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Variations to Birth Outcomes with Labor and Delivery Doula Support

Nicole I. Hunter-Severson
Bethel University

VARIATIONS TO BIRTH OUTCOMES WITH LABOR AND DELIVERY DOULA SUPPORT

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Nicole Hunter

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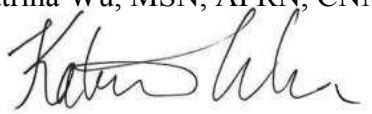
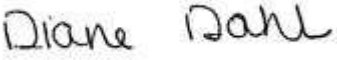
Approvals:

Project Advisor Name: Katrina Wu, MSN, APRN, CNM

Project Advisor Signature: 

Dean/Chief Nursing Administrator Name: Diane Dahl, PhD, RN

Dean/Chief Nursing Administrator Signature: 

Director of Graduate Nursing Program Name: Jane Wrede, PhD, APRN, CNM

Director of Graduate Nursing Program Signature: 

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Abstract

Background/Purpose: The purpose of this critical appraisal of the literature is to discern if there are variations to birth outcomes as a result of having a doula present as a continuous support during labor and delivery.

Theoretical/Conceptual Framework: Watson's (2010) Theory of Human Caring will be the framework for this literature appraisal. Dr. Watson's theory is founded on holistic care that involves putting a heart-centered caring process into action based upon Watson's 10 carative factors.

Methods: Thirty research articles that were relevant to the scope of variations to birth outcomes as a result of having a doula present as a continuous support during labor and delivery were reviewed.

Results/Findings: Doula care resulted in decreased levels of pain and epidural usage, shorter labors, increases in spontaneous vaginal deliveries even when there was an induction of labor, higher Apgar scores at one and five minutes of life, increased rates of breastfeeding within the first hour of life, and an overall higher rating of satisfaction with the birth experience. Doula support also reduced the use of Pitocin, increased exclusive breastfeeding at one month of life, decreased healthcare disparities for the disadvantaged, and presented significant financial savings.

Conclusion: The findings of this critical review of literature support the notion that the use of doula care during labor and delivery results in significant discernable improvement to birthing outcomes across care settings around the world.

Implications for Research and Practice: Nurse-midwives are charged with the evaluation and incorporation of scientific evidence into clinical practice in order to provide guidance and counseling to their patients so they can make educated, informed choices. Doula care during labor and delivery, as a practice standard, has the potential to significantly improve birthing outcomes.

Keywords: doula, continuous labor support, labor and delivery outcomes, midwifery care, Theory of Human Caring

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Chapter I: Introduction

The experience of childbirth will forever alter the woman who experiences it. This is not just a physical change but an emotional transformation as well. The significance of childbirth and how it unfolds varies greatly among cultures. For thousands of years around the world, women have labored and given birth with the support of other women. Frequently, this was a female friend or family member who had children, a midwife, or a female elder (Kayne, Greulich, & Albers, 2001). This role was so unique and influential that the term "doula" was coined. According to the Merriam-Webster Dictionary (2017), the word doula means "a woman experienced in childbirth who provides advice, information, emotional support, and physical comfort to a mother before, during, and just after childbirth."

With the vast and sweeping medicalization of labor and delivery in the United States in the middle of the 20th century, the support that women had routinely experienced during parturition essentially vanished (Papagni & Bucker, 2006). When women arrived at the hospital, they were placed in a room where nurses checked on them occasionally and doctors arrived only for complications or delivery. Along with the disappearance of labor support came an expanded scope and application of medical interventions. During the second half of the 1900's there was a marked increase in the number of operative vaginal deliveries, cesarean births, and the use of pharmacological pain control. Although these technologies can be beneficial, if not lifesaving, the frequency of their application has exceeded their necessity. This has resulted in harm to patients, a system that routinely fails to deliver a satisfactory patient experience, and exorbitant healthcare costs.

Statement of Purpose

The purpose of this paper is to critically appraise scholarly writings in order to discern if there are variations to birth outcomes as a result of having a doula present as a continuous support during labor and delivery. It will examine the effects of doula care on medical interventions, length of labor, mode of delivery, and neonatal Apgar scores. The mother's satisfaction with the care experience as it relates to the birth, the postpartum period, and its impact on bonding and breastfeeding will also be included. An investigation of how doula support affects health outcomes for those impacted by racial and economic disparities will be included as well. Finally, consideration will be given to the ramifications of doula services on healthcare costs.

Evidence Demonstrating a Need for the Critical Review

Interventions. The intricacies between intrapartum interventions and maternal or neonatal morbidity and mortality are not decisively clear, however there is a distinct interplay between these two subjects. The term "cascade of interventions" describes how one intervention can have a domino effect leading to another intervention, and then another. Understanding this cascade effect is imperative when analyzing the current state of birthing practices and how this translates into labor and delivery outcomes. Alteration of this sequence may be the gateway to establishing practices that interrupt the spiral of events and provide improved care practices for optimal maternal and neonatal outcomes. Some of the most salient interventions to examine include the induction of labor, the use of Pitocin for augmentation, pharmacological pain control methods, operative vaginal births, and cesarean deliveries.

Induction of labor. The rate of induction of labor (IOL) has more than doubled in the United States over the past two decades (Bonsack, Lathrop, & Blackburn, 2014). Although IOL

can be advantageous, it comes with potential risks for both mothers and babies. There is a substantial body of literature regarding the possible adverse outcomes associated with IOL including prolonged labor, an increased risk of infection, tachysystole, an increased rate of cesarean section, and an increased risk of postpartum hemorrhage (Chauhan & Ananth, 2012). Adverse neonatal affects could include fetal intolerance to labor, infection, and respiratory distress syndrome.

Considerable variations exist between hospitals and practitioners in the use of IOL. The fluctuations cannot solely be attributed to medical indications in the populations (Bonsack et al., 2014). This discrepancy in application demonstrates that there is vast inconsistency in diagnostic criteria. Additionally, there is little evidence available to commensurate improvements in outcomes with increased rates of usage before term without a clear medical indication (Glantz, 2012).

Pitocin augmentation. Similar to IOL, the use of Pitocin has an important role in the management of labor and the rate of usage has more than doubled since 1990 (Gu et al., 2016). Pitocin is one of only twelve medications that have been labeled a "high-alert medication" with a black box warning indicating its unapproved status for elective use without "medical indication." (Simpson & Knox, 2009). Despite these cautionary guidelines, implementation for usage does not have clearly defined parameters. Pitocin has been found to be started both too early and too late in relation to the diagnosis of labor dystocia (Selin, Almstrom, Wallin, & Berg, 2009).

Pitocin usage has led to significant increases in perineal trauma, the use of regional analgesia, instrumental vaginal deliveries, cesarean sections, and uterine ruptures (da Silva et al., 2012; Buchanan, Patterson, Roberts, Morris, & Ford, 2012). For infants, studies have shown an association between Pitocin use and fetal distress, poor oxygenation, abnormal heart rates,

Apgar score <7 at five minutes, the need for neonatal intensive care admission, and neonatal morbidity (Selin et al., 2009; Oscarsson, Amer-Wåhlin, Rydhstroem, & Källén, 2006; Buchanan et al., 2012). Moreover, it is concerning that the negative effects of Pitocin usage may not be limited to the delivery room. Recent research has found lower levels of exclusive breastfeeding at two months as well as increased maternal depression and anxiety (Gu et al., 2016).

Pharmacologic pain interventions. In 2003, the United States started using a standard birth certificate form that recorded the use of epidural or spinal anesthesia during labor (Osterman & Martin, 2011). Those records indicate that 61% of women having vaginal deliveries in the United States used epidural or spinal anesthesia. This number is even greater for women with assisted vaginal births. A full 84% of women experiencing a forceps delivery had spinal anesthesia, and 77% of women with vacuum extraction births used anesthesia. The rate for IV pain medication is not standardly recorded and therefore harder to estimate (Osterman & Martin, 2011).

As mentioned above, interventions bring with them possible consequences. Although rare, epidural or spinal anesthesia procedures have inherent risks. In addition, the interaction between pain management methods and the course of labor and delivery needs to be considered. The major associations to be examined include an increased risk of instrumental delivery (forceps or vacuum), an increased use of Pitocin, fetal malposition, a longer second stage of labor, and fetal distress (Osterman & Martin, 2011). It is important to note that a causative relationship has not been established, between epidural or spinal anesthesia usage and increased interventions, but rather an association.

Operative birth. One in 20 women will experience an operative vaginal delivery with large variances in rates, ranging from less than 5% to 25% (Ali & Norwitz, 2009). Although this

percentage may seem high it has decreased significantly over the past 15 years (The American Congress of Obstetricians and Gynecologist [ACOG] & Society for Maternal-Fetal Medicine [SMFM], 2016). The national cesarean section rate is even higher at 32%, with even larger variations depending on location and provider from approximately 7 % to 69 % (Centers for Disease Control and Prevention [CDC], 2015). Inarguably, operative vaginal births or cesarean deliveries can be lifesaving procedures for mothers and babies; however, these rates are alarming considering the World Health Organization [WHO] found that there are no improvements in maternal or fetal mortality when the rate rises above 10% (WHO, 2015).

Surgical procedures carry risks, and when it is a maternal dyad, the risks increase for both the mothers and the babies. For mothers undergoing operative vaginal delivery or cesarean birth, there are increased risks of infection, hemorrhage, reactions to anesthesia, thromboembolism, and injuries, as well as additional risks for future pregnancies (Cunningham et al., 2010). Cesarean births, in particular, have higher overall severe morbidity and mortality for mothers. Risks for neonates include nerve injury, fracture, intracranial hemorrhage, lacerations, and transient tachypnea of the newborn (Cunningham et al., 2010).

Patient satisfaction. Birth can have a profound impact on the mother, the mother's relationship with her partner, and even on maternal-fetal attachment. Much attention has been given to poor birthing outcomes, but research on positive experiences is newly emerging. Establishing the factors that impact women's satisfaction with their birth experience had been difficult. In a 2012 study by Hollins Martin, Snowden, & Martin, the three most significant factors impacting a mothers satisfaction with her birth experience included 'being supported,' 'being in control,' and 'things going as planned.'

Medical ethics mandates that health care providers strive for both beneficence and non-maleficence in regards to patient care. Many would argue that, in addition to ethical accountability, there is also a moral obligation to provide a high-quality experience for patients.

Racial and socioeconomic disparities. The United States is ranked 50th in the world for maternal mortality, with the largest number of mothers dying from childbirth of any industrialized nation (Bingham, Straus, & Coeytaux, 2011). The loss of a mother is a heavy-hearted issue but one that is not equally divided among our citizens. When scrutinized by race, it is disturbing to see that per 100,000 births, 40 Black women die compared to 12 White women and 16 women of other ethnicities (CDC, 2016). This means that Black women are more than 3 times as likely to die as their White counterparts.

Neonatal mortality is likewise ranked poorly when compared to most European nations. The United States ranks 26th out of 29 nations, and has the highest death rate for infants born at 37 weeks or more of gestation (MacDorman, Mathews, Mohangoo, & Zeitlin, 2014). Racial disparities are seen with non-Hispanic Black women having the highest neonatal mortality of 7.46 deaths per 1,000 live births; this is 2.2 times higher than non-Hispanic White women (Mathews, MacDorman, & Thoma, 2015).

Socioeconomic disparities also need to be considered when examining birth outcomes. There is a significant association between those from a lower socioeconomic status and preterm birth, low birth weight, and small for gestational age babies (Blumenshine, Egerter, Barclay, Cubbin, & Braveman, 2010). There is a decreased utilization of prenatal care, alterations in delivery outcomes, and reduced rates of breastfeeding associated with poor socioeconomic position as well (Daoud et al., 2015).

