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Effects of Labor Support from Doulas on Birth Outcomes

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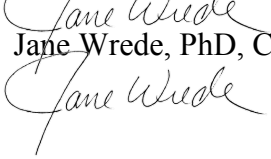
Director of Nurse-Midwifery Program Signature: 

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To my beautiful children: This journey has not been without its struggles, but I didn't finish in spite of you, I finished because of you. Becoming a mother has changed my life in so many ways, and I hope throughout the years ahead I can help other women in their paths to motherhood. I hope you have learned you can always follow your dreams, even when things seem difficult or impossible.

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Abstract

Background/Purpose: Women using a doula for support during labor and childbirth is increasing, with 6% of women in 2012 utilizing doulas (Dekker, 2017). The American College of Obstetricians and Gynecologists [ACOG] recommends one-to-one labor support to improve labor outcomes. The purpose of this literature review was to determine the effects of labor support from doulas on birth outcomes.

Theoretical Framework: Kolcaba's Theory of Comfort can be used during childbirth. This theory focuses on relief, ease, and transcendence, allowing women the opportunity to rise above the pain and experience comfort, even when their pain is not gone. Doula support is intended to increase the laboring woman's comfort, thereby improving birth outcomes.

Methods: Twenty-two primary research articles relevant to birth outcomes as a result of doula support were reviewed.

Results/Findings: Doula support during labor results in lower rates of cesarean and operative vaginal deliveries with an increase in normal spontaneous vaginal deliveries, decreased pain and decreased pain medications received during labor, shorter lengths of labor, increased patient satisfaction, increased rates of breastfeeding, decreased rates of oxytocin augmentation, improved neonatal Apgar scores at 1 and 5 minutes of life, higher rates of perineal integrity, decreased rates of amniotomies, decreased rates of induction, and improved outcomes if induction is used.

Conclusion: Doula support during labor results in many benefits for both mother and infant without any associated negative outcomes.

Implications for Research and Practice: Nurse midwives should ensure women are educated on the purpose and benefits of receiving doula support during labor. In addition, nurse midwives should provide more one-to-one labor support to women.

Keywords: doula, labor support, birth outcomes, midwifery care, Theory of Comfort

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Chapter I: Effects of Labor Support from Doulas on Birth Outcomes

Introduction

Childbirth is a unique experience, and the outcomes women experience during labor and birth can impact and change a woman's life, both positively and negatively. For thousands of years women have been giving birth surrounded and supported by other women. This role of offering support during pregnancy, labor and delivery, and postpartum was so unique and powerful that in the 1980s the word "doula" was chosen to describe a person who serves families in labor. The word comes from the Greek term for woman servant. A doula is defined as a trained professional who provides continuous physical, emotional, and information support to a mother before, during, and shortly after childbirth to help her achieve the healthiest, most satisfying experience possible (Doulas of North America [DONA], 2019).

Women have expectations and goals for how they expect their labor and birth to unfold, and women are using doulas to help them meet these goals and expectations. In 2006, only 3% of women in the United States used a doula during childbirth, but that percentage doubled to 6% in 2012 (Dekker, 2017). Of those women who did not use a doula but understood what a doula was, 27% stated they would have liked to have had a doula during labor/delivery. (Dekker, 2017). With the number of women utilizing doula services on the rise, the purpose of this literature review was to determine why. Are there benefits to having a doula during childbirth? Will doula support improve birth outcomes? What benefits do women receive from having doula support during labor? While the healthcare provider may be the most important member of the team, a doula is another professional during childbirth, whose sole purpose is to support the mother, especially if her goal is to achieve a normal, physiologic birth.

History

Doulas' emphasis on non-medical tasks is what sets them apart from midwives or other providers in the labor and birth setting. A doula's standard of practice forbids involvement in medical tasks, and instead focuses on non-pharmacological methods of pain relief, providing education and encouragement, and facilitating communication between the laboring woman and her providers. DONA International, the largest and longest-standing doula certifying organization has over 12,000 members in all states and over 50 countries and boasts of many contributions of birth doulas to modern maternity care. However, there are also many doulas who practice without being certified or recognized by organizations.

Evidence Demonstrating Need

Midwives differ from doulas in that their responsibility is the health and well-being of mother and baby, and their medical priorities exist in harmony with the non-medical tasks of a doula. Midwives have been serving women for thousands of years, and even their title means 'with woman.' Certified nurse midwives [CNMs] make up over 90% of midwives in the United States and are able to care for women throughout the lifespan, including during pregnancy and childbirth, as well as provide primary and gynecological care, birth control options, and care for newborns through the first 28 days of life (American College of Nurse Midwives [ACNM], 2016). CNMs are licensed, independent health care providers with prescriptive authority throughout the entire United States and are defined as primary care providers under federal law. CNMs graduate from schools accredited through the Accreditation Commission for Midwifery Education [ACME] and receive their certification through the American Midwifery Certification Board [AMCB].

As of 2017, there were approximately 6,530 midwives practicing throughout the United States (BLS, 2018). The vast majority of these midwives are employed by physician offices, with large numbers also being employed by general medical and surgical hospitals (BLS, 2018). In 2014, midwives attended 332,107 births, representing 12.1% of all vaginal births or 8.3% of the total births in the United States (ACNM, 2016). Since 1989, the percentage of midwife-attended births has risen nearly every year. Midwives practice wherever women give birth, with 94.3% of their attended births occurring in hospitals, 3% in freestanding birth centers, and 2.7% taking place in homes (ACNM, 2016).

Midwives have a professional responsibility to promote the hallmarks of midwifery, as described by ACNM. This includes the advocacy of non-intervention in normal processes in the absence of complications, promoting woman- and family-centered care, and incorporating evidence-based complementary and alternative therapies (ACNM, 2012). This allows midwives to have an important role in labor support, yet midwives will always have other responsibilities as well.

The ACNM, Midwives Alliance of North America [MANA], and the National Association of Certified Professional Midwives [NACPM] published a consensus statement defining normal physiologic birth, identifying measurable benchmarks to describe normal physiologic birth, identifying factors that facilitate or disrupt normal physiologic birth, creating a template for system changes, and ultimately improving the health of mothers and infants while avoiding unnecessary and costly interventions. While the consensus statement isn't specifically about utilizing doulas, it does reference multiple factors that influence the ability of a woman to give birth without intervention, including factors relating to the woman, the clinician, and the birth setting and environment. According to ACNM, MANA, and NACPM, factors that facilitate

normal physiologic birth include access to providers supportive of and skilled in normal physiologic birth and maternity care providers skilled in non-pharmacologic methods for coping with labor pain (ACNM, 2013). Factors that disrupt normal physiologic birth include an unsupportive environment, lack of supportive companions, and any situation in which the mother feels unsupported (ACNM, 2013). As the purpose of a doula is to provide physical, emotional, and information support to women, doulas are an additional resource to help women achieve normal physiologic birth, in addition to midwives.

A statement from ACOG agrees and states that "continuous one-to-one emotional support provided by support personnel, such as a doula, is associated with improved outcomes for women in labor" (Bryant & Borders, 2019, p.1). These benefits can include shortened labor, decreased need for analgesia, fewer operative deliveries, and fewer reports of dissatisfaction with the labor experience. In addition, ACOG discusses the potential benefits of teaching labor support techniques to friends or family members. This can still result in significantly shorter durations of labor, higher Apgar scores at 1 and 5 minutes, and decreased cesarean rates. ACOG indicates that continuous labor support is cost effective and discusses that paying for such personnel has the potential to result in substantial cost savings. Finally, ACOG states that because of the many benefits and absence of risks, programs and policies may need to be developed to integrate trained support personnel into the intrapartum care environment to provide continuous one-to-one emotional support to women in labor.

The Cochrane Database, which reviews hundreds of thousands of published research articles, agrees with ACNM and ACOG, showing positive outcomes from utilizing a doula. After combining the results of 26 trials that included more than 15,000 women, Cochrane states that women who received continuous support were more likely to have spontaneous vaginal births

and less likely to utilize pharmacological methods of pain relief or have negative feelings about childbirth (Bohren, Hofmeyr, Sakala, Fukuzawa, & Cuthbert, 2017). They were also less likely to experience vacuum or forceps-assisted births or undergo a cesarean section. (Bohren et al., 2017). Duration of labor was found to be approximately 40 minutes shorter for women who have continuous labor support and babies were less likely to have low 5-minute Apgar scores (Bohren et al., 2017). The overall results of the Cochrane review showed that utilization of continuous labor support leads to statistically better outcomes for both mother and baby, with no negative consequences.

Statement of Purpose

The purpose of this literature synthesis is to create a critical appraisal of scholarly research articles to determine the effect of continuous labor support from doulas on birth outcomes. This paper will examine the effects of doula support on multiple aspects of labor including induction of labor, oxytocin augmentation, amniotomy, perineal integrity, labor pain, pain management, duration of labor, and mode of delivery. It will also analyze other aspects of birth outcomes including neonatal outcomes, breastfeeding initiation rates, and patient satisfaction.

Theoretical Framework

"Increasing comfort can redefine the meaning of pain in childbirth. Increasing comfort may create a decreased need for medical interventions and lower costs" (Schuiling & Sampson, 1999, p. 77). Comfort during labor does not mean the absence of pain, and this idea allows us to theorize the purpose and benefits of comfort during childbirth. Comfort can be defined as "the state of having met basic human needs for ease, relief, and transcendence" (Kolcaba, 2001, p. 88). Kolcaba's Theory of Comfort offers us a framework through which we may better

understand how labor support may increase the laboring woman's comfort and improve outcomes.

Kolcaba's Theory of Comfort is based on the premise that patients have comfort needs, and when those needs are met, patients are both strengthened and motivated (Kolcaba, 2001). The theory focuses on three forms of holistic comfort: relief, ease, and transcendence. Relief comes from the idea that providers relieve comfort needs expressed by patients. Ease is the concept that once basic functions are met, a patient can reach homeostasis and feel calm and content. Finally, transcendence stems from the thought that patients can rise above the pain, challenges, and difficulties with assistance from their nurses or other providers). Kolcaba's Theory of Comfort places an importance on these concepts of relief, ease, and transcendence within physical, psychospiritual, environmental, and sociocultural contexts. This means that not only does comfort apply to physical comfort, such as decreasing pain, but also psychospiritual comfort, such as receiving emotional support, environmental comfort, being in an environment that is supportive and caring. Another aspect of this is sociocultural comfort, which is comprised of having wishes and beliefs being honored and respected. These comfort needs are driven by patient expectations; patients expect care that is both competent and holistic. When health care providers meet patients' comfort needs, better outcomes for both patients and institutions are achieved, including increasing patient satisfaction scores (Kolcaba, 2001).

