
Purpose: To evaluate the effects of antenatal integrative medicine education programs (including acupressure, visualization and relaxation, breathing, massage, yoga, and facilitated partner support) alongside normal antepartum care compared with a control group when it comes to the outcome of intrapartum epidural use. **Sample/Setting:** The trail included 176 nulliparous women with low risk pregnancies within 2 hospitals in Sydney Australia. Complementary therapies for labor and birth protocol, based on the She Births and acupressure for labor courses were used at a 2-day antenatal course.	A blind randomized controlled trial. The design was a randomized controlled trial without blinding. Women who presented in labor and those who requested pain relief were asked to take part. After consent they were randomized to receive acupuncture, TENS, or traditional analgesics (sterile water papules, nitrous oxide, warm tub bath, pethidine or epidural analgesia). Pain was assessed using a linear 10-cm visual analog scale.	There was a significant difference in epidural use between the groups; the intervention group (23.9%) versus standard care (68.7%, risk ratio 0.37, $p<0.001$). Also the intervention group had a reduced rate of augmentation(rr=0.54, $p<0.0001$) and decreased caesarean rate (rr=0.52, $p=0.017$) Including integrative medicine education, specifically that of Complementary Therapies for Labour and Birth, in antenatal care can significantly reduce the rates of epidural use and caesarean delivery. This overall can improve maternal and fetal outcomes.	**Strengths:** Within this study results of pain was observed at more than one point; it was studied before, immediately after, as well as 30, 60 and 120 minutes after a women received the intervention. With multiple data points it allows for a broader understand the result of acupressure intervention and stronger conclusion. **Limitations:** A quasi-experimental trial is not as strong as a randomized control trial and doesn't allow for bias reduction to occur. Also a sample size of only 100 women is not a very large study sample

Source Smith, C. A., Levett, K. M., Collins, C. T., & Crowther, C. A. (2011). Relaxation techniques for pain management in labour. *The Cochrane Database of Systematic Reviews*, (12), CD009514. https://doi.org/10.1002/14651858.CD009514			
Johns Hopkins Evidence Appraisal: Strength: Level 1 Quality: B (Good Quality)			
Purpose/Sample	**Design (Method/Instruments)**	**Results/Conclusion**	**Strengths/Limitations**
Purpose: To summarize and assess the evidence regarding the effects of acupressure on the duration of labor and the mode of delivery within randomized control trials. **Sample/Setting:** Four major databases and Google scholar was searched and found 13 randomized controlled trials that examined the effects of acupressure at any acupoint during childbirth on the duration of labor and /or mode of delivery. Eligible studies could include nulliparous or multiparous women who health full-term pregnancies in the first stage of labor.	A systematic review of randomized controlled trials with a meta-analysis. Data extraction was performed by two independent reviewers using a form that had been specifically designing for this purpose. First author's name, year of publication, country, participants, type of intervention and comparison and outcomes were extracted.	Acupressure increases the chance of vaginal delivery when compared with placebo or no interventions. (Odds ratio 2.329, 95% confidence interval 1.348-4.024, P=0.002; risk difference 8.9%, 95% CI 2.7%-15.0%, P=0.005) Acupressure decreased the duration of the active phase by 1.310 hours (P<0.001) Acupressure could have a great role in reducing the rate of cesarean delivery and decreasing the duration of labor for moms. Yet there is a need for more reliable randomized controlled trials.	**Strengths:** This systematic review allows for us to look at a greater array of trials and evaluate the effect of acupressure instead of just a trial that stands alone. Our n-value is much larger when utilizing this systematic review as well. **Limitations:** The included trials only allowed for lower risk pregnancies. Therefore we have no evidence of what these same intervention could create as result for women who are higher risk. Also there is no conversation as to how these acupressure might be effected by patient bias.