Racial minorities and those with socioeconomic disparities not only have substandard birthing outcomes, but they are also less satisfied with the care they receive (McFarland, Ornstein, & Holcombe, 2015; Daoud et al., 2015). Dissatisfaction can result in decreased HCAHPS (Hospital Consumer Assessment of Healthcare) scores. HBVP (Hospital Value-Based Purchasing) may be increasing disparities in healthcare by penalizing larger hospitals in densely populated areas that rely heavily on Medicare reimbursement. The goal of health care is to deliver consistent, high-quality medical care to all people, regardless of race or socioeconomic standing. As a nation, we are failing our families.

Healthcare costs. Patient satisfaction has a compounded significance due to increased financial implications. In 2007 the Centers for Medicare and Medicaid Services started Hospital Value-Based Purchasing (HVBP), a program that incentivizes staff to provide quality, performance-based healthcare by linking payments directly to patient satisfaction scores obtained from the Hospital Consumer Assessment of Healthcare Providers and Systems Survey (HCAHPS) (The Henry J. Kaiser Family Foundation, 2017). As of 2017 hospitals could lose up to 2% of their reimbursement for subpar HCAHPS scores. Depending on the state, the percent of births paid for by Medicaid ranges from 31% to 72%. Poor HCAHPS scores from families who are not satisfied with their birth experience could result in monumental financial losses for care facilities (The Henry J. Kaiser Family Foundation, 2017).

The United States spends more than any other nation on health care, with a 5.8% increase in 2015 reaching a total of $3.2 trillion per year (Centers for Medicare and Medicaid Services, 2016). This equates to $9,990 being spent on every man, woman, and child in the nation. Hospitalizations associated with pregnancy and childbirth account for five of the 20 most expensive conditions for hospital stays (Torio & Moore, 2016).

Every additional application of intervention increases the cost for birth. For example studies show that IOL is 17.4% more expensive than spontaneous labors (Bonsack et al., 2014). The average vaginal delivery without complications is $2,900, while the average cesarean section without complications is $4,700 (Moore, Witt, & Elixhauser, 2011). Although Medicaid provides coverage for a significant number of women the majority of births are being paid for through private insurance policies (Curtin, Osterman, Uddin, Sutton, & Reed, 2013). Supplementary interventions cost billions of dollars annually both at the systems level for insurance organizations and at the individual level with increased premiums and deductibles.

Significance to Nurse-Midwifery

It is the professional responsibility of midwives, as described by the American College of Nurse-Midwives [ACNM], to promote the hallmarks of midwifery. This includes the advocacy of non-intervention in normal processes in the absence of complications, the promotion of woman- and family-centered care, the incorporation of evidence-based complementary and alternative therapies, and care to vulnerable populations. Simultaneously midwives have the obligation to evaluate, interpret, and apply research to their practice (ACNM, 2012).

The ACNM, the Midwives Alliance of North America [MANA], and the National Association of Certified Professional Midwives [NACPM] (2013) published a consensus statement that identified key benchmarks of normal physiologic childbirth. There is not a mere isolated statement regarding doula care but rather several references to the qualities embodied in this service. According to ACNM, MANA, and NACPM (2013) factors that disrupt normal physiologic childbirth include an unsupportive environment, lack of supportive companions, and any situation in which the mother feels unsupported. The statement goes on to recommend the introduction of policies that support normal physiologic birth.

A second consensus statement was made from ACOG and SMFM (2014): "Published data indicate that one of the most effective tools to improve labor and delivery outcomes is the continuous presence of support personnel, such as a doula…this resource is probably underutilized" (ACOG & SMFM, 2014).

Theoretical Framework

Watson's (2017) Theory of Human Caring will be the framework for this literature appraisal. The composition of this theory focuses on holistic care that involves putting a heart-centered caring process into action based on Watson's 10 carative factors:

1. Sustaining humanistic-altruistic values, through the practice of loving-kindness, compassion and equanimity with self/others.
2. Being authentically present, enabling the faith/hope/belief system; honoring subjective inner, life-world of self/others.
3. Being sensitive to self and others by cultivating own spiritual practices; beyond ego-self to transpersonal presence.
4. Developing and sustaining loving, trusting-caring relationships.
5. Allowing for the expression of positive and negative feelings – authentically listening to another person's story.
6. Creatively problem-solving-'solution-seeking' through caring process; full use of self and artistry of caring-healing practices via use of all ways of knowing/being/doing/becoming.
7. Engaging in transpersonal teaching and learning within the context of caring relationships; staying within other's frame of reference-shift toward coaching model for expanded health/wellness.

8. Creating a healing environment at all levels: subtle environment for an energetic, authentic, and caring presence.
9. Reverentially assisting with basic needs such as sacred acts and touching mind/body/spirit of spirit of other; sustaining human dignity.
10. Opening to spiritual, mystery, unknowns-allowing for miracles.

The doula's role is unique in the healthcare team equation since the underpinning of the craft is not medical. However, this does not equate to medical ignorance. Doulas undoubtedly strive to ensure the physical safety of the mother and child but the care they provide is not obligated to the technology involved in the birthing process. They are free from the constraints of monitoring machines and charting events that delivery personal must constantly attend to. Their sole focus is to use authentic presence to empower families to have a deep belief in their ability to bring forth life.

The artistry of a doula's caring-healing practice is gained through interpersonal experience. Cultivation of a loving, trusting relationship that accepts the patient fully, allowing for the expression of both positive and negative emotions, while embracing what she may become is paramount. This environment creates caring moments where a doula can use faith-hope to provide a genuine sense of wellbeing through beliefs, which are meaningful to the woman, enabling a wholeness of the mind/body/spirit experience. Doulas provide support that transcends ego, allowing miracles to occur. Where modern science has nothing further to offer the mother continuous labor support can use practical application of the Theory of Human Caring, with its interconnection of science and spirit, to impact birthing outcomes for women and babies (Watson, 2017).

Summary

In the 1900's the presence of continuous labor support during birth was viewed as inconvenient or inconsequential in the face of bold, new medical advances. This resulted in a fundamental culture shift where delivery practices prioritized maximizing benefits to mothers and babies through the application of technology. Subsequent overuse of these methods moved the United States to leading industrialized nations in maternal and neonatal mortality. There is now an understanding that more is not always better, and the benefit of modern medicine has limits.

Midwives are uniquely poised to take the lead in educating families and influencing policies that incorporate research findings to ensure optimal outcomes for the families they serve. Applying the Theory of Human Caring establishes an understanding of the mind, body, and spirit connectedness. Chapter two will explain the methods utilized to search and appraise scholarly writings regarding the impact of doula care on birthing outcomes. Chapter three will provide a synthesis of the literature including strengths, limitations, and recommendations for practice. Finally, chapter four will present a discussion of the implications and conclusions for care providers.

Chapter II: Methods

This chapter will chronicle the procedures used to identify the literature related to alterations in birth outcomes as a result of having doula support for labor and delivery. A list of search engines, as wells as inquiry key words, will be presented. The process that was employed to determine the relevant studies will be clearly outlined, including criteria for inclusion, exclusion, and a summary of studies selected. Lastly, the mechanism for determining the level and quality of the evidence will be reviewed.

Search Strategies

Articles that were considered in this examination of literature were from academic journals published between 1998 and 2017. Databases that were searched include EBSCOhost, PubMed, CINAHL, SCOPUS, Google Scholar, and Cochrane Database of Systematic Reviews. Key search terms included: doula, continuous labor support, and non-pharmacological pain management with labor. A snowball technique was executed to yield additional literature to review.

Criteria for Inclusion and Exclusion

The studies selected for this literature review included labor support that was provided by professional doulas, midwives, nursing students, friends, family members, lactation consultants, and childbirth educators with some additional doula training and untrained companions. Articles had to include support during labor and delivery but could also include support before and/or after childbirth. Inclusion materials could have data on interventions, birthing outcomes, satisfaction, or financial implications.

The exclusion criteria encompassed articles that provided support without a birthing component for example, when services were provided only through home visiting or during

abortive services. Writings examining doula support that were provided exclusively for breastfeeding were rejected. Finally, research regarding some specialty populations was rejected due to the inability to extrapolate those results to a generalized population or other factors that may have significantly altered results. This included articles related to a prison doula program, doulas that also acted as interpreters and the experience of doula care for women with intellectual disabilities.

Summary of Selected Studies

Initial searches produced 74 possible studies to be evaluated. Excluding literature that was older than 1998 or that did fit inclusion requirements refined this number to 30 articles that were relevant to the scope of variations to birth outcomes as a result of having a doula present as a continuous support during labor and delivery. The scholarly writings that were included in the final review consisted of 14 randomized control trials, 5 quasi-experimental trials, 4 non-experimental trials, and 7 qualitative studies. The literature included research from the United States, Iran, Mexico, Nigeria, Batswana, and Sweden.

Evaluation Criteria

Once selected the articles were evaluated for strength and quality using the Johns Hopkins Research Evidence Appraisal Tool (Dearholt & Dang, 2012). The level of evidence strength is graded on a scale of I –V. For the purpose of this literature review only studies that were at level III or better were considered. In addition, all systematic reviews were excluded from examination. The highest level of scientific evidence strength is graded as level I; this includes experimental studies of randomized controlled trials (RCT). Level II contains quasi-experimental studies. Non-experimental and qualitative studies make up level III (Dearholt & Dang, 2012).

Research quality is divided into three sections categorized as A, B, or C and descending from high to low (Dearholt & Dang, 2012). High quality (A) has consistent generalizable results. It contains a sufficient sample size with adequate control as well as consistent recommendations that are based on a thorough literature review that includes references to scientific evidence. Good quality (B) research contains these same elements however they are less regular. There is some control with fairly definitive conclusions and reasonably consistent recommendations based on a fairly comprehensive literature review that includes some scientific evidence. Finally, the lowest level is low quality (C). This level of research contains major flaws including inconsistent results, insufficient sample size, and no ascertainable conclusions (Dearholt & Dang, 2012).

Summary

Extensive database searches were performed on EBSCOhost, PubMed, CINAHL, SCOPUS, Google Scholar, and Cochrane Database of Systematic Reviews. A snowball technique was employed for additional article identification. Thirty scholarly articles were ultimately chosen for evaluation using the Johns Hopkins Research Evidence Appraisal Tool, once the inclusion and exclusion criteria were applied.

Chapter III: Literature Review and Analysis

Synthesis of the Matrix

The matrix was used to organize the scholarly articles and identify significant outcomes of the use of doula support during labor. The matrix column headings that were relevant to the research process included: purpose, sample, design, measurement, results/conclusions, recommendations, level, and quality. The writings were evaluated for strength and quality using the Johns Hopkins Research Evidence Appraisal Tool (Dearholt & Dang, 2012). Citations were organized by the most common chronological order of labor events and then cataloged alphabetically.

Synthesis of the Major Findings

The matrix is comprised of 30 scholarly articles that were chosen for appraisal to ascertain the impact of continuous labor support on birth outcomes. At least one or more studies are included that examine the impact of doula support on the induction of labor (IOL), use of oxytocin, pharmacologic pain interventions, length of labor, mode of delivery, and neonatal outcomes. Additionally, there were studies that looked at how continuous labor support impacted situations outside of the immediate birth process. This included the effect of doula support on breastfeeding, emotional implications for the mother, and the maternal-infant relationship. Finally, consideration was given to the outcomes of doula support for vulnerable populations and possible financial ramifications.

Induction of labor. The use of nonmedical methods for labor induction is sparsely researched and has mixed or inconclusive results. "Self induction" includes techniques such as walking and exercise, nipple stimulation, and sexual intercourse. Kozhimannil, Johnson, Attanasio, Gjerdinger, and McGovern (2013) found that of the 1,573 women who participated in

the Listening to Mothers II Survey, a survey of English-speaking women in U.S. hospitals during 2005, nearly 30% of these women used nonmedical methods to start labor. They also found that there were substantially higher odds of using nonmedical techniques for labor induction for women with doula support (Adjusted Odds Ratio (AOR) = 3.03, 95% CI 1.21-7.61).