Childbirth is a very unique situation when it comes to discussing comfort and pain management, as it is a physiologically normal event, and the pain doesn't signal a pathological process. During childbirth, the experience of comfort is distinctly different from the absence of pain, and the relief of pain does not ensure comfort. Comfort occurs when a woman experiences a sense of ease in her childbirth environment and when she is supported by human presence

(Schuiling, Sampselle, & Kolcaba, 2010). Comfort measures include many different non-pharmacologic interventions, including alternative and complementary methods of pain control used to promote comfort. Another distinct comfort measure is support, defined as one-to-one continuous support provided by a family member, significant other or care provider (Schuiling, Sampselle, & Kolcaba, 2010).

Doulas are the one care provider whose job it is to provide continuous physical, emotional, and information support to a mother before, during, and after childbirth (DONA, 2019). When it comes to studying the effect doulas and their continuous labor support have on women in childbirth, using Kolcaba's Theory of Comfort is ideal. Doulas who provide that one-to-one continuous support promote the comfort of laboring women as their focus, both strengthening and motivating their patients during the process by focusing on the physical, psychospiritual, environmental, and sociocultural contexts that surround a woman during childbirth (DONA, 2019).

Continuous labor support is one of the most important and basic needs for families experiencing the childbirth process and a way birth outcomes can be improved. Research states that doulas should be viewed by parents and providers as a valuable, evidence-based member of the birth care team (Dekker, 2017). Midwives are in a unique position when it comes to caring for laboring women, and are in the best role to encourage normal physiologic birth, while still maintaining the availability of medical interventions if necessary. Although continuous labor support can be offered by birth partners, midwives, nurses, or physicians, research has shown that doulas have a stronger positive effect than other types of support persons (Dekker, 2017). In addition, continuous labor support is risk-free and highly effective. As midwives have an obligation to evaluate, interpret, and apply research to their care (ACNM, 2012), midwives

should be knowledgeable on the use of doulas for continuous labor support, and should be advocating for their use amongst their patients.

Chapter II: Methods

Chapter II outlines the process used to find and identify literature related to birth outcomes in the presence versus absence of labor support. A list of search engines and search terms are included, as well as the process to determine relevant studies and inclusion and exclusion criteria. A summary of selected studies are provided along with the process for determining the level and quality of studies.

Search Strategies

CINAHL, Ebsco – Academic Search Premier, PubMed, Google Scholar, and Cochrane Database of Systematic Reviews are all databases that were searched to find literature on the topic of labor support. Key search terms included: labor support and doula. Once articles were found, their references lists were reviewed and additional articles were found to review.

Criteria for Inclusion and Exclusion

The articles selected for this literature review include labor support provided by midwifery/nursing students, nurses, midwives, other healthcare professionals, friends, family members, partners, and professional doulas. All articles include labor support, but many also included antenatal and postpartum support as well. Data from these studies include interventions, birth outcomes for mother and baby, rates of breastfeeding initiation, and patient satisfaction. Exclusion criteria removed some articles that focus only on prenatal education or postpartum support, but did not include support during the labor process. Articles that focus only on specific populations were rejected as well, due to the difficulty of comparing those results to the general population. One such article that was rejected studied women in prison and the benefits doula support could offer those women. Also, articles that focused exclusively on the financial benefits of doula support were discarded, as the focus of this literature review is on birth outcomes.

Summary of Selected Studies

The initial search yielded 68 studies that were evaluated. Articles were excluded if they did not fit the inclusion criteria, or if they were greater than 20 years old, unless the study was conducted in the United States. As the United States has different birth outcomes from other developed countries, studies from the United States are most relevant to this literature review. This narrowed the list down to 22 articles that met the inclusion criteria and were relevant to the topic of labor support. The articles included in the final review consist of 15 randomized controlled trials, five quasi-experimental trials, and two non-experimental trials, with one being a secondary analysis and the other being an observational retrospective analysis. There was one large systematic review done by the Cochrane Database of Systematic Reviews. It was not included as an article to be analyzed in this literature review, although it was used as a resource. The articles included contain research from Botswana, Brazil, Canada, Iran, Jordan, Mexico, Nigeria, and the United States, with 12 studies conducted in the United States.

Evaluation Criteria

Once the literature was selected, the articles were then evaluated for strength and quality using the Johns Hopkins Research Evidence Appraisal Tool (Dearholt & Dang, 2012). This system grades the strength and quality of evidence on a scale of I-V, with the highest level of scientific evidence receiving a Level I and being comprised of randomized controlled trials. Level II articles are comprised of quasi-experimental trials, and Level III articles are non-experimental trials. Therefore, this final review contains 15 Level I articles, five Level II articles, and two Level III articles. Of the 22 articles that met inclusion criteria, none are graded Level IV or Level V.

The quality of research in these 22 articles was then analyzed. Research quality is divided into three sections labeled High, Good, or Low. This review only contains articles labeled as High or Good, as none of the included articles are of Low quality. High quality has consistently generalizable results, meaning there is a large enough sample size with adequate control and consistent recommendations based on literature review with references to scientific evidence (Dearholt & Dang, 2012). Good quality has less generalizable results, but still contains some control with fairly definitive conclusions and reasonably consistent recommendations based on literature review with some references to scientific evidence (Dearholt & Dang, 2012). The articles in this literature review contain 14 graded High quality and 8 of Good quality.

Summary

Thorough database searches were performed on CINAHL, Ebsco – Academic Search Premier, PubMed, Google Scholar, and Cochrane Database of Systemic Reviews. After 40 articles were located, the additional 28 were found by reviewing their reference lists. This technique resulted in the initial 68 studies that were evaluated. Once the inclusion and exclusion criteria were applied, 22 scholarly articles were chosen for review using the John Hopkins Research Evidence Appraisal Tool.

Chapter III: Literature Review and Analysis

Synthesis of the Matrix

The matrix is a method of organizing the articles regarding labor support, and also allowed for connecting common themes and outcomes of the studies. The headings in the matrix included: purpose, sample/setting, method/instruments, conclusion, strengths, limitations, author recommendations, and implications.

Synthesis of the Major Findings

This matrix contains 22 articles chosen for their individual studies and findings related to labor support and its effects on birth outcomes. The main purpose of this review is to determine the effect on birth outcomes from doula support during labor, with multiple outcome measures being studied. These studies examine the correlation between labor support and the following birth outcomes: mode of delivery, pain management, duration of labor, patient satisfaction, breastfeeding, oxytocin augmentation, neonatal outcomes, labor pain, perineal integrity, amniotomy, and induction. Overall, findings illustrate an improvement in outcomes with the use of a doula for labor support. Use of pain medication and duration of labor are found to be statistically significant, as are mode of delivery, rates of breastfeeding initiation, and patient satisfaction with the use of a doula for labor support. Perineal integrity, pain perception, and neonatal outcomes are also affected by doula support, yet not significantly. Finally, doula support during labor is found to have no effect on rates of induction or oxytocin augmentation.

Mode of Delivery

Mode of delivery was the most frequently studied outcome measure, evaluated in 17 of these studies.. As there is a considerable difference between a vaginal delivery and a cesarean delivery, both in immediate risks to the mother, risks to the infant, and future risks to the mother,

increasing rates of spontaneous vaginal deliveries and decreasing rates of cesarean deliveries is a goal amongst both ACOG and the World Health Organization [WHO]. One study found no significant difference in rates of cesarean, forceps or vacuum assisted vaginal deliveries, or spontaneous vaginal deliveries between women with or without doula support (Gordon et al., 1999). Two studies found an increased rate in cesarean delivery amongst women with doulas as labor support, although that increase was not significant (Campbell, Lake, Falk, & Backstrand, 2006 & Safarzadeh et al., 2012). Eight studies, including the largest study with 6,915 women, found a decrease in rates of cesarean deliveries among women with doulas for labor support, yet the results were not statistically significant (Bolbol-Haghighi, Masoumi, & Kazemi, 2016; Gruber, Cupito, & Dobson, 2013; Hodnett et al., 2002; Kashanian, Javadi, & Haghighi, 2010; Khresheh, 2010; Langer, Campero, Garcia, & Reynoso, 1998; Morhason-Bello et al., 2009; Paterno, Van Zandt, Murphy, & Jordan, 2012). The remaining six studies found statistically significant decreases in cesarean delivery rates among women with doulas (Kennell, Klaus, McGrath, Robertson, & Hinkley, 1991; Kozhimannil, Hardeman, Attanasio, Blauer-Peterson, & O-Brien, 2013; Madi, Sandall, Bennett, & MacLeod, 1999; McGrath & Kenneth, 2008; Mottl-Santiago et al., 2008; Trueba, Contreras, Velazco, Lara & Martinez, 2000). As cesarean delivery rates vary greatly from country to country throughout the world, certain statistics vary immensely as well between studies, depending on the location of each study.

Eight studies, including a mix of five randomized controlled trials, two quasi-experimental studies, and one non-experimental study found an increase in the rates of spontaneous vaginal deliveries and a decrease in rate of assisted vaginal deliveries and/or cesarean deliveries, yet no results were found to be statistically significant. The one non-experimental study took place in the United States and examined interventions utilized by

doulas. This study found an increase in the total number of interventions provided by doulas was associated with decreased odds of cesarean birth, specifically if the interventions were physical interventions rather than emotional or informational interventions (Paterno et al., 2012). A quasi-experimental study of 225 women in the United States found that 19.6% of mothers with doula support had a cesarean birth as compared to 24.2% of mothers without doula support (Gruber et al., 2013). A quasi-experimental study of 226 women in Jordan found 75% of women had spontaneous vaginal deliveries and 17.8% had cesarean deliveries when using a doula for support, and 71% of women had spontaneous vaginal deliveries and 24% had cesareans when they did not have the support of a doula (Khresheh, 2010). A randomized controlled trial of 100 women in Iran found that women who received doula support had a 98% chance of normal spontaneous vaginal delivery and 2% chance of a cesarean or vacuum-assisted delivery, as compared to 94% and 6% in the control group (Bolbol-Haghighi et al., 2016). Another randomized controlled trial of 100 women in Iran found continuous labor support decreased the cesarean rate from 24% to only 8% (Kashanian et al., 2010). As both those studies were small, the decreases observed were not statistically significant. A randomized controlled trial of 585 women in Nigeria found that women with labor support were five times less likely to deliver via cesarean (Morhason-Bello, et al., 2009). Another randomized controlled trial of 724 nulliparous women in Mexico found a decrease in cesarean deliveries and forceps deliveries for women using doula support. These numbers decreased from 27.2% and 3.4% in women without support, to 23.8% and 2.8% for those upported by doulas (Langer et al., 1998). A large randomized controlled trial took place in North America, both in the United States and Canada, and studied the mode of delivery for 6,915 women. This study found similar rates of cesarean delivery, operative vaginal delivery, and spontaneous vaginal delivery between women with doulas and

those without. However, outcomes were slightly better in the women with doula support, finding that 71.8% of women with doulas had a spontaneous vaginal delivery, 15.7% had an operative vaginal delivery, and 12.5% had a cesarean delivery as compared to 71.2%, 16.2%, and 12.6% in women who did not have labor support (Hodnett et al., 2002).