At the other end of the labor spectrum McGrath and Kennell (2008) examined the end result of the number of cesarean sections with IOL and doula support. Of the 33 women in the study with IOL, those with doula support had significantly lower rates of cesarean sections. More specifically, those with standard care had a cesarean rate of 58.8% while women with doula support had a cesarean rate of 12.5%, $p = 0.007$.

Use of Pitocin. The use of Pitocin for augmentation was included in 7 studies. The majority of the studies found no difference in the use of Pitocin with the presence of doula support; however, for the two studies where doulas did have an effect, it was substantial. Madi, Sandall, Bennett, and MacLeod (1999) examined 109 primigravidas in spontaneous labor; of those with no support 30% received Pitocin to augment their labors while 13% with support needed Pitocin augmentation, $p= 0.03$. In another study twenty-one mothers (42%) from the doula support group needed Pitocin, while 48 mothers (96%) from the standard-care group received augmentation with Pitocin, $p >0.001$ (Trueba, Contreras, Velazco, Lara, & Martinez, 2000). This results in a 129% increased need for Pitocin without support.

Pain interventions. The issue of pain control during labor is a consideration for any mother preparing for birth. Wishes and desires range from complete elimination of pain to staunch rejection of any pharmacological interventions. The personal desires of mothers are impacted by many variables including physical, emotional, and even cultural factors.

This literature review included eighteen studies that examined the differences in pain interventions for mothers with continuous labor support. There were several factors related to pain that were examined, including expectations going into labor, the laboring mother's ability to cope with pain, perceptions of the level of pain at different stages of labor, the use and timing of epidurals during labor, and the number and types of nonpharmacological pain relief methods utilized. Five studies found no change in the perception of pain or in the use of epidurals, but the remaining 13 studies found benefits to labor pain with the use of doula support.

Both qualitative and quantitative studies are included in the matrix with regards to perceptions of labor pain and coping with the discomfort. Lundgren's (2008) qualitative study of 9 women from Sweden found that doulas were viewed as being able to help women cope with labor pain. Morhason-Bello et al. (2009) helped to quantify this finding with 292 women with continuous labor support reporting pain scores of 6.3 (6.1-6.5) while the 293 women without support had higher pain scores of 6.9 (6.7-7.1), $p<0.001$. This study was particularly strong due to its large sample size. Safarzadeh et al. (2012) worked to further refine the differences in pain with doula support. Their findings show that, for Iranian women, there was no difference in pain scores at the beginning of active labor (defined as 4 cm); however, differences were observed at the end of the second stage of labor (defined as 10 cm). There were 36 Iranian women with doula support that rated their pain as severe as opposed to 61 women with that rating without support, $p=0.001$. Finally, Torres (2015) had a qualitative study with 72 participants that reported doula support to be a natural form of pain management to avoid epidurals and to help ease the fear of the unknown.

The amount and timing of pain during labor will have an impact on epidural usage. Gordon et al. (1999) conducted a study involving 314 women at multiple care locations in the

United States and Canada. They found significantly less epidural usage with doula care at 54.4% as opposed to 66.1% ($p<0.05$) with standard care. McGrath and Kennell (2008) examined 420 nulliparous middle-income women in Cleveland, Ohio from 1988 through 1992. There were 224 women in the experimental group who had doula support with an epidural rate of 64.7%. With usual care of friend/family support but no doula the epidural rate was significantly higher at 76.0% ($p= 0.008$). Riley, Hutchings, and Liberman (2012) continued to have the same results with 40.7% of women with doula support receiving epidurals and 59.3% of standard care mothers with epidurals ($p <0.0001$).

The number and types of interventions provided by doulas also impacted the use of epidurals (Paterno, Zandt, Murphy, & Jordan, 2011). Interventions provided by nursing students at the Johns Hopkins Birth Companions Program were broken down into two categories consisting of physical interventions such as massage, counter pressure, or ambulation, and emotional/informational interventions, which consisted of techniques such as verbal encouragement, easing fears or answering the mother's questions. These two types of interventions were examined separately and it was found that physical interventions were associated with decreased odds of epidural (AOR 0.80; 95% CI, 0.73-0.88) while the number of emotional/information interventions did not have this same effect.

Internationally, these finding continue to be consistent. Khresheh (2008) found of the 216 nulliparous women in Jordan, the 105 with continuous labor support were significantly less likely to use pharmacological pain relief (45% verses 98%). In Botswana Madi et al. (1999) found a lower use of analgesia (epidurals were not available in this location) with 53% of the primigravidas in spontaneous labor receiving pharmacologic pain control with continuous labor support verses 73% ($p= 0.03$) with standard care.

In addition to less women receiving pharmacological pain relief with doula support, there were also a difference in the timing for those who opted to have an epidural. In a study of 600 nulliparous women carrying a singleton pregnancy, those in the doula group had cervical dilation of 4.3 cm +/- 1.3 when receiving an epidural compared to 3.9 cm +/- 1.2 in the standard care group ($p=0.007$) (Campbell, Lake, Falk, & Backstrand, 2006).

A study of 89 women in the Baltimore, Maryland area found that there were variations in results within a group of mothers who all had doula support (Van Zandt, Edwards, & Jordan, 2005). In this analysis women who received more types of complementary doula interventions during labor were 38% less likely to have an epidural. It is important to consider the length of labor and its effect on a woman's determination to opt for an epidural. When looking at the study where all women had doula support, it was found that women who had longer labors were 23% more likely to have an epidural than those with shorter labors (Van Zandt, Edwards, & Jordan, 2005).

Duration of Labor. Nine studies examined the duration of labor with continuous labor support or standard care. Only two studies did not find a statistically significant decrease in the amount of time women spent laboring with doula care.

Bolbol-Haghighi, Masoumi, and Kazemi (2016) found that for the 100 women in their study, the duration from admission to 10 cm (the first stage of labor) was significantly shorter with doula support 7.9 hours +/- 3.55 SD verses 11.46 hours +/- 3.71 SD with standard care, $p<0.001$. This was again replicated in the 600 women in Campbell et al.'s (2006) study. The doula-supported women in this New Jersey study had labors lasting 10.4 hours +/- 4.3 SD as compared to women without doulas laboring for 11.7 +/- 4.8 SD, $p=0.004$. In Tehran the 50 women given continuous support by a midwife had a mean duration of the first stage of labor of

167.9 minutes +/- 76.3 SD verses 247.7 minutes +/-101 SD, $p<0.001$ for women who received standard care (Kashanian et al., 2010). The women with support also saw a significantly shorter second stage of labor of 34.9 minutes +/-25.4 SD verses 55.3 minutes +/- 33.7 SD, $p=0.003$ for those without support. Langer (1998) found that of the 724 women in the Mexico City study, the duration of labor was shorter with doula support at 4.56 hours as compared to 5.58 hours without a doula (RR 1.07, CI 95%=-1.52 to -0.51).

In Nigeria, the length of labor was considered for 585 women (Morhason-Bello et al., 2009). The 292 mothers with no labor support had a longer duration of the active phase of labor with a rage of 5.1-5.5 hours and an average of 5.3 hours, than the supported group with a range of 4.5-4.9 hours and an average of 4.7 hours, $p< 0.001$. Finally, the women in the study by Safarzadeh et al. (2012) were found to have a significantly shorter active phase of labor with doula support with a mean of 189.32 minutes (SD 90.85) as compared to the control group with a mean of 251.13 minutes (SD 75.05), $p= 0.000$.

Despite having shorter labors with doula support, when a woman with continuous labor support does choose to have a labor epidural they have significantly longer labors with a mean of 13.08 hours as compared to a mean of 8.93 hours ($p=0.0024$) without an epidural (Van Zandt et al., 2005). It is not yet known if this is because epidurals slow down the progression of labor or if women with more prolonged labors choose an epidural for relief from the pain.

Mode of Delivery. The Cochrane Collaboration examined mode of delivery in relationship to labor support (Hodnett, Gated, Hofmeyr, & Sakala, 2013). It was determined through 19 trials that women who had doula support during labor were more likely to have a spontaneous vaginal birth (n= 14,119, average risk ratio (RR) 1.08, 95% confidence interval (CI) 1.04 to 1.12) and less likely to have an instrumental vaginal birth (n=14,118, RR 0.90, 95% CI

0.85 to 0.96). Women with labor support were also less likely to have a cesarean birth (22 trials, n=15,175, RR 0.78, 95% CI 0.67 to 0.91). A meta-analysis by Chaillet et al. (2014) found usual care increased the odds ratio for cesarean birth OR 1.60 (95% CI 1.18-2.18) and instrumental delivery OR 1.21 (95% CI 1.03-1.44) when compared with techniques routinely employed by doulas of CNS Control (education, attention, deviation, support).

Sixteen studies in the matrix examined the impact of continuous labor support on the mode of delivery, comparing either vaginal or operative birth, which included forceps, vacuum extraction, or cesarean delivery. Nine of the studies in the literature appraisal indicated no statically significant difference in vaginal versus operative deliveries with continuous labor support. Seven studies found a significant decrease in the number of cesarean births.

The most substantial evidence of reduction in cesarean delivery rates with doula support was seen in the study by Kozhimannil, Hardeman, Attanasio, Blauer-Peterson, and O'Brian (2013). This study had strong evidence due to its very large sample size of 1,079 women who were receiving Medicaid and supported by doulas in Minneapolis, Minnesota through Everyday Miracles, an organization that provides no cost doula care to low-income women. The women had support prenatally, continuously during labor and in the postpartum period. This study found that doula care was associated with a 40.9% decreased odds of cesarean delivery when compared to Medicaid-funded births generally.

The positive effects of doula support were not limited to lower socioeconomic populations. McGrath and Kennell (2008) had a study with 420 nulliparous middle-income women in Cleveland, Ohio from 1988 through 1992. These women generally had consistent prenatal care and partner support in addition to doula care. This demographic of women usually independently sought out doula care since it is usually a service that has to be paid for by the

patient. The study results indicated that those receiving continuous labor support from a trained doula had a cesarean delivery rate of 13.4% while the control group's rate was 25.0%, p= 0.02.

The benefits of continuous labor support on mode of delivery are also not limited to women giving birth only in the United States. The positive effect is seen cross-culturally with studies showing reductions in cesarean deliveries in Iran, Batswana, Nigeria, and Mexico (Kashanian Javadi, & Haghighi, 2010; Madi et al., 1999; Morhason-Bello et al., 2009; Trueba et al., 2000). The reduction of cesarean sections in third world countries may be even more important due to increased possible negative consequences of surgical birth. It is worth noting that in some of these countries, women are not routinely allowed any companion in the birthing ward.

Another variable of study that was included in the matrix examined how the number of interventions that doulas used for support during labor impacted mode of delivery. The study by Paterno et al. (2011) included 648 labors and births that received student-nurse doula support at Johns Hopkins University School of Nursing that were delivered by either a certified nurse-midwife (CNM) or an obstetrician. The total number of interventions provided by the doula was associated with decreased odds of cesarean birth (AOR 0.90; 95% CI, 0.85-0.95). In addition, the study revealed that doulas provided significantly more interventions to mothers that delivered with a CNM than with a physician. This could mean that the potential positive benefits of doula support may not currently be maximized, depending on provider preference.

Neonatal Outcomes. The two neonatal outcomes that were examined with regards to doula support in labor were Apgar scores and breastfeeding. A total of eleven studies were included for analysis with three studies finding no changes to Apgar scores and one study finding no changes to breastfeeding rates.

The three scholarly writings that found no effect on Apgar scores were all strong studies, being randomized control trials (level I) and of the highest quality (A) (Hodnett et al., 2002; Kashanian et al., 2010; Madi et al., 1999). In addition, the study by Hodnett et al. (2002) had a substantial sample size of n=6915. The research that found no affect on breastfeeding was also a randomized control trial (level I); however, it was of low quality (C) (Gordon et al., 1999).

Two studies found increased Apgar scores at both one and five minutes of life with doula supported-labors. In a study of 600 births in the United States, 95% of babies born to mothers who had doula support had a 1 minute Apgar score >6 whereas only 90% of babies whose mothers hadn't received doula support scored that high ($p = 0.04$). This difference continued with 99.7% of doula-supported births having a 5-minute score >6 verses 97% ($p = 0.006$) with standard care (Campbell et al., 2006). These results were also seen in a study of 100 Iranian women, where the 50 babies born to doula-supported mothers had significantly increased Apgar scores at 1 minute 8.49 +/- 0.81 and 5 minute 9.25 +/- 0.70 when compared to babies where the mother did not have doula support 7.82 +/- 0.93 ($p <0.001.$) at 1 minute and 8.92 +/- 0.90 ($p = 0.04$) at 5 minutes (Bolbol-Haghighi et al., 2016).

Breastfeeding within the first hour after delivery is correlated with more successful long-term breastfeeding practices and is integral in breastfeeding promotion strategies (Saadeh & Arke, 1996). In a study of 11,471 women, 85% of those with doula care had intended to breastfeed before delivery verses only 68% of mothers with standard care (Mottl-Santiago et al., 2007). In addition, four studies showed significant increases in initiation of breastfeeding with doula-supported births. Studies where mothers had continuous labor support reported mothers breastfeeding in the first hour 46-97.9% of the time, while mothers in these same studies without doula support breastfed their infants in the first hour of life 23-70.3% of the time (Campbell,

Scott, Klaus, & Falk, 2007; Kozhimannil et al., 2013; Mottl-Santiago et al., 2008; Morhason-Bello et al., 2009). Langer, Campero, Garcia, and Reynoso (1998) also found that mothers with doula-supported births exhibited more behaviors that promoted breastfeeding (calm environment during breastfeeding and care of nipples) and had higher exclusive breastfeeding rates at one month after birth with 12% verses 7% for those mothers without support.

Emotional and psychosocial outcomes. There are many ways that a doula can have an impact on the emotional and psychosocial elements of birth. There are 15 studies included in this literature review that examine the more abstract issues of feelings and relationships. Due to the nature of the subject matter, most of the studies are qualitative. Research has been done to understand the impact of doula support on the birth environment and experience, the feelings of the mother about her control and self-worth, and her feelings towards her child.

Twelve of the studies examined the impact of continuous labor support on the birth environment and experience. In these studies women were significantly more likely to report a good birthing experience (Campbell et al., 2007; Campero et al., 1998; Gordon et al., 1999; Hodnett et al., 2002; Humphries & Korfmacher, 2012; Hunter, 2012; Khresheh, 2008; Langer et al., 1998; McGrath & Kennell, 2007; Morhason-Bello et al., 2008; Torres, 2015; Papagni & Buckner, 2006). The doulas were able to "hold the space" by attending to the mother in a caring and intimate way (Hunter, 2009). It was also reported that the doulas were able to build trusting relationships, which helped to alleviate the fear of the unknown and promote feelings of emotional closeness (Humphries & Korfmacher, 2012; Lundgren, 2008; Torres, 2015). In the study by McGrath and Kennell (2008) of the 224 couples with doula support, 100% of the participants rated their experience positively and would want to have continuous labor support again. In addition, these positive feelings extended beyond the relationship with the doula; the

participants felt “very satisfied” with the care they received at the hospital (Campbell et al., 2007; Campero et al., 1998).

Beyond the positive feelings shared about the birth environment or experience, studies also found that mothers reported that their positive doula experienced this had an affirmative effect on their sense of control during labor as well (Campero et al, 1998; Langer et al., 1998). The only negative reference in any of the studies was surrounding possible conflict between the nurse and the doula. This was found to have a negative impact on the birth experience, although interestingly, it did not result in a negative opinion of the doula (Papagni & Buckner, 2006).

Five studies were included where women who had doula support experienced more positive feelings about themselves than those who did not have supported births. These sentiments included an increased self-esteem, the feeling that they coped very well with labor, and a very positive perception of their body’s strength or capacity to give birth (Campbell et al., 2007; Campero et al., 1998; Gentry, Nolte, Gonzalez, Pearson, & Ivey, 2010; Gordon et al., 1999; Lundgren, 2008).

These nearly universal positive emotional and psychosocial results with doula support continued when mothers reported their feelings towards their infants. These mothers were significantly more likely to report positive perceptions of their infants (Campbell et al., 2007). They were observed to have more infant-centered parenting values, show more positive engagement with their infants and be more likely to respond to their infant’s distress (Hans et al., 2013). The infants whose mothers received doula support during birth were also less likely to show visible upset during the observed interactions.

Special populations. There are populations of women who are at an increased risk for adverse birthing outcomes. These groups contain women who have a significant social risk due

to limited economic resources, many of whom are also racial minorities and adolescent parents. Six studies examined results specific to the mothers and children who are most at risk. The majority of the studies identified low to moderate-income women as recipients of Medicaid. The studies that examined adolescent parents were comprised primarily of African American or Latina mothers. There were numerous variables considered for these vulnerable populations that included preterm labor (PTL), low infant birth weight, emotional implications, and breastfeeding.

One study examined how doula support altered preterm labor for Medicaid beneficiaries. Kozhimannil et al. (2013) saw an average preterm birth rate that was lower for the women in their study with doula support, when compared generally to Medicaid beneficiaries (6.1% vs. 7.3%). However, this difference was not statistically significant in uncontrolled comparisons. Another study by Gruber et al. (2013) examined 226 socially disadvantaged mothers who participated in a doula support program; the researchers found that they were four times less likely to have low birth weight (LBW) babies. Although PTL and LBW are factors that are impacted before the labor and delivery process is started they were included in this literature review because the mothers had support both before and during delivery. This highlights further benefits that may be possible with doula support for vulnerable populations outside of the immediate delivery process.

Hans et al. (2013) studied 248 African American women under the age of 22 to examine the impact of doula support on the mother-infant relationship. Beyond being at risk due to their younger age, 93.8% of these women had low incomes as evidenced by being recipients of Medicaid benefits. Results of this study showed that doula support resulted in more positive parent-infant interactions, less use of high-risk parenting attitudes, and reduced maternal stress.

Humphries and Korfmacher (2012) studied 12 young, low-income African American mothers and found emotional closeness and trust reported with doula support. For adolescent mothers doula support helped them navigate the fragmented social and health service system (Gentry et al., 2010).

Finally, breastfeeding was impacted by doula support for low-income women. In a study of 1,069 mothers with Medicaid coverage receiving doula support, there was a near-universal initiation of breastfeeding (97.9%), while the general Medicaid populations' rate was 80.8%. For African American women, the improvement was even more pronounced with 70.3% of women without support initiating breastfeeding compared to 92.7% initiating breastfeeding with doula support (Kozhimannil et al., 2013).

Financial considerations. Every provider and institution needs to be aware of the financial aspects of providing care to ensure sustainability. There were two studies that looked directly at the cost implications of providing every woman with doula support during birth. Two supplemental studies were included to help illustrate the indirect potential financial impact of doula support for institutions providing care to Medicaid recipients.

In a large study (n=1079) by Kozhimannil et al. (2013) 1,079 women receiving Medicaid were supported prenatally, during birth and in the postpartum period by doulas in Minneapolis, Minnesota. The results showed a 40.9% decrease in cesarean section rates compared to the national Medicaid rate, after adjustments were made for clinical and sociodemographic factors. The researchers then extrapolated their results to examine potential cost savings to the government for Medicaid-funded, singleton births nationally (n=279,008). There are variations in potential cost savings, depending on each state's reimbursement rates, birth volume, and current cesarean rates. The researchers used 3 scenarios generated by empirically driven

assumptions to simulate the fiscal impact on cesarean birth rates of 22.3%, 31.6%, and 40.8%. This was then combined with varying doula compensation rates of $100, $200, or $300. The end result is that birth cost savings could be achieved in nearly every state with the addition of doula support for Medicaid funded deliveries. Dollar amounts related to these estimates range from a savings of $2 million to exceeding $9 million annually (Kozhimannil et al., 2013).

Chapple, Gilliland, Li, Shier, and Wright (2013) studied the estimated immediate cost savings for all low-risk births in Wisconsin if in-hospital doula support was provided. The authors used the variations for use of epidurals, cesarean deliveries, and instrumental vaginal deliveries that were seen in the Cochrane Review of continuous labor support of 22 trials with 15,288 women. For 2010 an estimated savings of $28,997,754.80 could have been achieved if every low-risk birth was attended in-hospital by a professional doula.

The final two articles with financial implications examined women's emotional experience with doula support and how that impacted their degree of satisfaction with the care they received. Both the study by Campbell et al. (2007) and by Campero et al. (1998) found that women with doula support were most likely to have been very satisfied with the care they received when compared to any other groups. While these studies did not directly make the connection between patient satisfaction scores and HCAPS reimbursement rates the results could be extended to understand how improved satisfaction scores would impact the financial health of institutions that provide birthing services to mothers with Medicaid coverage.

Summary

Thirty scholarly articles were chosen for appraisal to ascertain the impact of continuous labor support on birth outcomes. The most prominent type of research was derived through the use of randomized control trials and the majority of these studies were of high or good quality

based on the Johns Hopkins Research Evidence Appraisal Tool. When the body of research was scrutinized, the most profound impact of doula care on birth outcomes was seen in the decreased level of pain and epidural usage, shorter labors, increased spontaneous vaginal deliveries (even when there was an IOL), higher Apgar scores at one and five minutes of life, increased rates of breastfeeding within the first hour of life, and higher rates of satisfaction with the birth experience and personal performance. And, although less supported by the current research, doula support was also seen to reduce the use of Pitocin, increase exclusive breastfeeding at one month of life, decrease healthcare disparities for the disadvantaged, and present significant financial savings.

Chapter four will discuss the current trends in maternity care, including the gaps in literature regarding doula care. Implications for nurse-midwifery practice will be explored as well as recommendations for future research. Finally, a discussion of Watson's Theory of Human Caring will provide a deep understanding into the mind/body/spirit connection that authenticates the improvements seen in birthing outcomes through the use of continuous labor support.

Chapter IV: Discussion, Implications, and Conclusions

The purpose of this literature synthesis is to determine if there are variations to birth outcomes as a result of having a doula present as a continuous support during labor and delivery. Thirty scholarly writings were selected for critique using the Johns Hopkins Research Evidence Appraisal Tool. The examination findings reveal current trends in research related to doula care as well as gaps in the literature. Chapter four will help to identify the implications for nurse-midwifery practice consistent with the research findings and recommend 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 doula care for birth.

Literature Synthesis

The fundamental question for this critical literature review was to examine the alterations of birthing outcomes with the presence of continuous support for labor and delivery. Many outcome variables were taken into consideration and the findings generally showed outcome improvements with the use of doula support.