Six studies did show a statistically significant decrease in the rate of cesarean or operative vaginal deliveries, and a significant increase of spontaneous vaginal deliveries amongst women using doula support during labor. These studies included four randomized controlled trials and two quasi-experimental studies, with one of those being the largest study included, looking at results of 11,471 women. A randomized controlled trial of 100 nulliparous women in Mexico found a reduction in the rate of cesarean deliveries when women were supported by doulas during labor, with a decrease from 24% in women receiving standard care to 2% in those with doulas (Trueba et al., 2000). Another small randomized controlled trial of 109 women took place in Botswana and reported an increase in spontaneous vaginal deliveries, 71% to 91%, a decrease in vacuum-assisted vaginal deliveries, 16% to 4%, and a decrease in cesarean deliveries, 13% to 6%, when women received labor support (Madi et al., 1999). A randomized controlled trial of 412 nulliparous women in the United States found continuous labor support significantly reduced the rate of cesarean delivery and forceps delivery. Cesarean delivery was reduced from 18% to 8%, $p = 0.009$, and forceps delivery was greatly reduced from 26.3% to 8.2%, $p < 0.0001$ (Kennell et al., 1991). Another randomized controlled trial in the United States looked at 420 nulliparous women and found doula support significantly lowered the cesarean delivery rate from 35% to 13.4%, $p = 0.002$, and decreased that rate even more amongst induced labors, reducing cesarean deliveries from 58.8% to only 12.5%, $p = 0.007$ (McGrath & Kennel, 2008). One quasi-experimental study of 1,079 women in the United States saw the cesarean delivery

rate decrease from 31.5% to 22.3% with the use of doula support during labor (Kozhimannil et al., 2013b). The largest study also took place in the United States and was a quasi-experimental study of 11,471 women. This study found a decrease in cesarean deliveries from 19% to 16% when a woman received labor support as well as a decrease in operative vaginal deliveries, 6% to 5% (Mottl-Santiago et al., 2008). While those decreases were not significant for the total number of women in the study, in nulliparous women with a midwife provider, the decrease was statistically significant, from 18% to 15% (Mottl-Santiago et al., 2008).

Three randomized controlled trials found different results, yet none were statistically significant. A randomized controlled trial of 314 women in the United States found no significant differences in rates of cesarean, forceps or vacuum assisted vaginal, or spontaneous vaginal deliveries between women who were provided doulas during labor and those who were not (Gordon et al., 1999). Another randomized controlled trial of 150 primiparous women in Iran found no significant difference in cesarean section rates between women supported by a doula and those without. Iran is already a country with very low cesarean delivery rates, and a slightly lower proportion of women supported by doulas had normal vaginal deliveries, 97.3%, compared to women in the control group, 98.7%, yet this decrease was not statistically significant (Safarzadeh et al., 2012). A final randomized controlled trial of 600 women in the United States found a small increase in cesarean delivery rates for women receiving support from a doula. The cesarean delivery rate increased from 17.9% of women without doula support to 18.9% in the presence of a doula, but the increase was not statistically significant (Campbell et al., 2006).

Pain Management

Pain control during labor is an aspect every mother preparing for birth thinks about. There are many different options available for women, ranging from nonpharmacologic comfort measures to intravenous pain medications and epidurals. Thirteen studies examined the differences in pain management and how labor support may affect the type and timing of pain management requested and utilized by laboring women. Different aspects of pain management were looked at, including epidural rates and type and timing of analgesia/anesthesia. Results were found to be quite mixed, but of the 13 studies which examined differences in pain management and how labor support may affect the type and timing of pain management, five found a significant decrease in the use of pharmacological pain management when women received labor support, and four studies found a decrease that was not statistically significant (Campbell, Lake, Falk, & Backstrand, 2006; Gordon et al., 1999; Hodnett et al., 2002; Kennel, Klaus, McGrath, Robertson, & Hinkley, 1991; Khresheh, 2010; Madi, Sandall, Bennett, & MacLeod, 1999; McGrath & Kennel, 2008; Mottl-Santiago et al., 2007; Trueba, Contreras, Velazco, Lara, & Martinez, 2000). Two randomized controlled trials found opposite results, with increased rates of epidural use in women with doulas, yet neither increase was statistically significant (Langer, Campero, Garcia, & Reynoso, 2005; Safarzadeh et al., 2012). The remaining two articles were non-experimental studies focused on specific doula interventions and found the more interventions provided by doulas, the lower the rates of epidural anesthesia (Paterno, Van Zandt, Murphy, & Jordan, 2012; Van Zandt, Edwards, & Jordan, 2005). One study found those results to be significant, with women 38% less likely to receive an epidural if they received more types of complementary doula interventions (Van Zandt et al., 2005).

The five studies which showed a statistically significant decrease in the use of pharmacologic pain management with the use of a doula for labor support consisted of four randomized controlled trials and one quasi-experimental study. A randomized controlled trial of 314 nulliparous women found that doulasupport resulted in significantly less epidural use, 54.4% versus 66.1%, $p < 0.05$ (Gordon et al., 1999). This study also found the use of a doula resulted in a decrease in the use of analgesia during the first stage of labor, 61.1% versus 68.5%, but that difference was not statistically significant (Gordon et al., 1999). Another randomized controlled trial of 412 nulliparous women found a statistically significant decrease in epidural rates among women with labor support, with only 7.8% of women with labor support from a doula receiving epidural anesthesia, while 55.3% of the control group received epidurals, $p <0.0001$ (Kennell et al., 1991). However, this study found no difference between the groups in the use of pudendal or intravenous anesthesia (Kennell et al., 1991). A randomized controlled trial of 109 nulliparous women also found a statistically significant decrease in analgesia for women with labor support, with only 53% of women who had support during labor using analgesia for pain relief compared to 73% who did not receive labor support (Madi et al., 1999). The final randomized controlled trial of 420 women found significantly lower rates of epidural analgesia among women supported by doulas during induced labors. The number of women using epidurals was 76% in the control group and only 64.7% in the support group, $p = 0.008$ (McGrath & Kennel, 2008). A quasi-experimental study of 226 nulliparous women also found that women who had support during labor were significantly less likely than those in the control group to have pharmacological pain relief. As epidurals were not available at this location, the only option for pain relief was intravenous pharmacologic pain relief, which was used by 45% of women in the support group and 98% of women in the control group, $p = 0.000$ (Khresheh, 2010).

The four studies which showed a decrease in pharmacologic pain management, albeit not statistically significant, consisted of three randomized controlled trials and a large quasi-experimental study with over 11,000 women. A randomized controlled trial of 600 nulliparous women found the group receiving doula support had statistically more advanced cervical dilation at the time of epidural anesthesia than those without continuous labor support; women were 4.3cm +/- 1.3 at the time of epidural anesthesia in the doula group as compared to 3.9cm +/- 1.2 in the control group (Campbell et al., 2006). However, the study also found that there was no significant difference between the two groups in epidural rates, with 85% of women in the doula group receiving epidural anesthesia versus 88% in the control group (Campbell et al., 2006). Another randomized controlled trial of 100 nulliparous women found a decrease in the use of epidurals associated with women receiving labor support from a doula, but that decrease was not statistically significant. This study found a 300% reduction rate in the use of epidurals, from 32% in the control to only 8% in the support group, but the study was small and therefore results were not statistically significant (Trueba et al., 2000). The largest study, a quasi-experimental study of 11,471 women, found similar results that women who received labor support from a doula had lower rates of epidural use, but results were not statistically significant. Rates of epidural use decreased from 46% in women without labor support to 36% in women who had doulas providing labor support. (Mottl-Santiago et al., 2007). Another large study was a randomized controlled trial of 6,915 women which found women receiving continuous labor support were less likely to use medication for pain relief, yet found no statistically significant differences between those women and others receiving usual care. Rates of epidural use were 66.1% in the support group versus 68% in the control group, intramuscular/intravenous opioid use was 27.4% versus 27%, and nitrous oxide use was 13.3% versus 14.8% (Hodnett et al., 2002).

A non-experimental study of 678 birth records looked at specific doula interventions and found that an increase in the number of interventions provided by labor doulas was associated with a decrease in the rate of epidural anesthesia, specifically if the interventions were physical interventions rather than emotional/informational interventions (Paterno et al., 2012). Another non-experimental study looked at birth records from 89 vaginal births and examined the number of interventions provided by doulas during labor. This study found the more complementary doula interventions used, the lower the epidural use for both nulliparas and multiparas (Van Zandt, et al., 2005). These results were statistically significant. Women were 38% less likely to have an epidural if they received more types of complementary doula interventions during labor, $p = 0.003$ (Van Zandt, et al., 2005).

Two randomized controlled trials found very different results for rates of pharmacological pain management. One randomized controlled trial of 724 nulliparous women actually found that more women who received support during labor received epidural anesthesia as compared to women in a control group, although the difference was very small and not significant, 88.1% in the support group compared to 87.3% in the control group (Langer et al., 1998). Another randomized controlled trial of only 150 women found similar results. This study found no significant difference in use of medication between women receiving labor support and women receiving standard care, and found that only 50.7% of women with labor support went through labor without pain medications as compared to 52% of women in the control group (Safarzadeh et al., 2012).

Duration of Labor

Eleven studies examined the relationship between doula support and the duration of labor. Only one study, but the largest containing 6,915 women, found no difference in the

duration of labor between women with and without labor support (Hodnett et al., 2002). Three studies found a decrease in the duration of labor for women with labor support, although the results were not statistically significant (Kennell, Klaus, McGrath, Robertson, & Hinkley, 1991; Khresheh, 2008; Trueba, Contreras, Velazco, Lara, & Martinez, 2000). The remaining seven studies found that labor support significantly decreased the duration of labor for women (Bolbol-Haghighi, Masoumi, & Kazemi, 2016; Campbell, Lake, Falk, & Backstrand, 2006; Kashanian, Javadi, & Haghidhi, 2010; Langer, Campero, Garcia, & Reynoso, 2005; Morhason-Bello et al., 2009; Safarzadeh et al., 2012; Shahshahan, Mehrabian, & Mashoori, 2014). Although the seven studies were small, all were randomized controlled trials of High quality.