In the immediate labor and delivery process scholarly writings that were examined included IOL, Pitocin augmentation, pharmacologic pain interventions, length of labor, mode of delivery, and neonatal outcomes. With regards to induction of labor (IOL), nearly 30% of women were found to use nonmedical methods to start labor and the odds of using nonmedical methods of IOL are higher for women with doula support (Kozhimannil et al., 2013). For women who had IOL and doula support there was an associated lower rate of cesarean section (12.5%) when compared to women with IOL and standard care (58.8%) (McGrath & Kennell, 2008). Seven studies looked at the use of Pitocin for labor augmentation. Five of the studies, which constituted a majority, found no affect of continuous labor support from a doula on the use

of Pitocin (Bolbol-Haghighi et al., 2016; Gordon at al., 1999; Kashanian et al., 2010; Morhason-Bello et al., 2009; Safarzadeh et al., 2012). This results in mixed evidence since the two studies that did find that doula support reduced the use of Pitocin had a marked difference- namely a 129% increased need for Pitocin without support (Madi et al., 1999; Trueba et al., 2000). Pharmacologic pain interventions had robust studies with both qualitative and quantitative data. Thirteen studies revealed benefits concerning labor pain with the use of doula support, which included a reduction of pain scores (Morhason-Bello et al., 2009) and reduced epidural usage (Gordon et al., 1999; McGrath & Kennell, 2008; Riley et al., 2012). Women who opted for epidural placement had more advanced dilation at the time of placement (Campbell et al., 2006). There was also strong evidence that the average length of labor was decreased with continuous labor support (Bolbol-Haghighi et al., 2016; Campbell et al., 2006; Kashanian et al., 2010; Langer, 1998; Morhason-Bello et al., 2009; Safarzadeh et al., 2012) and seven studies had significant evidence demonstrating that women who had doula support during labor were more likely to have a spontaneous vaginal birth mode of delivery (McGrath and Kennell, 2008; Kashanian et al., 2010; Kozhimannil et al., 2013; Madi et al., 1999; Morhason-Bello et al., 2009; Paterno et al., 2011;Trueba et al., 2000) Babies faired better when their mothers received continuous labor support which was demonstrated by increased Apgar scores at both one and five minutes (Bolbol-Haghighi et al., 2016; Campbell et al., 2006).

Beyond the primary birthing process, studies examined the effects of doula support on breastfeeding, emotional implications for the mother, and the maternal-infant relationship. Increased rates of breastfeeding within the first hour of life were seen in four studies and one research article found more exclusive breast-feeding even after one month of life (Campbell et al., 2007; Kozhimannil et al., 2013; Langer, et al., 1998; Mottl-Santiago et al., 2008; Morhason-

Bello et al., 2009). A total of 12 studies included in this literature review found significant improvements in the mother's reported birth experience and five articles found they had more positive feelings about themselves with doula support (Campbell et al., 2007; Campero et al., 1998; Gentry et al., 2010; Gordon et al., 1999; Hodnett et al., 2002; Humphries & Korfmacher, 2012; Hunter, 2012; Khresheh, 2008; Langer et al., 1998; Lundgren, 2008; McGrath & Kennell, 2007; Morhason-Bello et al., 2008; Torres, 2015; Papagni, & Buckner, 2006). Women who had a doula-supported birth reported more positive perceptions of their infants, more infant-centered parenting, and their infants were less likely to show visible upset (Campbell et al., 2007; Hans et al., 2013).

Final consideration was given to the impact of doula support for vulnerable populations and possible fiscal ramifications for healthcare institutions. Many of the positive associations from continuous labor support for families with healthcare disparities is echoed in the results above. The data for this subset of individuals was extracted; these are the families most at risk for adverse results, where continuous labor support could possibly have the greatest impact on improving birthing outcomes. Doula support showed decreased rates of PTL and LBW, increased vaginal deliveries, more positive parent-infant interactions, emotional closeness, and increased breastfeeding rates (Kozhimannil et al., 2013; Gruber et al., 2013; Hans et al., 2013; Humphries & Korfmacher, 2012; Gentry et al., 2010). Most of these outcomes had compelling amounts of data to support how doula care could result in significant gains in the fight to reduce healthcare disparities for the disadvantaged. Doula care during labor and delivery has a two-fold process for impacting financial standings. The first piece is to directly reduce the cost of care provided. Mothers with doula support have less interventions and more spontaneous vaginal deliveries resulting in an overall reduction in the net cost of the birthing process. When these

results are applied to the financial considerations for government spending on Medicaid beneficiaries the results are powerful with nearly every state saving millions of dollars annually (Chapple et al., 2013; Kozhimannil et al., 2013). Although these results are somewhat limited (in that they looked only at the reductions for governments through Medicaid spending), these results could be extrapolated to estimate the potential cost savings to private insurance carriers and individual policyholders. This would provide a more accurate illustration of the true monetary benefits that could be seen through the use doula care as a standard practice. The second financial gain that could be reaped through the use of continuous labor support is directly to the healthcare institutions. Having families who are more satisfied with their care should result in higher HCAPS, allowing facilities to collect maximum reimbursement for care provided to patients through the HVBP program (Campbell et al., 2007; Campero et al., 1998).

Current trends and gaps in the literature. The Institute for Healthcare Improvement (IHI), an organization focused on redesigning health care into a system without errors, waste, delay, and unsustainable costs, was established in 1991 (Institute for Healthcare Improvement, 2017). The organization went through several transformations to arrive at the development and institution of the Triple Aim in 2008. The components of the Triple Aim are to (1) improve the patient experience, (2) improve population health, and (3) reduce per capita cost. The Triple Aim was used as the foundation for the 2010 Patient Protection and Affordable Care Act (ACA) (McCarthy, 2015). The systemic government changes and resulting HCAHPS reimbursement requirement impacted the focus and goal of health care research.

Continuous labor support has been a subject of study since the 1980's. The initial research focused heavily on the use of intrapartum analgesia and the mode of delivery. These subjects continue to be ongoing areas of significant research. The scope of pain studies has

expanded to include not only the use of pharmacological interventions but also patient reported levels of pain. Research has narrowed its focus on providers of support to primarily examine certified doula care, as opposed to support from hospital staff or untrained friends or family members. This shift is the result of earlier research, which indicated that trained doula support resulted in the most significant benefits (Hodnett et al., 2013).

The newest trend in doula-supported birth research has follows the lead of the ACA and focuses on how doula support will help lower the cost of health care and decrease disparities for vulnerable populations. Additionally, studies are focusing on how care is impacting the emotional state of mothers. This includes feelings of self-worth, maternal-infant relationships and feelings of satisfaction with care received.

Despite the valuable knowledge that has been gained regarding continuous support during birth, some areas still require further investigation. As mentioned above, research has transitioned to focus on care provided by trained professionals, vulnerable populations, and fiscal implications; however, there are not yet robust quantities of studies in these areas. Gaps also remain in understanding how provider type and health care team attitudes impact intervention techniques employed by doulas, and how this plays into the mothers birthing experience.

Recommendations for Future Research

Current obstetrical trends have altered the birthing landscape to include a reduction in the routine induction of labor before 39 weeks gestation, acceptance of intermittent osculation and an increase in the trial of labor after cesarean delivery (TOLAC). Although the benefits of doula support have a solid base demonstrating its positive affects, recommendations for future research should focus on expanding the depth of knowledge on care provided by trained professionals, 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 intervention techniques employed by doulas, and how this plays into the mother's birthing experience. It is only with a deeper understanding of these intricacies, examined within the context of the emerging birthing trends, that a full comprehension of the potential positive impact of doula support can be obtained.

Extensive exploration has not yet occurred concerning the effect of doula-supported births on patient satisfaction scores and the resulting 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 doula care as a standard practice when it has been identified as one of the most effective tools to improve labor and delivery outcomes (ACOG & SMFM, 2014).

Implications for Nurse-Midwifery Practice

This critical appraisal of the literature surrounding doula-supported birth provides a comprehensive and succinct evaluation of the available scientific evidence. The midwifery community cannot disregard the overwhelmingly positive affects 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). It is imperative that practitioners have a comprehensive understanding of the benefits of doula services, allowing them to provide guidance and counseling to their patients so they can make educated, informed choices (ACNM, 2012).

Midwives are charged with advancing nationally defined goals and objectives for health promotion. With the use of doula support endorsed by the ACNM, MANA, NACPM, ACOG, and SMFM, it is the professional responsibility of midwives to support legislation and policy initiatives that promote the use of doula services. In addition, the Code of Ethics (2013) requires midwifes to promote a just distribution of resources and promote equity in access to quality health services. Movement towards institutional practice standards that fund professionally trained continuous labor support can help bridge the divide for women and children who are most at risk but least able to afford doula services.

Theoretical Framework: Watson's Theory of Human Caring

Dr. Watson's Theory of Human Caring clearly defines and explains the value of continuous labor support. This theory guides our understanding of how human presence is able to result in birthing outcomes that cannot be accomplished by the most cutting-edge scientific technological advances. The positive birthing outcomes are brought about by responsiveness, support, and understanding which cannot be artificially replicated. The Theory of Human Caring includes the integration of both art and science into its framework with the foundation of understanding rooted in experience.

Some may argue that encouragement from doulas for mothers to be upright and moving during labor accounts for the improvements in birthing outcomes. This defense may seem reasonable, even logical, except when women with very limited ability to move (oftentimes confined to a small cot for the duration of their labors) still have improved labor outcomes when supplied with doula services (Langer et al., 1998). The support from doula care cannot be limited to concrete, cause and effect explanations. Anyone can attend to the basic needs of a laboring woman; however, the improvements in outcomes seen with trained continuous labor support, as

opposed to a nurse, midwife or support person of the woman's choosing, highlights the intricacies of responsiveness that are essential for the transpersonal caring relationship (Hodnett et al., 2013; Wagner, 2010).

In the human caring process the continuous labor support opens themselves to connectedness with the mother, her environment, and the universe. This intentional human connection allows for the provision of the mind-body-spirit, with wholeness in all aspects of care. The doula uses self to create a supportive and healing environment through intentional touch, voice, authentic presence, movement, preparation, breathing, relaxation/imagery/ visualization, intentionality, appropriate eye contact, smiling/positive gestures, active listening, and nature/light/sound/noise protection. The doula listens and provides attention for the mother to comprehend, on a basic spiritual level, that she is unique and worthy of respect and caring. This transforms the "tasks" of meeting basic needs into healing interactions. The doula encourages the expression of both positive and negative feelings within the context of helping the woman to believe in her innate ability to birth. This allows for the labor and delivery experience to emerge, change, and grow with the acceptance of the unknown. Doula care and support goes beyond ego-self and radiates to spiritual, even cosmic concerns and connections that tap into healing possibilities and potentials.

The very meaningful and authentic sharing of the human experience between a mother and her doula is difficult to articulate or measure. In the doula community, this essence is known as "holding the space" (Hunter, 2012). Throughout the literature, mothers describe this concept as trust, respect, and security. Watson's theory defines it as coming together in a focal point in space and time (caring occasion) with transpersonal caring accomplished though the caritas (Watson, 2017).