A randomized controlled clinical trial of 100 women found that continuous support by midwifery students during labor significantly decreased the average duration of first stage of labor from 7.90 +/- 3.55 hours to 11.46 +/- 3.71 hours, $p < 0.001$ (Bolbol-Haghighi et al., 2016). The average duration of second stage was also found to be shorter, 52.47 +/- 28.97 minutes compared to 64.14 +/- 34.67 minutes, but not significantly shorter, $p = 0.002$ (Bolbol-Haghighi et al., 2016). Another small randomized controlled trial of 100 women found similar results, where continuous midwife support during labor was found to result in statistically significant shorter active first and second stages of labor, but showed no difference for the third stage (Kashanian et al., 2010). A third randomized controlled trial of 100 women found a significant decrease in both the length of first and second stages of labor with the presence of a continuous support person. The duration of the first stage of labor decreased from 5 +/- 1.1 hours and 6.6 +/- 1.1 hours in the two groups without labor support to 4.6 +/- 0.8 hours and 4.9 +/- 0.8 hours in the two groups with labor support, $p <0.0001$ (Shahshahan et al., 2014). The length of the second

stage of labor decreased from 1.01 +/- 0.35 hours and 0.78 +/- 0.22 hours to 0.68 +/- 0.22 hours to 0.88 +/- 0.33 hours, p = 0.001 (Shahshahan et al., 2014).

A slightly larger randomized controlled trial of 150 women found a significant decrease in the length of the active phase of labor when using a doula for labor support and also saw a decrease in the length of second stage, but that decrease was not significant. Duration of the active phase of labor decreased from 251.13 +/- 75.05 minutes to 189.32 +/- 90.85 minutes, p = 0.000, and the duration of second stage decreased from 44.39 +/- 144.02 minutes to 42.50 +/- 146 minutes, p = 0.556 (Safarzadeh et al., 2012). A randomized controlled trial of 585 women also found that psychosocial support significantly decreased the duration of the active phase of labor (Morhason-Bello et al., 2009). Another randomized controlled trial of 586 women found similar results. Women accompanied by an additional support person were found to have statistically shorter total lengths of labor, 10.4 +/- 4.3 hours compared to 11.7 +/- 4.8 hours. This same study found shorter, but not statistically significant, lengths of second stage, 58 +/- 51 minutes compared to 64 +/- 57 minutes (Campbell et al., 2006). A randomized controlled trial of 724 women also found a significant decrease in the duration of labor for women who had psychosocial support from a doula. The duration of labor decreased from 5.58 hours in the control group to 4.56 hours in those women with labor support from a doula (Langer et al., 2005).

Several studies found similar results, with labor support from a doula being associated with shorter durations of labor, yet not showing statistically significant results. A randomized controlled trial of 100 women found that women who had the support of a childbirth educator trained as a doula tended to have shorter labors 14.51 +/- 5.36 hours as compared to 19.38 +/- 7.5 hours, but the difference was not significant as the study contained only a small number of

participants (Trueba et al., 2000). A non-randomized comparison study of 226 nulliparous women found that although supportive companionship during labor decreased the total duration of labor, 8 +/- 4.2 hours from 10 +/- 4.8 hours, the decrease was also not significant, $p = 0.18$ (Khresheh, 2008). A randomized controlled trial of 412 nulliparous women found women who received continuous support of a doula during labor had the shortest duration of labor, 7.4 +/- 3.8 hours, compared to 8.4 +/- 4.2 hours in the observed group, and 9.4 +/- 4.2 hours in the control group, $p = 0.001$, however this decrease was not statistically significant (Kennell et al., 1991).

The largest randomized controlled trial of 6,915 women utilized nurses as labor support and found no difference in length of time between women receiving labor support and those in the control group in admission to delivery, active labor to delivery, or time of epidural analgesia to delivery (Hodnett et al., 2002). However, the nurses providing labor support in the experimental group were the same nurses caring for the women, preventing the women from receiving support from a person whose sole purpose was labor support, as women in other studies received.

Patient Satisfaction

For all women, the childbirth process is one of the most significant experiences in their lives. The way a woman perceives and remembers her labor and birth experience can affect her relationship with her baby, her risk of postpartum depression, and many other aspects of her life. Eight studies reviewed the effect of labor support on women's satisfaction during labor with the majority finding a positive correlation between labor support and women's satisfaction. Six of these studies found women receiving doula care rated their perception of labor and delivery as a significantly more positive experience than women without support from a doula (Campbell, Lake, Falk, & Backstrand, 2007; Gordon et al, 1999; Khresheh, 2008; McGrath & Kennel, 2008;

Morhason et al., 2009; Shahshahan, Mehrabian, & Mashoori, 2014). One study also found women receiving doula support reported more satisfaction with their experiences, yet results were not statistically significant (Bruggeman et al., 2007). The one remaining study found women with labor support perceived a higher degree of control over the delivery experience, but did not experience increased satisfaction (Langer, Campero, Garcia, & Reynoso, 2005).

A randomized controlled trial of 212 women found that those who received support during labor and delivery were more satisfied with labor, 88% versus 76%, $p < 0.0001$, and were also more satisfied with delivery, 91.4% versus 77.1%, $p < 0.0001$, although these differences were not statistically significant (Bruggeman et al., 2007). Another randomized controlled trial of 600 women found that doula-supported mothers were statistically more likely to report positive perceptions from their labor and delivery experience, specifically regarding their support and self-worth (Campbell et al., 2007). One randomized controlled trial of 314 nulliparous women focused on how the use of doulas during hospital-based labor and delivery affected self-esteem, depression, and postpartum perceptions of the birth in nulliparous women. Women who received support from a doula were significantly more likely to rate their birth experience as good, 82.5% versus 67.4%, to feel they coped very well with their labor, 46.8% versus 28.3%, to feel labor had a very positive effect on their feelings as a woman, 58% versus 43.7%, and to perceive their bodies as strong, 58% versus 41%, $p < 0.05$ (Gordon et al., 1999). A quasi-experimental study of 226 nulliparous women found similar results. After comparing labor experiences between women who received supportive companionship from a female relative and those who did not receive support, 84% of women with labor support rated their birth experience as good, compared to only 32% of women without labor support, $p = 0.020$ (Khresheh, 2008). A randomized controlled trial of 420 nulliparous women determined those with doula support had

overwhelmingly positive experiences during labor. Twenty-four hours after delivery, 100% of women who received doula support rated the presence of a doula as either positive, 7%, or very positive, 93% (McGrath & Kennel, 2008). A similar randomized controlled trial of 525 women conducted by Morhason-Bello et al. also found that women who were allowed companionship during labor were more likely to have a satisfying birth experience (2009). Another randomized controlled trial of 100 pregnant women in spontaneous labor also showed similar results. These women were divided into four groups; two groups received labor support, while the remaining two did not, and one group of each also received routine interventions, such as artificial rupture of membranes and oxytocin augmentation, with the remaining group allowing natural physiological birth. The study found that women who were allowed a support person were more satisfied with their labor experience, and that women who were allowed a support person and did not receive routine interventions were the most satisfied (Shahshahan et al., 2014). One final study found slightly different results regarding patient satisfaction with the use of doulas. A randomized controlled trial of 724 nulliparous women found that women who received social support by a doula perceived a higher degree of control over the delivery experience than the women without doulas, but found no differences in anxiety, self-esteem, pain, and satisfaction with their childbirth experience (Langer et al., 2005). Although 82.3% of women with a doula rated their satisfaction as high, 81.9% of women without doula support did as well, showing no statistical significance between the two groups (Langer et al., 2005).

Breastfeeding Initiation

Exclusive breastfeeding is recommended by both the WHO and the American Academy of Pediatrics [AAP] as the optimal form of infant nutrition. Breastfeeding is well known to have many positive impacts on both maternal and infant health, yet creating and maintaining a

successful breastfeeding relationship can be difficult and challenging for many mothers. Eight studies looked at the effect of labor support on rates of breastfeeding initiation and successful breastfeeding (continuation?). Three quasi-experimental studies and one randomized controlled trial found that receiving doula support increased breastfeeding initiation rates (Campbell, Lake, Falk, & Backstrand, 2007; Gruber, Cupito, & Dobson, 2013; Kozhimannil, Attanasio Hardeman, & O-Brien, 2013; Mottl-Santiago et al., 2007). Two randomized controlled trials found doula support increased rates of exclusive breastfeeding, despite not increasing rates of breastfeeding initiation (Gordon et al., 1999; Langer, Campero, Garcia, & Reynoso, 1998). The remaining two randomized controlled trials found doula support decreased the length of time between birth and breastfeeding initiation, which has shown to improve breastfeeding success; yet, for these studies, no overall increase in breastfeeding initiation or exclusive breastfeeding rates occurred (Bruggemann, Parpinelli, Osis, Cecatti, & Carvalhino Neto, 2007; Morhason-Bello et al., 2009).

One quasi-experimental study focused specifically on doula care and breastfeeding initiation rates among low-income, racially diverse women. Kozhimannil et al. studied 1,069 women and found that receiving doula support increased the breastfeeding initiation rate from 80.8% to 97.9%, and in African American women, increased rates from only 70.3% to 92.7% (2013a). Another quasi-experimental study of 225 women found that women with certified doulas during labor were significantly more likely to initiate breastfeeding, 79.4% versus only 67.2% without doula support (Gruber et al., 2013). When women were divided by age, adolescents had no significant difference in breastfeeding initiation rates, 67.4% versus 64.4%, but in adult women the difference was quite pronounced, with 90.2% initiating breastfeeding after receiving doula support as compared to only 73.2% of women without doula support (Gruber et al., 2013). The largest quasi-experimental study, which included 11,471 women,

found that receiving doula support not only increased rates of breastfeeding initiation, from 68% to 85%, but also found women with doula support initiated breastfeeding sooner after delivery than those without doulas (Mottl-Santiago et al., 2007). Of breastfeeding women with doula support, 46% put their infants to breast within the first hour after delivery, while only 23% of women without doula support initiated breastfeeding in that first hour (Mottl-Santiago et al., 2007). A randomized controlled trial of 600 women found similar results. Campbell et al. found that doula-supported mothers were statistically more likely to have initiated breastfeeding than women who did not receive support during labor (2007).