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Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Bolbol-Haghighi, N., Masoumi, S. Z., & Kazemi, F. (2016). Effect of continued support of midwifery students in labor on the childbirth and labor consequences: A randomized controlled clinical trial. *Journal of Clinical and Diagnostic Research 10*(9), 14-17. doi:10.7860/JCDR/2016/19947.8495	To evaluate the effect of continuous labor support by midwifery students on childbirth and labor consequences at Fatemieh Hospital, Shahroud, Iran.	100 women aged 18-45 years old with a singleton live fetus and reactive NST on admission, and no exclusion criteria of presence of any other disease, depression, preeclampsia, placental abruption or previa, fetal anomaly or prior uterine incision were randomly assigned to receive continuous labor support from a midwifery student or standard care.	Randomized controlled trial	Outcomes measured via chart review: duration of the first stage of labor, duration of the second stage of labor, oxytocin use, vaginal vs. cesarean delivery, Apgar scores at 1 and 5 minutes.	Statistically significant decrease in the first stage of labor with doula support and a decrease in the second stage of labor although this was not statistically significant. No significant difference in the use of oxytocin or mode of delivery. Both 1 and 5-minute Apgar scores were statistically significantly higher in the doula-supported group.	Curriculum planning using midwifery students as doulas, can be an appropriate low-cost strategy to increase access to doula services.	Level I Quality A (High)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Campbell, D. A., Lake, M. F., Falk, M., & Backstrand, J. R. (2006). A randomized control trial of continuous support in labor by a lay doula. *Journal of Obstetric, Gynecologic, & Neonatal Nursing: Clinical Scholarship for the Care of Women, Childbearing Families, & Newborns, 35*(4), 456-464. doi:10.1111/j.1552-6909.2006.00067.x	To compare labor outcomes in women accompanied by a doula with outcomes in women who did not have this additional support person (control group)	600 nulliparous, low-risk women carrying a singleton pregnancy at a tertiary perinatal care hospital in New Jersey.	Randomized controlled trial	Chart review assessed: length of labor, type of delivery, type and timing of analgesia/anesthesia, and Apgar scores	Doula Group: significantly shorter length of labor, greater cervical dilation at the time of epidural anesthesia, and higher Apgar scores at both 1 and 5 minutes. Differences did not reach statistical significance in type of analgesia/anesthesia or cesarean delivery despite a trend toward lower cesarean delivery rates in the doula group.	Hospitals, prenatal centers, and childbirth educators should consider the potential benefits of providing a labor preparation program for pregnant women and female companions along with husbands or partners.	Level I Quality B (Good)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Campbell, D., Scott, K. D., Klaus, M. H., & Falk, M. (2007). Female relatives or friends trained as labor doulas: Outcomes at 6 to 8 weeks postpartum. *Birth: Issues in Perinatal Care, 34*(3), 220-227. doi:10.1111/j.1523-536X.2007.00174.x	To examine the association between doula support and maternal perceptions of the infant, self, and support from others at 6 to 8 weeks postpartum.	494 low-risk, nulliparous women with 229 participants receiving doula support and 265 participants receiving standard care.	Randomized controlled trial: Telephone interviews using a 42-item questionnaire administered between 6 to 8 weeks postpartum.	The questionnaire examined expectations about childbirth, breastfeeding, and postnatal support received from others, maternal perceptions of the baby, and relationship satisfaction with partner/spouse.	A statistically significant number of doula-supported mothers were satisfied with their labor and delivery, and reported feeling very close to their child. There was also a statistically significant number of women who felt supported from others all of the time. Doula supported mothers had statistically significantly higher scores when rating their feelings about being a woman, their self-worth, their bodies' performance, and their ability to be a good mother. Among those who had the same partner for the entire period there was no difference in their level of satisfaction with these relationships before pregnancy, during pregnancy and labor, and since pregnancy.	There needs to be further examination of how best to train and engage close female friends and relative to enhance immediate and long-term childbirth outcomes. It would be beneficial to have additional studies that examine the mechanism underlying doula support and beneficial outcomes.	Level I Quality B (Good)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Campero, L., Garcia, C., Diaz, C., Ortiz, O., Reynoso, S., & Langer, A. (1998). "Alone I wouldn't have known what to do": A qualitative study on social support during labor and delivery in Mexico. *Social Science & Medicine, 47*(3), 395-403. doi:10.1016/80277-9536(98)00077-x	Examine the effects of the provision of psychosocial support to first-time mothers during labor, childbirth and in the immediate postpartum period in a social security hospital in Mexico City.	16 women who were first time mothers or women with one previous cesarean section, with a single, live fetus, with a dilation of less that six centimeters, no serious medial complications, and no indications of an elective cesarean section. Eight women had doula support and eight women received standard care.	Qualitative Study	In-depth interviews held in the immediate post partum period before discharge from the hospital asking the women to describe their experience and perception on four parameters: 1. The way they had been treated by the medical staff 2. The medical information, routines and interventions experienced 3. The labor experience and the perception of themselves during the process 4. The experience of doula care (for those receiving it) or the possibility of having a companion (for those without doula care).	Most women had an attitude of subordination; however, those with doula support more easily expressed themselves and felt they had some rights. Most women felt there was a lack of information provided by the medial staff. For women with doula support it was easier to be involved in the process or cope by talking to the doula. Women without doula support viewed the vaginal exam more positively because it was the only time they received attention. Women with doula support had a positive attitude about themselves and higher self-esteem. Women with a doula appreciated having the continuous presence of a caring person.	The need to conceptualize childbirth as a multidimensional event, which involves the whole person and not only the physical self. The need for further qualitative research to deepen understanding of reported findings as well as to provide a basis of comparative analyses.	Level III Quality B (Good)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Chapple, W., Gilliland, A., Li, D., Shier, E., & Wright, E. (2013). An economic model of the benefits of professional doula labor support in Wisconsin births. *Wisconsin Medical Journal*, *112*(2): 58-64. Retrieved from https://www.wisconsinmedicalsociety.org/_WMS/publications/wmj/pdf/112/2/58.pdf	To estimate the immediate cost savings per delivery with in-hospital professional doula labor support in Wisconsin.	15,288 Low risk pregnant women in Wisconsin for 2010, including 9042 'low-risk' cesarean deliveries. Inclusion criteria: Singleton, full-term, vertex births without history of GDM, gestational hypertension or feto-pelvic disproportion disorder.	Non-Experimental	Outcomes recorded: Regional analgesia use (epidural injection), cesarean delivery and instrumental vaginal birth. The risk reductions reported were calculated from studies included in the Cochrane Review that utilized professional doula care. The cost savings was based on the mean hospital charge taken from Wisconsin Price Point System from October 2010 through September 2011.	Estimated savings of $28,997,754.80 could have been achieved if every low-risk birth were attended in-hospital by a professional doula. A professional doula providing only in-hospital labor support would yield an estimated cost savings of $424.14 per delivery or $530.89 per low-risk delivery. The derived relative risk reduction for cesarean delivery was 31% and 14% for regional analgesia use.	It is recommended that Wisconsin insurers consider reimbursing for professional doula labor support. It is also recommended that pilot programs be implemented in Wisconsin that can better assess the implementation of professional doula labor support services.	Level III Quality A (High)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Gentry, Q. M., Nolte, K. M., Gonzalez, A., Pearson,M., & Ivey, S., (2010). "Going beyond the call of doula": A grounded theory analysis of the diverse roles community-based doulas play in the lives of pregnant and parenting adolescent mothers. *Journal of Perinatal Education, 19*(4), 24-40. doi:10.1624/105812410X530910	Explore the services doulas provided aimed at enhancing maternal and child outcomes and increasing opportunities for self-sufficiency.	30 disadvantaged pregnant and parenting adolescents who received support from a community-based doula program in a large Southeastern urban area	Qualitative Study	Ethnographic interviews were recorded and then transcribed by the interviewers. Two data coding schemes were used 1) direct content analysis method to identify themes, 2) Strauss' grounded theory methodology in which codes are sorted into conditions, interaction among actors, strategies/tactics, and consequences.	Doulas provide valuable assistance to pregnant and parenting adolescents by addressing social-psychological issues and socio-economic disparities. Diverse role-taking results in doulas helping pregnant adolescents navigate social and health service systems. Adolescents experiencing an unplanned pregnancy benefit tremendously from having doulas.	Future research to include interviews with doulas to understand their perspectives. Additional research with other key stakeholders in the adolescent mother's social support network and social service providers.	Level III Quality A (High)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Gordon, N. P., Walton, D., McAdam, E., Derman, J., Gallitero, G., & Garrett, L. (1999). Effects of providing hospital-based doulas in health maintenance organization hospitals. *Obstetrics and Gynecology, 93*(3), 422-426. doi:10.1016/S0029-7844(98)00430-X	To evaluate the effects of providing doula services during hospital-based labor	314 nulliparous women with uncomplicated pregnancies who were in spontaneous labor with a cervix dilated less than 5 cm on admission to one of 3 HMO hospitals. Randomization was done within 30 minutes of admission, by a sealed envelope that contained assignment to the doula or standard care group. 149 women had doula care and 165 received standard care.	Randomized controlled trial: Telephone interviews 4-6 weeks postpartum supplied study data. 143 doula supported mothers and 145 usual care mothers provided information.	Mode of delivery Epidural usage Breastfeeding initiation and duration Postpartum perceptions of the birth, self-esteem and depression	Women with doula support had fewer epidurals and were more likely to report a positive birth experience. There was no significant effect on mode of delivery, oxytocin use, breast-feeding, postpartum depression or self-esteem.	As nurse-patient ratios increase the amount of support to patients' decreases, and we need to reassess the need for experienced labor companions.	Level I Quality C (Low)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Gruber, K. J., Cupito, S.H., Dobson, C. F. (2013). Impact of doulas on healthy birth outcomes. *Journal of Perinatal Education, 22*(1), 49-58. doi:10.1891/1058-1243.22.1.49	To compare birth outcome results of two groups of mothers who received childbirth education classes: one group receiving labor support from a certified doula and the other group not receiving additional labor support.	226 expectant mothers who participated in at least three childbirth classes (YWCA, Greensboro, *Healthy Moms Healthy Babies*). 97 with doula assistance, 129 without doula assistance. All women were identified as being at risk for adverse birth outcomes because of racial disparity, homelessness, interpersonal violence, unhealthy housing, poverty, or young age.	Quasi-Experimental: Retrospective birth outcome data was collected for two groups of mothers who had participated in the same YWCA Healthy Beginnings Program, one of which also worked with a doula before, during, and after birth, the other did not.	The impact of doula care was measured by a) Type of birth b) Incidence of having a LBW baby c) Incidence of complications at birth for either mother or baby d) Incidence of initial breastfeeding.	There were minimal differences for type of birth, although the rates of cesarean birth were higher for non doula-assisted mothers. Doula-assisted mothers were four times less likely to have a LBW baby, two times less likely to experience a birth complication involving themselves or their baby, and statistically significantly more likely to initiate breastfeeding. Doula assistance in this case seems to have impacted health choices of expectant mothers during pregnancy, resulting in lower risk of LBW births.	To use doulas during the prenatal period has the most effective impact on empowering women to be actively involved in preparing for birth and developing self-efficacy in maternal health behaviors. Future research should attempt to isolate the variables that resulted in positive outcomes.	Level III Quality B (Good)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Hans, S. L., Thullen, M., Henson, L. G., Lee, H., Edwards, R. C., & Bernstein, V. J. (2013). Promoting positive mother-infant relationships: A randomized trial of community doula support for young mothers. *Infant Mental Health Journal, 34*(5), 446-457. doi:10.1002/imhj.21400	To investigate the effect of doula services on parenting among young, low-income mothers.	248 low-income pregnant women were randomly assigned to receive either doula services or routine medical and social services. The doulas provided prenatal home visitation, support during labor and delivery, and 3 months of postpartum home visitation.	Randomized Controlled Trial	Outcomes assessed: Mother–infant interaction, beliefs about appropriate parenting, and parent experience of stress in interaction with the infant.	Mothers who had received doula services endorsed more child-centered parenting values, showed more positive engagement with their infants, and were more likely to respond to infant distress at 4 months. Infants of doula-supported mothers were less likely to show visible upset during observed interactions.	Further research is needed to determine whether the program is effective for other high-risk populations and when implemented more broadly.	Level I Quality B (Good)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Humphries, M. L., & Korfmacher, J. (2012). The good, the bad, and the ambivalent: Quality of alliance in a support program for young mothers. *Infant Mental Health Journal, 33*(1), 22-33. doi:10.1002/imhj.20334	To examine the beneficial relationship between racially similar doulas and adolescent mothers.	12 African American adolescent mothers supported by 1 of 4 African American female doulas	Qualitative Study of individual interviews	The type of relationship between mothers and doulas and themes relating to a positive alliance, a negative alliance, and ambivalence. The degree to which the doulas and mothers were in agreement of their assessment of the alliance.	Both mother and doula in 7 of the 12 cases saw a positive alliance. Its themes were based on 1. Availability, 2. Positive interactions, 3. Trust, 4. Emotional closeness, and 5. Mother feels helped. Two dyads were concordant noting more negative or ambivalent alliances. Negative signs of alliance centered around 1. Inconsistent contact, 2. Lack of trust, and 3. Doula's difficulty in dealing with personal issues of the mother. 9 of the 12 dyads had a common understanding of the relationship alliance.	Training and supervision of service providers might include a focus on characteristics identified as facilitating a positive relationship. Further study needs to be done on the negative elements of helping relationships.	Level III Quality B (Good)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Hunter, C. (2012). Intimate space within institutionalized birth: Women's experiences birthing with doulas. *Anthropology & Medicine, 19*(3), 315-326. doi:10.1080/13648470.2012.692358	To explore reasons why doula care may result in positive birthing outcomes.	9 doulas from a Midwestern town that were white, with some secondary education and 9 mothers of similar background with 1 mother that was non-white.	Qualitative Study	Observation of childbirth classes and the childbirth experience was combined with two interviews with doulas and one interview with mothers after delivery. Data analysis using Atlas ti qualitative software was used to identify particular behaviors that doulas enact for "holding the space" in childbirth and the meaning mothers and doulas take away from those behaviors.	Components of "holding the space" 1. Techniques (practical methods such as hand holding, breathing or words of encouragement), 2. Relationships (representing the woman's interests during labor and speaking for her when she could not), 3. Physical support, and 4. Emotional support Doulas are effective because they create and maintain a level of intimacy that is not replicated by others. Doula care may offer a means of filling a social void by providing a meaningful level of intimacy during birth.	Further research on the ability and means to reframe the understanding of birth in the U.S. with a focus on mainstream hospital birthing practices. Further research into the differing roles of familial relationships and social organizations surrounding childbirth and in what ways doula care can make an impact.	Level III Quality B (Good)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Hodnett, E., Lowe, N., Hannah, M., Willan, A., Stevens, B., Weston, J., Ohlsson, A., . . . Stremler, R. (2002). Effectiveness of nurses as providers of birth labor support in North American hospitals. *Journal of the American Medical Association, 288*(11), 1373-1381. doi:10.1001/jama.288.11.1373	To evaluate the effectiveness of nurses as providers of labor support in North American hospitals.	6915 women with a live singleton fetus or twins that was at least 34 weeks gestation with no contraindications to labor that received care at a participating hospital. Participating hospitals had to have a cesarean delivery rate of at least 15%, a 24-hour epidural analgesia service and a willingness to participate. Women were randomly assigned to receive usual are or continuous labor support by a specially trained nurse.	Randomized controlled trial	Outcomes assessed via chart review: cesarean delivery rate, spontaneous vaginal delivery rate, length of time from randomization to delivery, length of time from initiation of epidural analgesia to delivery, perineal trauma, health problems during the postpartum hospital stay, length of postpartum stay, neonatal outcomes including evidence of asphyxia, need for higher level of nursery care, or length of hospital stay. A 6 to 8 week postpartum questionnaire examined mothers' evaluation of their experiences.	The cesarean delivery rate was almost identical in the two groups. There were no significant differences in other maternal or neonatal events during labor, delivery, or the hospital stay. The questionnaire reveled no significant differences in women's perceived control during childbirth or depression. All comparisons of women's likes, dislikes, and their future preference for amount of nursing support, favored the continuous labor support.	To improve woman's evaluations of their care during labor and birth ensure that all women have continuous intrapartum nursing support. There needs to be large well-controlled evaluations of comprehensive changes to the routine care of women during labor and birth to decrease cesarean rates and rates of other intrapartum interventions.	Level I Quality A (High)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Kashanian, M., Javadi, F., & Haghighi, M. (2010). Effect of continuous support during labor on duration of labor and rate of cesarean delivery. *International Journal of Gynecology & Obstetrics, 109*(3), 198-200. doi:10.1016/j.ijgo.2009.11.028	To evaluate the effects of continuous midwife support during labor on length of the different stages of labor and the cesarean rate.	100 nulliparous women who presented for care at the Department of Obstetrics and Gynecology at the Iran University of Medical Sciences, Tehran, between March and September 2003 and who had not received education classes on childbirth.	Randomized controlled trial: In the intervention group (n=50) continuous support during labor was provided; the control group (n=50) did not receive continuous labor support.	Duration of the active, second and third stages of labor Cesarean delivery Oxytocin use Apgar score of < 7 at 5 minutes	Continuous labor support resulted in statistically significant shorter active and second stages of labor. Cesarean rate in the continuous support group was 8% and 24% for women without continuous midwifery support. No major differences between the groups with regards to the use of oxytocin, length of the third stage of labor, or Apgar scores of <7 at 5 min.	