A randomized controlled trial of 724 nulliparous women found that receiving psychosocial support during labor by a doula increased the rates of exclusive breastfeeding from 7.5% to 12.3% at one month following delivery (Langer et al., 1998). Having doula support resulted in increased frequency of behaviors which promote breastfeeding, including caring for the mother's nipples, creating a calm environment during breastfeeding sessions, and decreasing women's rates of supplementing with formula after a doctor's suggestion (Langer et al., 1998). Another randomized controlled trial of 314 nulliparous women found no difference in breastfeeding initiation rates between women with continuous labor support and women without. The same study did find, however, that a higher percentage of women were still breastfeeding at four weeks postpartum if they used a doula during labor, versus those who had not, yet the difference between the two groups was not statistically significant (Gordon et al., 1999).

A randomized controlled trial with 585 women found that psychosocial support during labor decreased the interval between delivery and initiation of breastfeeding (Morhason-Bello et al., 2009). Initiation of breastfeeding within one hour after delivery has been correlated with higher rates of long-term breastfeeding success and is considered an essential step in promoting

successful breastfeeding. The final randomized controlled trial contained 212 nulliparous women and found that a higher number of infants were put to the breast in the delivery room if the mother had received labor support, 11% versus 6.5% of infants (Bruggeman et al., 2007). However, overall results regarding breastfeeding, including initiating breastfeeding in the first 12 hours and number of breastfeeding attempts in the first 12 hours, found no significant difference in breastfeeding success rates of women who received labor support as compared to women who did not (Bruggeman et al., 2007).

Oxytocin Augmentation

If labor is not progressing well, oxytocin augmentation may be recommended to advance the labor process with the end goal of a vaginal delivery. Infrequent or ineffective contractions can slow down the rate of cervical dilation, effectively slowing down the labor process. This can happen because of increased anxiety, which increases a woman's pain perception, increasing the secretion of catecholamines, reducing blood flow to the uterus, and consequently reducing the effectiveness of contractions. Of the five articles looking at oxytocin augmentation, two studies found no difference in the administration of oxytocin for labor augmentation (Kashanian, Javadi, & Haghighi, 2010; Gordon, Walton, McAdam, Derman, Gallitero, & Garret, 1999). The remaining three studies did show a difference in the administration of oxytocin, finding the number of women needing oxytocin augmentation was significantly lower in the groups receiving labor support (Bolbol-Haghighi, Masoumi, & Kazemi, 2016; Kennel, Klaus, McGrath, Robertson, & Hinkley, 1991; Trueba, Contreras, Velazco, Lara, & Martinez, 2000).

A randomized controlled trial by Bolbol-Haghighi et al. (2016) found that the number of women needing oxytocin augmentation was significantly lower in the group receiving labor support rather than the non-supportive group, $p = 0.002$, only 1 woman versus 3 women.

Although their results were significant, the study was small, containing only 100 women, with 50 in the control group who did not receive labor support, and 50 in the group receiving doula support. Trueba et al. completed another randomized controlled trial containing 100 women and also found the use of labor support to make a significant difference on the use of oxytocin during labor. Only 21 mothers, 42%, from the doula supported group received oxytocin augmentation, compared to 48 mothers, or 96%, from the control group, $p > 0.001$ (Trueba et al., 2000). Kennell et al. conducted the largest randomized controlled trial with 412 women and found similar results, with only 14% of women receiving labor support needing oxytocin augmentation versus 37.4% in the control group, $p < 0.0001$ (1991).

Two studies, however, found no difference in the frequency of administration of oxytocin between women with continuous labor support and women without. A randomized controlled trial of 100 nulliparous women by Kashanian et al. found that women who received continuous midwife support during labor had no significant difference in oxytocin augmentation than women in the control group who did not receive labor support (2010). Gordon et al. conducted a randomized controlled trial with 314 women and found that 61.7% of women with doula support received oxytocin augmentation as compared to 62.4% of women without doula support (1999). Although this study found having doula support decreased the likelihood of oxytocin augmentation, the results were not statistically significant.

Neonatal Outcomes

Seeing how labor support affects neonatal outcomes as well as maternal outcomes is also a consideration. A total of five studies compared Apgar scores of infants whose mothers had or had not received labor support. The Apgar score is a method used at both one and five minutes of age to quickly assess an infant's response to extrauterine life, with the best score being a 10 and

the lowest score being zero. These five studies had mixed results, with two stating Apgar scores were significantly improved in infants whose mothers received labor support (Bolbol-Haghighi, Masoumi, & Kazemi, 2016; Campbell, Lake, Falk, & Backstrand, 2006). The remaining three studies found no difference in Apgar scores between mothers who received labor support from a doula and those who did not (Bruggemann, Parpinelli, Osis, Cecatti, & Carvalhino Neto, 2007; Langer, Campero, Garcia, & Reynoso, 2005; Mottl-Santiago et al., 2007). No studies found labor support to have a negative effect on neonatal outcomes.

A randomized controlled trial of 100 women and their infants found that infants in the group of 50 women receiving supportive care from trained midwifery students had better one and five minute Apgar scores compared to those 50 infants whose mothers did not receive labor support (Bolbol-Haghighi et al., 2016). Infants in the supportive group had average Apgar scores of 8.49 +/- 0.81 at one minute and 9.23 +/- 0.7 at five minutes, as compared to 7.82 +/- 0.93 and 8.92 +/- 0.9, with $p < 0.001$ and $p = 0.04$, which made the differences statistically significant (Bolbol-Haghighi et al., 2016). A larger randomized control trial of 600 nulliparous women also found Apgar scores to be significantly improved when laboring women received doula support. Of 291 women receiving labor support from a doula, 95% of infants had one minute Apgar scores >6 and 99.7% had five minute Apgar scores >6 (Campbell et al., 2006). Of infants whose mothers who did not receive labor support, only 90% of infants had one minute Apgar scores >6 and 97% had five minute Apgar scores >6 (Campbell et al., 2006).

Three studies found different results, including a randomized controlled trial of 212 primiparous women showing no statistical significant difference in one and five minute Apgar scores, whether or not mothers received labor support from a companion of their choice (Bruggemann et al., 2007). Of the 105 women who received labor support, 20 infants had one

minute Apgar scores of <7 and three infants had five minute Apgar scores of <7, as compared to 21 infants and two infants of the 107 women who did not receive labor support (Bruggemann et al., 2007). A randomized controlled trial of 724 women found that an Apgar score of <7 at either one or five minutes was very rare in both the women receiving psychosocial support from a doula during labor and those women without, showing no statistical difference between them in regards to neonatal outcomes (Langer et al., 2005). The largest study comprised of 11,471 women and infants was a quasi-experimental design and also found no significant difference in Apgar scores between infants whose mothers received doula support during labor and those who did not (Mottl-Santiago et al., 2007). 1.5% of infants whose mothers received doula support had five minute Apgar scores <7, while 1.2% of infants whose mothers did not receive doula support had 5 minute Apgar scores <7 (Mottl-Santiago et al., 2007).

Labor Pain

Although labor is a natural process, it can be quite uncomfortable and painful for women. While pain medication is available in many forms, it can come with many undesirable side effects. Studies have been completed to determine the effect of labor support on labor pain as experienced by laboring women. Three studies looked at how doula support affected women's perception of pain during labor. All three studies found that women with labor support reported lower pain scores throughout labor (Safarzadeh et al., 2012; Shahshahan, Mehrabian, & Mashoori et al., 2014; Morhason-Bello et al, 2009).) One study showed statistically significant results, with average pain ratings ranging from 7-9 on a scale of 1-10 decreasing to a range of 5-7 on a scale of 1-10 in women with labor support (Shahshahan et al., 2014).

Safarzadeh et al. conducted a randomized controlled trial on 150 primiparous women in active labor and found that at the end of the active phase of labor, women who had labor support

were more likely to experience mild to moderate pain instead of severe pain as compared to women without labor support (2012). Both the control group and experimental group consisted of 75 women, and 39 women with labor support rated their pain as mild to moderate and only 36 women rated it as severe, while 14 women without labor support rated their pain as mild to moderate, leaving 61 to rate it as severe, $p = 0.001$ (Safarzadeh et al., 2012). A randomized controlled trial of an additional 100 women by Shahshahan et al. found similar results, showing statistically significant differences in pain occurring both upon admittance to the hospital and at delivery in women with labor support, as compared to women without, $p < 0.0001$ (2014). The average pain rating at hospital admittance was a 5 out of 10 and the average pain rating at delivery was a 7 out of 10 with labor support, whereas in patients without labor support, those pain ratings were a 7 out of 10 and 9 out of 10 (Shahshahan et al., 2014). A third randomized controlled trial by Morhason-Bello et al. studied 585 women and supported previous findings, showing that women with psychosocial labor support by a person of their choice had lower pain scores than women who did not have the support of a doula during labor (2009).

Perineal Integrity

Following a vaginal delivery, perineal integrity is an important aspect of the delivery to consider. While no laceration would be the optimal outcome, a first degree laceration is the most minor, with each degree increasing in severity, up to a fourth degree laceration. With a laceration, blood loss can increase and interventions such as suturing can cause risk of infection, and delay skin-to-skin or breastfeeding initiation. Two studies were completed that examined perineal integrity and its correlation with labor support. While both studies found a decrease in perineal lacerations among women with doula support compared to those without, only one study

found those results to be statistically significant (Hodnett et al., 2002; Shahshahan, Mehrabian, & Mashoori, 2014).

Shahshahan et al. conducted a small randomized controlled trial of 100 nulliparous women in spontaneous labor and found a statistically significant difference in perineal lacerations between women with labor support and those without, $p < 0.0001$ (2014). Of women with labor support who did not receive routine care, 60% had a first degree laceration, 36% had a second degree laceration, and 4% had a third degree laceration (Shahshahan et al., 2014). These numbers are less than women who also did not receive routine care and did not receive labor support, which were 52% suffering from a first degree laceration, 28% with a second degree laceration, and 20% with a third degree laceration (Shahshahan et al., 2014). Women receiving doula support were significantly more likely to only have a first degree laceration as well as significantly less likely to have a third degree laceration.

Hodnett et al. conducted a large randomized controlled trial of 6,915 women in established labor and also found rates of perineal trauma to be less in women with labor support, though not enough to be statistically significant (2002). 1,828 women, 52.9%, with labor support had some type of perineal trauma, as compared to 1,860 women, 53.7%, without labor support (Hodnett et al., 2002). Rates of episiotomy, second degree tears, and third or fourth degree tears were similar between the two groups as well, showing no statistically significanct reduction in perineal integrity from doula-provided labor support. (Hodnett et al., 2002).

Amniotomy

In addition to oxytocin augmentation, amniotomy is another way for providers to augment labor. Amniotomy means rupturing the amniotic sac surrounding infant/fetus. Although it has historically been used to augment labor, the safety and efficacy of amniotomy continues to

be debated by experts. Routine amniotomy is not recommended by any organization as a standard part of labor management and care, yet it is still frequently utilized. Amniotomy can put the mother and baby at risk for additional complications, including a prolapsed umbilical cord, intraamniotic infection, or umbilical cord compression. One study looked at amniotomies and found a statistically significant decrease in the use of amniotomies for women with labor support (Madi, Sandall, Bennett, and MacLeod, 1999). Madi et al. conducted a randomized controlled trial which examined 109 nulliparous women in spontaneous labor and found only 30% of women with labor support required an amniotomy to augment labor, versus 54% of women without labor support, $p = 0.03$ (1999).

Induction

Many women worldwide, particularly in the United States, experience an induction of labor, whether it is medically indicated or purely elective. In regards to induction, not only are women with doula support less likely to be induced, but of those who are induced, women with a doula have a much lower risk of having a cesarean delivery (McGrath & Kennel, 2008). One randomized controlled trial looked at how the use of doula support during labor affects rates and outcomes of induction using oxytocin. McGrath and Kennel found that women who utilized doula support were less likely to require a medical induction of labor using oxytocin (2008). In this study, 33 women were given oxytocin to induce labor, and of those women, 17 were in the control group, and 16 in the doula group. Among those women who were induced, 58.8% of women in the control group delivered via cesarean, whereas only 12.5% of women in the doula group required a cesarean delivery, $p = 0.007$ (McGrath & Kennel, 2008). These results showed that having labor support from a doula significantly reduces a woman's chance of having a cesarean delivery if she does require an induction of labor using oxytocin.

Summary

Twenty-two scholarly articles were analyzed for the effect of continuous labor support on birth outcomes. The majority of these articles were randomized controlled trials of high or good quality, with several quasi-experimental or non-experimental studies. Upon analyzing these studies, the use of doula support during labor was found to have the largest positive impact on pain management, duration of labor, mode of delivery, breastfeeding initiation, and patient satisfaction with those impacts being statistically significant. Other outcomes were improved perineal integrity, decreased pain, and improved neonatal outcomes, but results were not as strong and therefore were not significant. Doula support during labor was found to have no real effect on induction or oxytocin augmentation, but neither found a negative impact from doula support.

Chapter IV: Discussion, Implications, and Conclusions

The purpose of this literature synthesis was to determine what effects labor support by a doula has on birth outcomes. Twenty-two primary research articles were reviewed to find current trends in research related to doula support as well as gaps in the research. Chapter IV will identify recommendations for future research and implications this research has on nurse-midwives and their practice. Kolcaba's Theory of Comfort will be integrated and used to review the benefits of labor support by a doula.

Trends and Gaps in Literature

Labor support has been a topic of research in women's health journals since the 1980s, with much of the early research focusing on use of pain medication and mode of delivery. While these topics continue to be researched, newer studies are focusing on how labor support is affecting the mother, rather than just her outcomes. This means more research is being done focusing on laboring women's perception of pain and patient satisfaction. Studies on labor support have also shifted throughout the years from focusing on support given by family and friends, to support given by hospital staff such as nurses or midwives, to support given by trained and certified doulas.

Although a large body of knowledge has been gained regarding the benefits of labor support throughout the years, there is still much to study and learn. Additional studies could also be used to fill in the gaps regarding how the birth environment and other members of the healthcare team, including providers, play a part in the care doulas are able to provide during labor and delivery.

Recommendations for Future Research

Although studies throughout the last almost 40 years have demonstrated the benefits of doula support during labor, recommendations for future research include expanding on the growing body of knowledge we have regarding the benefit of labor support by trained doulas. As stated above, future research should also focus on the role birth environments, providers, and nurses play in affecting birth outcomes. Additional research which wasn't included in this literature synthesis could also include the corresponding financial implications doulas can have on healthcare costs. As research shows, doulas are able to improve outcomes and decrease interventions; a decrease in cost associated with the childbirth process could be achieved if all patients were utilizing doula services.

Nurse Midwifery Implications

The intent of this literature synthesis was to evaluate studies regarding the effects of doula support during labor on birth outcomes. As the studies showed multiple benefits of doula support during labor, such as improved physical and emotional outcomes for mother and infant, , midwives need to recognize these findings and incorporate them into daily practice. ACOG's newest recommendation states, "continuous one-to-one emotional support provided by support personnel, such as a doula, is associated with improved outcomes for women in labor (ACOG, 2019, p. 164). Although ACNM does not have a position statement of its own with any direct reference to doulas or labor support, it did partner with MANA and NACPM to create a consensus statement regarding physiologic childbirth. This statement asserts that a supportive environment, knowledge and confidence, autonomy and self-determination, and care that supports each woman individually, are all important aspects of support a health and normal physiologic birth experience (ACNM, 2012). It also states that practitioners need the "education,

knowledge, competence, skill, and confidence in supporting physiologic labor and birth" (ACNM, 2012, p.530). This means midwives need to understand the findings regarding doulas for labor support and should educate their patients on what doulas are and why they may want to have doula support during childbirth. Educating patients on how to find reputable doulas is important as well. DONA International allows families to search for recognized doulas via location, doula type, and certification, making it a reputable and easy to use resource for midwives to provide to their patients.

Theoretical Framework: Kolcaba's Theory of Comfort

Kolcaba's Theory of Comfort offers an explanation of the value of continuous labor support. This theory guides our understanding of how meeting a laboring woman's comfort needs can strengthen and motivate a patient, improving birth outcomes. The theory focuses on three forms of holistic comfort: relief, ease, and transcendence, which doulas are able to provide for laboring women.

Relief is a feeling of reassurance and relaxation following release from anxiety or distress. It can even mean the alleviation of pain, discomfort, or distress. Doulas are able to provide relief for laboring women by meeting the needs expressed by them. If a laboring woman is anxious or distressed, a doula is able to provide emotional and information support to her. If a laboring woman is experiencing pain and discomfort, a doula can provide continuous physical support to her. By providing these things, a doula is able to provide reassurance and relaxation for women, even in the midst of childbirth.

Ease is defined as the absence of difficulty, effort, or discomfort, freedom from worries or problems. Although childbirth isn't likely to be free from effort or discomfort, finding ways to decrease those feelings and instead increase comfort, can be a task of the doula. Doulas can also

help to decrease worries and problems, as doulas have been found to help women achieve the healthiest experience possible, and also have a positive impact on the well-being of the entire family (DONA, 2019).

Finally, transcendence is the existence or experience beyond the normal or physical level. Doulas have been likened to travel guides in foreign countries, supporting families through the life changing experience of having a baby. By providing this support, women have the opportunity to achieve the most satisfying experience possible (DONA, 2019). Doulas have the resources to help women rise above the pain, discomfort, and distress, allowing them to reach transcendence in their childbirth experience.

The pain experienced by women during childbirth differs from other pain because it is not pathologic but rather a normal part of physiologic birth, and not all pain needs to be eliminated for women in labor to experience comfort. Labor pain is also not purely physical, but also psychological in nature. Doulas can provide support in the presence of pain and the pure act of providing continuous labor support diminishes pain. Doulas are there to provide labor support and in the process of supporting women during this time, provide comfort. Complementary comfort measures provided by doulas can vary from interventions as simple as listening, easing fears, encouragement, or breathing techniques, to more hands-on interventions such as positioning, massage, counter pressure, or hip squeezes. By providing these complementary measures, a doula achieves her goal of providing the laboring woman with comfort and helping her achieve the healthiest, most satisfying experience possible.

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<table>
<tr><td colspan="4">Source: 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</td></tr>
<tr><th>Purpose/Sample</th><th>Design (Method/Instruments)</th><th>Results</th><th>Strengths/Limitations</th></tr>
<tr><td>Purpose:
Evaluate the effect of continued support by midwifery students during labor on the childbirth and labor consequences.
Sample/Setting:
100 women at Fatemieh Hospital in Shahroud, Iran with a singleton live fetus and reactive NST upon admission, and no exclusion criteria of any other disease including depression, preeclampsia, placental abruption or previa, fetal anomaly, or prior uterine incision.
Johns Hopkins Evidence Appraisal Level of Evidence:
Level I
Quality:
High</td><td>Randomized controlled trial (RCT).
Of the 100 women, 50 women randomly assigned to receive continued support of midwifery students and remaining 50 to receive standard care.
Continued support included massage, heat therapy, cold therapy, concentration and distraction, creative visualization, birth call, acupressure, aromatherapy, and music.
Outcomes determined via chart review included duration of the first and second stages of labor, oxytocin use, vaginal versus cesarean delivery, and Apgar scores.</td><td>Conclusion:
Use of continued support resulted in a statistically significant decrease in the first stage of labor and a decrease, though not statistically significant, in the second stage of labor. No significant difference was found in the use of oxytocin or delivery mode. Continued support also resulted in statistically significant higher Apgar scores.</td><td>Strengths:
All midwifery students providing continued support received the same training of six 60 minute classes on supportive care during labor ensuring they had the same background for providing support.
Limitations:
The doctors and midwives knew of the ongoing study and could have changed their use of unnecessary interventions during this time. Although the midwifery students attended the same training, there are likely to be variations amongst students and not all care was likely the same.</td></tr>
<tr><td colspan="4">Author Recommendations:
Supportive care should be part of the curriculum for midwifery students. This can provide a low-cost strategy to increase access to continued labor support.</td></tr>
<tr><td colspan="4">Implications:
Continued supportive care, specifically by midwifery students, during labor can decrease the length of labor and result in improved Apgar scores at delivery.</td></tr>
</table>

Source: Bruggeman, O.M., Parpinelli, M.A., Osis, M.J., Cecatti, J.G., & Carvalhinho Neto, A.S. (2007). Support to woman by a companion of her choice during childbirth: a randomized controlled trial. *Reproductive Health, 4(5).* doi: 10.1186/1742-4755-4-5.			
Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: Evaluate the effectiveness and safety of the support given to women by a companion of their choice during labor and delivery. **Sample/Setting:** 212 primiparous women at the Sumare maternity hospital in Sao Paulo, Brazil, with a singleton live cephalic fetus, in active labor, and no evidence of cephalo-pelvic disproportion or fetal distress. Exclusion criteria included fetal malformation, maternal disease or elected cesarean, and unavailability of companion. **Johns Hopkins Evidence Appraisal Level of Evidence:** Level I **Quality:** Good	Randomized controlled trial (RCT). Of the 212 women, 105 were randomized to receive support from the companion of their choice and 107 were randomized to receive routine care in the institution with no companion present. These companions included the woman's partner, woman's mother, another female relative, or friend. Variables regarding patient satisfaction and events related to obstetrical care, neonatal results, and breastfeeding were evaluated via chart review and patient interviews.	**Conclusion:** Having support from a companion of their choice improved satisfaction with women's birth experiences in regards to obstetrical care. Regarding neonatal results and breastfeeding outcomes there were no statistically significant differences between the groups. Having support significantly lowered the occurrence of meconium-stained amniotic fluid.	**Strengths:** Study conducted in one hospital where it was not common for women to have a support companion, making this a very different intervention compared to the control group. **Limitations:** Active management of labor was adopted in all women in this study, as is common in Brazilian maternity units, which may minimize the positive effects of support on some outcomes.
Author Recommendations: Women and healthcare providers may benefit from allowing women a companion of their choice during childbirth as it incurs no extra cost to the institution or woman, yet improves maternal satisfaction with the birth process and consequently benefits all those involved.			
Implications: Although support during childbirth can improve maternal satisfaction, the benefits may be surpassed by the rates of intervention carried out in the environment in which delivery occurs. Having support may also encourage medical staff to be more accommodating than if the woman was alone.			