Continuous labor support should be available to all women and should be introduced as routine practice.	Level I Quality A (High)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Khresheh, R., (2010). Support in the first shags of labor from a female relative: The first step in improving the quality of maternity services. *Midwifery, 26*(6), e21-e24. doi:10.1016/j.midw.2008.11.003	To assess whether labor support by a female relative during the first stage of labor affected duration of labor, use of pharmacologic pain relief, mode of delivery and the woman's postpartum perception of the birth experienced.	Convenience sample of 226 nulliparous women who had a single term fetus, were expecting an uncomplicated vaginal birth, and were in spontaneous labor at the time of admission at the Al-Karak hospital Jordan.	Quasi-experimental: Convenience sample: women who arrived with a female relative were allowed to have her stay and provide support. Women who arrived with a male companion or no support were assigned to receive usual care.	Mode of delivery, use of pain relief, duration of labor and perceptions of the birth experience	Women with support were significantly less likely to have pharmacologic pain relief and more likely to report a good birth experience. No differences between the groups in mode of delivery or duration of labor.	Consideration should be given to change maternity systems to ensure that all women have access to support of a female relative in labor	Level II Quality (Good)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Kozhimannil, K. B., Hardeman, R. R., Attanasio, L. B., Blauer-Peterson, C., & O'Brien, M. (2013). Doula care, birth outcomes, and costs among Medicaid beneficiaries. *American Journal of Public Health, 103*(4), e113-e121. doi:10.2105/10AJPH.2012.301201	To compare outcomes for Medicaid recipients who received prenatal education and childbirth support from trained doulas as compared with outcomes from a national sample of similar women who did not receive doula support. This was then translated into potential cost savings of using doula care.	Medicaid-funded births nationally (from the 2009 Nationwide Inpatient Sample; n = 279,008) and Medicaid-funded births supported by doula care (n = 1,079) in Minneapolis, Minnesota, (Everyday Miracles doula service) in 2010 to 2012	Quasi-Experimental	Patient data was collected on maternal age, race/ethnicity, pregnancy related hypertension and diabetes, vaginal vs. cesarean delivery and preterm birth.	Women supported by doulas were more racially/ethnically diverse, slightly older (27 vs. 25), and had lower rates of gestational hypertension (3.8% vs. 7.8%), lower rates cesarean section (22.3% vs. 31.5%) and lower rates of preterm birth (6.1% vs. 7.3%- although this was not statically significant). After control for clinical and sociodemographic factors, odds of cesarean delivery were 40.9% lower for doula-supported births. Potential cost savings to Medicaid programs associated with cesarean rate reductions are substantial but depend on states' reimbursement rates, birth volume, and current cesarean rates.	State Medicaid programs should consider offering coverage for birth doulas to improve birth outcomes and lower birth costs.	Level II Quality A (High)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Kozhimannil, K. B., Attanasio, L. B., Hardeman, R. R., & O'Brien, M. (2013). Doula care supports near-universal breastfeeding initiation among diverse, low-income women. *Journal of Midwifery & Women's Health, 58*(4), 378-382. doi: 10.1111/jmwh.12065	To study whether doula support may be associated with breastfeeding initiation among low-income, diverse women.	Comparison of breastfeeding rates for 1069 women who received doula care from Everyday Miracles, a Minnesota-based organization that employs certified doulas, to a state-based sample of women with Medicaid coverage who gave birth in 2009 or 2010 and participated in the Minnesota Pregnancy Assessment Monitoring System survey (n= 51,721).	Quasi-Experimental	Breastfeeding initiation rate Race/ethnicity	Women who had doula-supported births had near-universal breastfeeding initiation (97.9%), compared with 80.8% of the general Medicaid population. Among African American women, 92.7% of those with doula support initiated breastfeeding, compared with 70.3% of the general Medicaid population.	Future research should examine the role that doula support may play in breastfeeding duration among vulnerable women and the potential impacts of facilitating financial access to culturally appropriate, trained doula services for low-income women who might not other-wise have access to this type of care.	Level II Quality A (High)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Kozhimannil, K. B., Johnson, P. J., Attanasio, L. B., Gjerdingen, D. K., & McGovern, P. M. (2013). Use of nonmedical methods of labor induction and pain management among U.S. women. *Birth: Issues in Perinatal Care, 40*(4), 227-236. doi:10.1111/birt.12064	Examine the use of nonmedical care to induce labor and manage pain during childbirth in the United States.	English-speaking women aged 18–45, who gave birth to a singleton infant in a U.S. hospital during 2005 (N = 1,573).	Non-Experimental: observational, retrospective analysis	Labor induction: self-induction and medical induction. Use of nonmedical and medical techniques for pain management during labor (tub or pool, shower, position changes, birth ball, hot or cold objects, mental strategies, environmental changes such as music or aroma, hands-on techniques, breathing techniques, or other techniques).	Nearly 30% of women used nonmedical methods to start labor, and over 70% of women used nonmedical pain management. Doula support was the strongest predictor of non-medical methods of labor induction. Use of nonmedical pain management was significantly associated with decreased odds of medical pain management.	Policies to increase access to doula care should be considered. It may be useful for payers to consider benefits design strategies that allow for a range of choices for labor pain management. Future research should examine effectiveness of alternative and non-medical strategies for induction and pain management.	Level III Quality A (High)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Langer, A., Campero, L., Garcia, C., & Reynoso, S. (1998). Effects of psychosocial support during labor and childbirth on breastfeeding, medical interventions, and mothers' wellbeing in a Mexican public hospital: A randomized clinical trial. *British Journal of Obstetrics & Gynecology, 105*(10), 1056-1063. Retrieved from https://scholar.google.com/	To evaluate the effects of psychosocial support during labor, delivery and the immediate postpartum period provided by a doula.	724 primiparous women with a single fetus, < 6 cm of cervical dilatation, and with no indications for an elective caesarean section were randomly assigned to be accompanied by a doula, or to receive routine care.	Randomized Controlled Trial: 361 women were assigned to be accompanied by a doula and 363 had standard care. Data was collected while the women were in the hospital and at 1 month postpartum with 20 women in the doula group and 36 women in the standard care group lost.	Outcomes assessed: breastfeeding practices, duration of labor, medical interventions (epidural anesthesia, use of forceps and cesarean section), mothers emotional conditions (perceived control over labor, anxiety, perception of pain, satisfaction and self-esteem), and newborn's health (Apgar scores and meconium staining)	Exclusive breastfeeding one month after birth was higher in the doula group, as were the behaviors that promote breastfeeding. However, this was not statistically significant. Statistically significant number women in the doula group perceived a high degree of control, and the duration of labor was shorter than in the control group. There were no effects on medical interventions, mothers' anxiety, self-esteem, perception of pain and satisfaction, or in newborns' conditions. Conclusions psychosocial support by doulas had a positive effect on breastfeeding and duration of labor.	Doula support during labor and the immediate postpartum period should be part of a comprehensive strategy to promote breastfeeding.	Level I Quality A (High)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Lundgren, I. (2010). Swedish women's experiences of doula support during childbirth. *Midwifery, 26*(2), 173-180. doi:http://dx.doi.org.ezproxy.bethel.edu/10.1016/j.midw.2008.05.002	To describe women's experiences of doula support during childbirth	9 Swedish women, 7 primiparous, 2 multiparous between the ages of 15-40	Qualitative Study	A tape-recorded interview was put into text. The questions included "Can you tell me about your experience of doula support during childbirth?" A follow-up question was about the support received from the midwife. Interpretation of the experience was done by getting first a picture of the whole, then organizing data into themes, and finally by analyzing the text and themes to get a new whole	Doula support lies between natural care and professional care. An aspect of doula support is helping the woman to play her part in the birth. Doulas provided continuous support, whereas the midwives' supporting role is unclear to women.	More research to describe the different support given by doulas and midwives. More qualitative studies on how support should be given Additional research on doula and midwifery care in different countries and care systems.	Level III Quality B (Good)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Madi, B. C., Sandall, J., Bennett, R., & MacLeod, C. Effects of female relative support in labor: A randomized controlled trial. *Birth 26*(1), 4-8. doi:10.1046/j.1523536x.1999.00004.x	Determine the effectiveness of the prescience of a female relative as a labor companion on labor outcomes.	109 primigravida in uncomplicated spontaneous labor were randomly distributed into a control group who labored without family present, and an experimental group who had a female relative with them during labor in Botswana.	Randomized Controlled Trial	Mode of delivery, use of analgesia, amniotomy, oxytocin, and Apgar scores at one and five minutes	Women with support had significantly more spontaneous vaginal deliveries. They used significantly less analgesia, were less likely to have amniotomy and were given fewer oxytocic drugs. There were no differences in the Apgar scores at one and five minutes.	All women giving birth in a hospital should be offered the choice of a female relative as a companion to give support during labor.	Level I Quality A (High)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
McGrath, S. K., & Kennell, J. H. (2008). A randomized controlled trial of continuous labor support for middle-class couples: Effect on cesarean delivery rates. *Birth: Issues in Perinatal Care, 35*(2), 92-97. doi:10.1111/j.1523-536X.2008.00221.x	Examine the effects of doula support for nulliparous middle-income women with a male partner during labor and delivery.	420 women enrolled in childbirth education classes in Cleveland, Ohio. 224 women were randomized into the doula group, 196 were in the control group.	Randomized controlled trial	Demographic data, induction of labor, epidural analgesia, mode of delivery, development of an elevated temperature and evaluation of experience of laboring with doula support.	Among induced labors doula supported births had a significantly lower rate of cesarean delivery (12.5% vs. 58.8%). With spontaneous labor the doula group had a lower cesarean delivery rate (13.4% vs. 25.0%) and less use of epidural analgesia (64.7% vs. 76.0%). Development of a fever was unrelated to the presence or absence of doula support. 100% of couples with doula support rated their experience with the doula positively.	Doula support is a risk-free obstetric technique that could benefit all laboring women and should be made available in all maternity units.	Level I Quality A (High)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Morhason-Bello, I. O., Adedokun, B. O., Ojengbede, O. A., Olayemi, O., Oladokun, A., & Fabamwo, A. O. (2009). Assessment of the effect of psychosocial support during childbirth in Ibadan, southwest Nigeria: A randomized controlled trial. *Australian & New Zealand Journal of Obstetrics & Gynecology, 49*(2), 145-150. doi:10.1111/j.1479-828X.2009.00983.x	To assess the effect of psychosocial support on labor outcomes.	585 women in Nigeria with anticipated vaginal delivery were studied: 293 were in the experimental group (labor support) and 292 were in the control group (routine care)	Randomized Controlled Trial: Between 30-32 weeks gestation women were enrolled and allocated into either the labor support group (they were told to bring a support person of their choice) or the routine care group.	The primary outcome measure was caesarean section rate. Others included duration of active phase, pain score, time of breastfeeding initiation and description of labor experience.	Women in the control group were about five times more likely to deliver by caesarean section, had significantly longer duration of active phase, higher pain scores, and longer interval between delivery and initiation of breastfeeding. Women in the labor support group had a more satisfying labor experience.	Psychosocial support during childbirth among Nigerian women appears beneficial and its inclusion in the management protocol may be justified.	Level I Quality B (Good)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Mottl-Santiago, J., Walker, C., Ewan, J., Vragovic, O., Winder, S., & Stubblefield, P. (2008). A hospital-based doula program and childbirth outcomes in an urban, multicultural setting. *Maternal & Child Health Journal, 12*(3), 372-377. doi:10.1007/s10995-007-0245-9	Determine differences in birth and breastfeeding outcomes for women who received labor support through a hospital-based doula program, compared with those who did not receive doula support.	11471 women at 37 weeks or greater giving birth to singleton, live infants.	Quasi-Experimental	Chart review assessed: differences in cesarean delivery rates, epidural use, operative vaginal delivery, Apgar scores, breastfeeding intent, and early breastfeeding initiation	There were no significant differences in cesarean births performed, epidural rates, operative vaginal deliveries or Apgar scores. Women with doula support had statistically significantly higher rates of breastfeeding intent and early initiation with the exception of early breastfeeding initiation by multiparous women attended to by a physician.	Further research into the effects of prenatal education and labor support on breastfeeding practices is needed.	Level II Quality A (High)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Papagni, K., Buckner, E. (2006). Doula support and attitudes of intrapartum nurses: A qualitative study from the patient's perspective. *Journal of Perinatal Education, 15*(1), 11-18. doi:10.1624/105812406X92949	To examine the level of acceptance by nurses for doula support, as perceived by the laboring woman.	9 Caucasian women from 21-40 years old. 5 primiparas and 4 multiparas in north central Alabama.	Qualitative	Patients' perceptions of the nurse's attitude toward the doula as either 1. Accepting and affirming or 2. Resentment and animosity, and how this impacted their experience	4 of 9 women reported that nurses that showed resentment and animosity towards the doula and this had a negative impact on their birth experience.	Further research on the reason some nurses are not accepting of doula support. Interviews with both nurses and doulas to investigate their perceptions.	Level III Quality C (Low)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Paterno, M. T., Van Zandt, S. E., Murphy, J., & Jordan, E. T. (2012). Evaluation of a student-nurse doula program: An analysis of doula interventions and their impact on labor analgesia and cesarean birth. *Journal of Midwifery & Women's Health*, *57*(1), 28-34. doi:10.1111/j.1542-2011.2011.00091.x	Explore differences in doula interventions by type of provider (CNM or obstetrician) and examine association between doula interventions with labor analgesia and cesarean birth.	648 labor and birth records from Birth Companions Program (students at the Johns Hopkins University School of Nursing who have had doula training provide continuous labor support to women in the East Baltimore area)	Non-Experimental: A secondary analysis of Birth Companions Program database	Interventions used by the doula broken down into physical or emotional/informational, pain medication (IV analgesia or epidural) and the mode of delivery (vaginal or cesarean).	Doulas used statically significantly more physical interventions with patients with a CNM than those attended to by a physician. There was not a statically significant difference in the number of emotional/informational interventions used between the types of providers.	Future research should examine the impact of having a male Birth Companion for support. Qualitative studies may help explain the impact and personal meaning of the physical, emotional, and informational interventions experienced during labor and birth.	Level III Quality A (High)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Riley, L., Hutchings, Y., & Lieberman, E. (2012). The effect of doula support on epidural use among nulliparous women in tertiary care centers. *American Journal of Obstetrics & Gynecology 206*(1), s70-s71. doi.org/10.1016/j.ajog.2011.10.150	To investigate the impact of doula support on the probability of receiving epidural analgesia in labor	381 women were randomized into doula care (155) or usual care (226)	Randomized Control Trial	Predictors of labor epidural analgesia (LEA) use Use of LEA	Predictors of LEA use were induction, birth weight, station </= -2 Doula support was associated with a significant decrease in LEA use even when predictors of LEA were present	No recommendations were made	Level I Quality C (Low)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Safarzadeh, A., Beigi, M., Salehian, T, Khojasteh, F., Burayri, T., Navabirigi, S. D., & Ansari, H. (2012). Effect of doula support on labour pain and outcomes in primiparous women in Zahedan, southeastern Iran: A randomized controlled trial. *Journal of Pain & Relief, 1*(112). doi: 10.4172/2167-0846.1000112	To determine the effect of doula support on labor pain and outcomes	150 primiparous women in labor wards in Zahedan and Mirjaveh were randomly selected to receive doula support (n=75) or usual care (n=75)	Randomized Controlled Trial	Mode of delivery Use of drugs (oxytocin/promethazine /hyoscine) Mean duration of active and second stage of labor Severity of pain as measured by a Visual Analogue Scale at the beginning of active labor (4cm) and at the end of the second phase of labor (10 cm)	No difference in the mode of delivery, use of drugs or the duration of the second stage of labor. Mean duration of active labor was shorter with doula support. 189.32+/-90.85 minutes vs. 251.13 +/- 75.05 minutes, p=0.000 No difference in pain severity between the two groups at the begging of active labor but less pain with doula support at the end of the second phase of labor	Doula support could be introduced to women during delivery, considering its proven supportive role.	Level I Quality B (Good)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Torres, J. M. C. (2015). Families, markets, and medicalization: The role of paid support for childbirth and breastfeeding. *Qualitative Health Research, 25*(7), 899-911. doi:10.1177/1049732314553991	Examining how participants understood the role of lactation consultants and doulas, and the reasons why clients turned to these services.	72 interviews with lactation consultants, doulas, clients, and clinicians, as well as 150 hours of ethnographic observation in the USA.	Qualitative Study	Identification of code categories that were organized into core themes and broken down into sub themes	Lactation consultants and doulas fill a gap in breastfeeding and labor support within maternity care. They act as advocates and guides, helping their clients navigate the complex medical maternity system.	Further research on the roles of race and class in the commercialization of breastfeeding and labor support is needed Additional research needed to track the broader impact of the growth of these two occupations on the maternity care system.	Level III Quality B (Good)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Trueba, G., Contreras, C., Velazco, M. T., Lara, E. G., & Martinez, H. B. (2000). Alternative strategy to decrease cesarean section: Support by doulas during labor. *Journal of Perinatal Education, 9*(2), 8-13. https://doi.org/10.1624/105812400X87608	To evaluate the labor interventions and outcomes when a childbirth educator that was also trained as a doula provided continuous labor support.	100 nulliparous women in Mexico City who were term, in active labor with a cervical dilation of 3 cm or more, with no previous uterine incisions, and judged to have adequate pelvises were randomly selected to receive doula support during labor or standard care.	Randomized controlled trial	Outcomes assessed via chart review: use of Pitocin, epidural usage, mean length of labor, and mode of delivery.	No statistically significant difference in the use of epidurals or the length of labor. 1,100% reduction in cesarean births with doula support (1 cesarean birth vs. 12) and a statistically significant decrease in the use of Pitocin.	Every effort should be made to ensure that laboring women receive support from those close to them and, additionally, from doulas. Further studies are needed to compare the level of doula training that creates the best outcomes.	Level I Quality A (High)