Source: 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, 35(4),* 456-464. doi: 10.1111/J.1552-6909.2006.00067.x			
Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: Compare labor outcomes in women accompanied by an additional support person with outcomes in women who did not have this additional support person. **Sample/Setting:** 600 nulliparous women carrying a singleton pregnancy who had a low-risk pregnancy at the time of enrollment and were able to identify a female friend or family member willing to act as their lay doula at a tertiary perinatal care hospital in New Jersey. **Johns Hopkins Evidence Appraisal** **Level of Evidence:** Level I **Quality:** High	Randomized controlled trial (RCT). 298 women were randomized to the doula group and 300 to the control group. The support person in the doula group was taught traditional doula supportive techniques in two 2-hour sessions. Outcomes determined via chart review included length of labor, type of delivery, type and timing of analgesia/anesthesia, and Apgar scores.	**Conclusion:** The doula group accompanied by an additional support person resulted in statistically significant shorter length of labor, greater cervical dilation at the time of epidural anesthesia, and higher Apgar scores. Differences did not reach statistical significance in type of analgesia/ anesthesia or cesarean delivery despite a lower cesarean rate in the doula group.	**Strengths:** All lay doulas attended the same two 2-hour sessions from one certified doula to learn traditional doula supportive techniques, ensuring they had the same knowledge base. **Limitations:** Study took place in an environment with high rates of medical interventions. Additionally, the control group still was able to receive visits from female companions who had not received doula training.
Author Recommendations: The process of providing education to a female companion to become a lay doula should be considered as the standard of care during the prenatal period.			
Implications: The effects of the birth environment have the ability to overpower the benefits of continuous support in labor. But, having a support person with additional doula training to provide continuous support during labor has a beneficial effect on the laboring woman.			

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<tr><td colspan="4">Source: 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</td></tr>
<tr><td>Purpose/Sample</td><td>Design (Method/Instruments)</td><td>Results</td><td>Strengths/Limitations</td></tr>
<tr><td>Purpose:
Examine the association between doula support and maternal perceptions of the infant, self, and support from others at 6 to 8 weeks postpartum.
Sample/Setting:
494 low-risk, nulliparous women at a tertiary perinatal care hospital in New Jersey. Women had to choose a support person to act as a doula during labor.
Johns Hopkins Evidence Appraisal Level of Evidence:
Level I
Quality:
Good</td><td>Randomized controlled trial (RCT).
229 women were randomized to receive doula support and 265 women received standard care. The 229 women receiving doula support attended two 2 hours classes with their doulas. These classes provided education regarding nonmedical, continuous support to laboring women. Research participants were then interviewed by telephone at 6 to 8 weeks postpartum using a 42 item questionnaire examining expectations about childbirth, breastfeeding, and postpartum support received from others, maternal perceptions of the baby, and relationship satisfaction with partner/spouse.</td><td>Conclusion:
Doula-supported mothers were statistically more likely to report positive prenatal expectations about childbirth and positive perceptions of their infants, support from others, and self-worth. These mothers were also more likely to have breastfed and to have been very satisfied with the care received at the hospital. There was no statistical significance between the groups in the level of satisfaction in their relationships with partners before pregnancy, during pregnancy and the childbirth process, or after delivery.</td><td>Strengths:
All lay doulas attended the same two 2 hour sessions from one certified doula to learn traditional doula supportive techniques, ensuring they had the same knowledge base.
Limitations:
The group receiving standard care was still able to receive visits from female companions. It is difficult to separate differences between receiving support from female friends and relative and those same friends and relatives that are trained as labor doulas.</td></tr>
<tr><td colspan="4">Author Recommendations:
Minimally trained female friends or relatives, personally selected by the mother-to-be, should be utilized as a low-cost alternative to professional doulas.</td></tr>
<tr><td colspan="4">Implications:
Labor support persons can be minimally trained yet still enhance the postpartum well-being of nulliparous mothers and their infants.</td></tr>
</table>

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<tr><td>Purpose/Sample</td><td>Design (Method/Instruments)</td><td>Results</td><td>Strengths/Limitations</td></tr>
<tr><td>Purpose:
Evaluate whether providing doulas during hospital-based labor affects mode of delivery, epidural use, breastfeeding, and postpartum perceptions of the birth, self-esteem, and depression.
Sample/Setting:
314 nulliparous women who delivered in one of three HMO-managed hospitals in northern California with uncomplicated pregnancies who were in spontaneous labor with a cervix less than 5cm dilated.
Johns Hopkins Evidence Appraisal Level of Evidence:
Level I
Quality:
Good</td><td>Randomized controlled trial (RCT).
149 women were randomized to receive doula care and 165 to receive standard care based on randomization done within 30 minutes of admission, by a sealed envelope containing the woman’s group. Assessed mode of delivery, epidural use, breastfeeding initiation and duration, postpartum perceptions of the birth, self-esteem, and depression via telephone interviews at 4-6 weeks postpartum and by chart review.</td><td>Conclusion:
Women who had doulas were significantly less likely to use epidurals than women who received standard care. They were also significantly more likely to rate the birth experience as good, to feel they coped very well with labor, to feel labor had a very positive effect on their feelings as women, and (increased positive?) perception of their bodies’ strength and performance. There was no significant different in rates of cesarean, vaginal, forceps, or vacuum delivery, oxytocin administration, breastfeeding, postpartum depression, or self-esteem measures.</td><td>Strengths:
All interviews were conducted by a single interviewer who was unaware of the women’s study group assignments until the last few questions of the interview.
Limitations:
The experience of the doulas varied within the study sites; patients may not have received the same experience from different doulas. The small size of the study groups limited the power of statistical tests.</td></tr>
<tr><td colspan="4">Author Recommendations:
As technology has increased, the amount of direct contact and support of laboring women has decreased by those nurses. It may be appropriate to reassess the need of experienced labor companions on labor and delivery.</td></tr>
<tr><td colspan="4">Implications:
Women who utilized doulas during labor were less likely to use epidurals and had better overall labor experiences.</td></tr>
</table>

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<tr><td>Purpose/Sample</td><td>Design (Method/Instruments)</td><td>Results</td><td>Strengths/Limitations</td></tr>
<tr><td>Purpose:
Compare the birth outcomes of socially-disadvantaged mothers at risk for adverse birth outcomes between those who received prenatal assistance from a certified doula and those mothers who declined doula services.
Sample/Setting:
225 expectant mothers who participated in childbirth classes at the YWCA in Greensboro, North Carolina. All were identified as being at risk for adverse birth outcomes because of racial disparity, homelessness, interpersonal violence, unhealth housing, poverty, or young age.
Johns Hopkins Evidence Appraisal Level of Evidence:
Level II
Quality:
Good</td><td>Quasi-experimental.
97 women elected to work with a doula and 129 without the assistance of a doula. The impact of having a doula was assessed by the type of birth, incidence of having a low birth weight baby, incidence of complications at birth for either mother or baby, and incidence of initial breastfeeding. These measures were determined via chart review.</td><td>Conclusion:
Although rates of cesarean delivery were higher for non doula-assisted mothers, there were no statistically significant differences for type of birth. Doula-assisted mothers were four times less likely to have a low birth weight baby, two times less likely to experience a birth complication involving themselves or their baby, and significantly more likely to initiate breastfeeding.</td><td>Strengths:
All doulas participated in DONA-certified training programs and received monthly continuing education from the project coordinator and staff, ensuring all were properly trained in the same fashion.
Limitations:
The participants themselves elected to work with a doula rather than being randomly assigned a group. The decision to work with a doula may have been as much a critical determinant of birth outcomes as the actual activities the doula provided.</td></tr>
<tr><td colspan="4">Author Recommendations:
Socially disadvantaged women may benefit from doula services in different ways than women who are not socially disadvantaged. More programs should be implemented to ensure adequate opportunities for this population to receive doula services and reap those benefits.</td></tr>
<tr><td colspan="4">Implications:
Doula assistance prenatally may be a way to empower women to be actively involved in improving their prenatal health behaviors, which could improve their birth outcomes.</td></tr>
</table>

<table>
<tr><td colspan="4">Source: Hodnett, E., Lowe, N., Hannah, M., Willan, A., Stevens, B., Weston, J., . . . 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</td></tr>
<tr><td>Purpose/Sample</td><td>Design (Method/Instruments)</td><td>Results</td><td>Strengths/Limitations</td></tr>
<tr><td>Purpose:
Evaluate the effectiveness of nurses as providers of labor support in North American hospitals.
Sample/Setting:
6915 laboring women who had a live singleton fetus and were 34 weeks gestation or more. These women delivered at 13 US and Canadian hospitals with annual cesarean delivery rates of at least 15% and 24 hour epidural analgesia service. Women were randomly assigned to receive usual care or continuous labor support by a specially trained nurse.
Johns Hopkins Evidence Appraisal Level of Evidence:
Level I
Quality:
High</td><td>Randomized controlled trial (RCT).
3461 women received usual care and 3454 received continuous labor support by a specially trained nurse during labor. Outcomes examined via chart review included delivery mode, length of time from epidural analgesia to delivery, perineal trauma, health problems during postpartum hospital stay, length of postpartum stay, neonatal outcomes, need for higher level or nursery care, and length of hospital stay. An additional 6-8 week postpartum questionnaire was evaluated to determine the women’s experiences.</td><td>Conclusion:
The rates of cesarean delivery were almost identical for the two groups and there were no statistically significant differences in other maternal or neonatal events. Following the 6-8 week postpartum visit there were no statistically significant differences in women’s perceived control during childbirth or in rates of postpartum depression. However, all comparisons of women’s likes and dislikes and their future preference for amount of nursing support favored the continuous labor support group.</td><td>Strengths:
All nurses providing the continuous labor support attended a two day training program conducted by an expert labor nurse and doula trainer.
Limitations:
Support from family members or visitors outside of hospital staff was not evaluated for any potential effect on these outcomes. This environment also was characterized by high rates of routine medical interventions, different than other locations.</td></tr>
<tr><td colspan="4">Author Recommendations:
The benefits of continuous labor support are likely overpowered by the effects of birth environments characterized by high rates of routine medical interventions.</td></tr>
<tr><td colspan="4">Implications:
Continuous labor support can improve women’s perceptions about labor and childbirth without improving medical outcomes.</td></tr>
</table>