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Van Zandt, S. E., Edwards, L., & Jordan E. T. (2005). Lower epidural anesthesia use associated with labor support by student nurse doulas: Implications for intrapartal nursing practice. *Complementary Therapies in Clinical Practice, 11*(3), 153-160. doi:10.1016/j.ctcp.2005.02.003	Examine whether the interventions of a student nurse doula decreases the likelihood of a woman receiving epidural anesthesia.	A retrospective review of 89 labor and birth records for mothers having vaginal births and supported by a student nurse doula from the Johns Hopkins University School of Nursing School's Birth Companions Program	Non-Experimental: observational, retrospective analysis	Parity in relation to epidural usage. Types and number of interventions performed by the doula as standard (interventions routinely provided by nurses such as providing a drink, positioning, easing fears, etc.) or complementary (interventions not routinely provided by labor nurses such as continuous presence, massage, counter pressure, etc.) and its association to epidural usage Epidural use in relationship to length of labor	Nulliparous women received epidurals more frequently (88.1%) than women who had had one previous birth (46.6%) or more (51.6%) Lower epidural use with increased complementary doula interventions. An association of higher epidural use with longer labors	Further study of the use of doula interventions in traditional labor and delivery settings is warranted. Future studies should evaluate the long-term effects of doula training on nurses' career development, specifically whether nurses who have been trained as doulas use this training in their practices, even in non-labor and delivery settings. Further analysis of the relationship between length of labor, length of continuous presence of the doula, and other medical interventions such as episiotomy	Level III Quality A (High)