Source: Kashanian, M., Javadi, F., & Haghighi. (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			
Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: Evaluate the effects of continuous midwife support during labor on the likelihood of having a cesarean birth and length of different stages of labor. **Sample/Setting:** 100 nulliparous women who had not received childbirth education classes and presented to the Department of Obstetrics and Gynecology at the Iran University of Medical Sciences in Tehran, Iran. **Johns Hopkins Evidence Appraisal Level of Evidence:** Level I **Quality:** High	Randomized controlled trial (RCT). 50 women were randomized to receive continuous labor support during labor and 50 women were randomized to receive standard care. Continuous labor support was managed by midwives and the effects were measured by comparing duration of active, second, and third stages of delivery, rates of cesarean delivery, oxytocin use, and Apgar scores of less than 7 at 5 minutes. These results were calculated via chart reviews.	**Conclusion:** Continuous labor support by midwives was found to result in statistically significant shorter active stage and second stage labors, but no difference for the third stage of labor. Continuous labor support decreased the cesarean rate from 24% with standard care to only 8%. There were no significant differences between oxytocin use or Apgar scores between the two groups.	**Strengths:** The continuous labor support was provided also by the health care provider, allowing the healthcare provider to spend more time with the woman and perhaps help her make more educated decisions than a lay doula might. **Limitations:** There were no limits on visitors or other support persons in these women, regardless of the group they were in.
Author Recommendations: Continuous labor support should be a routine practice and available to all laboring women.			
Implications: In the event a laboring woman is unable to have a doula or any other support person, a midwife may provide continuous labor support and still allow the woman to experience the benefits of having labor support, such as a shorter labor or decreased likelihood of a cesarean birth.			

<table>
<tr><td colspan="4">Source: Kennell, J., Klaus, M., McGrath, S., Robertson, S., & Hinkley, C. (1991). Continuous emotional support during labor in a US hospital. Journal of the American Medical Association, 265(17), 2197-2201. doi: 10.1001/jama.265.17.2197</td></tr>
<tr><td>Purpose/Sample</td><td>Design (Method/Instruments)</td><td>Results</td><td>Strengths/Limitations</td></tr>
<tr><td>Purpose:
Determine if the continuous presence of a doula during labor and delivery shortened labor and reduced the need for cesarean delivery.
Sample/Setting:
412 nulliparous women with single-gestation, term, uncomplicated pregnancies delivering in Texas. Women with pregnancy-induced hypertension, breech presentation, gestational diabetes, a history of drug or alcohol abuse, or other high risk conditions were not enrolled. Women were randomly assigned to receive standard care or continuous labor support by a doula.
Johns Hopkins Evidence Appraisal Level of Evidence:
Level I
Quality:
Good</td><td>Randomized controlled trial (RCT).
200 women received standard care and 212 women received continuous labor support from a doula. Outcomes examined included anesthesia/analgesia use, oxytocin use, duration of labor, type of delivery, neonatal outcomes, and timing of interventions. This information was determined using chart reviews.</td><td>Conclusion:
Continuous labor support reduced the use of epidural anesthesia and significantly reduced the rate of cesarean and forceps deliveries. There were no differences in the rates of pudendal blocks or IV narcotic use. While women with continuous labor support had less oxytocin use, shorter durations of labor, decreased infant hospitalization, lower rates of maternal fever, and increased time prior to interventions, none of these differences were statistically significant.</td><td>Strengths:
The majority of the deliveries, 82%, were accompanied by one of four doulas, who went through the same 3 week training program and additionally met weekly throughout the study to ensure a degree of consistency in their methods.
Limitations:
Patients were not routinely allowed visitors, so it is difficult to note if the differences are because of the doula and specific interventions or rather just the presence of another person.</td></tr>
<tr><td colspan="4">Author Recommendations:
Long-term effects of labor support on maternal-infant attachment, maternal self-esteem, and postpartum depression should be investigated, although the impact of labor support on maternal and infant health is apparent.</td></tr>
<tr><td colspan="4">Implications:
Doulas have a great benefit on maternal and infant health, and may also have additional long-term benefits. Doulas should also receive some sort of training to have the most benefit.</td></tr>
</table>

Source: Khresheh, R. (2010). Support in the first stage 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			
Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: Assess whether the provision of labor support by a female relative during the first stage of labor affects duration of labor, use of pharmacological pain relief, mode of delivery, and the woman's postpartum perception of the birth experience. **Sample/Setting:** 226 nulliparous women with a single term fetus, expecting an uncomplicated vaginal birth, and in spontaneous labor at the time of admission to the maternity ward in Al-Karek Hospital in Jordan. **Johns Hopkins Evidence Appraisal Level of Evidence:** Level II **Quality:** Good	Quasi-experimental. Convenience sample of women meeting inclusion criteria who had supportive companionship from a female relative with no medical or nursing experience were allowed to provide support during the first stage of labor. This support included staying with the laboring woman, being affectionate, keeping her calm, and stimulating and encouraging her. Women who arrived with a male companion or alone received standard care, which included admittance to the labor ward alone, without any support person. Use of pharmacologic pain relief, duration of labor, mode of birth, and woman's perception of her birth experience were analyzed using chart review and patient interviews.	**Conclusion:** Women who had continuous labor support were statistically less likely to use pharmacological pain relief and statistically more likely to have a positive perception of her birth experience. No statistical differences between the duration of labor or mode of delivery were found between the women receiving continuous labor support and those receiving standard care.	**Strengths:** The group receiving standard care was a prime example of a control group because they were not allowed to receive any support during labor. This allows the best comparison between doula support versus no support. **Limitations:** There was no consistency amongst the female relatives who provided the continuous labor support.
Author Recommendations: Maternity care systems should examine their policies regarding visitors during labor and allow women to have access to a support person of their choice to provide labor support.			
Implications: The presence of continuous labor support has a positive impact on the laboring woman regardless of the support person's knowledge of labor and childbirth.			

<table>
<tr><td colspan="4">Source: 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</td></tr>
<tr><td>Purpose/Sample</td><td>Design (Method/Instruments)</td><td>Results</td><td>Strengths/Limitations</td></tr>
<tr><td>Purpose:
Assess whether doula support may be associated with increased breastfeeding initiation rates among low-income, diverse women.
Sample/Setting:
1069 women who receiving doula care from Everyday Miracles, a Minnesota-based organization that employs doulas, compared to a sample of 51,721 women with Medicaid and participating in the Minnesota Pregnancy Assessment Monitoring System survey.
Johns Hopkins Evidence Appraisal
Level of Evidence:
Level II
Quality:
High</td><td>Quasi-experimental.
A comparison between the two groups consisted of both race/ethnicity and breastfeeding initiation rates. Data was taken from patient charts, patient interviews, and surveys.</td><td>Conclusion:
Women who had doula support from Everyday Miracles had a much higher breastfeeding initiation rate (97.9%) compared to the Medicaid average of 80.8%. The difference was even more pronounced among African American women, with 92.7% initiating breastfeeding after doula support compared with only 70.3% of the Medicaid population.</td><td>Strengths:
Large number of patients in the study, specifically the control group.
Limitations:
Not every patient who is part of Everyday Miracles utilizes Medicaid; the organization is open to anyone.</td></tr>
<tr><td colspan="4">Author Recommendations:
Access to doula services for low-income women should be improved to allow all women the benefits of continuous labor support from a doula.</td></tr>
<tr><td colspan="4">Implications:
Doula services may help improve racial disparities amongst women and infants in the United States, specifically for/among those who utilize Medicaid services.</td></tr>
</table>

<table>
<tr><td colspan="4">Source: 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/AJPH.2012.301201</td></tr>
<tr><td>Purpose/Sample</td><td>Design (Method/Instruments)</td><td>Results</td><td>Strengths/Limitations</td></tr>
<tr><td>Purpose:
Compare childbirth-related outcomes for Medicaid recipients who received prenatal education and childbirth support from trained doulas with outcomes from a national sample of similar women. This study also estimated potential cost savings.
Sample/Setting:
1079 women who receiving doula care from Everyday Miracles, a Minnesota-based organization that employs doulas, compared to a sample of 279,008 women from the 2009 Nationwide Inpatient Sample of Medicaid-funded births.
Johns Hopkins Evidence Appraisal Level of Evidence:
Level II
Quality:
High</td><td>Quasi-experimental.
A comparison between the two groups consisted of cesarean delivery rates and preterm birth rates.</td><td>Conclusion:
The cesarean rate decreased with statistical significance from 31.5% to 22.3% with the use of doula support among Medicaid beneficiaries nationally After control for clinical and sociodemographic factors, odds of cesarean delivery were 40.9% lower for doula-supported birth. The use of doulas also decreased preterm birth rates from 7.3% to 6.1%, but that difference was not statistically significant.</td><td>Strengths:
Large number of patients in the study, specifically the control group.
Limitations:
Not every patient who is part of Everyday Miracles utilizes Medicaid, the organization is open to anyone.</td></tr>
<tr><td colspan="4">Author Recommendations:
Access to doula support should be improved for low-incomes, ethnically diverse women as a means to reduce persistent racial/ethnic disparities.</td></tr>
<tr><td colspan="4">Implications:
Medicaid reimbursement of doulas could improve childbirth statistics significantly, specifically for ethnically diverse women. This could also save Medicaid money in the long run by decreasing the number of cesarean deliveries and their associated costs.</td></tr>
</table>

<table>
<tr><td colspan="4">Source: Langer, A., Campero, L., Garcia, C., & Reynoso, S. (2005). 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. doi: 10.1111/j.1471-0528.1998.tb09936.x</td></tr>
<tr><td>Purpose/Sample</td><td>Design (Method/Instruments)</td><td>Results</td><td>Strengths/Limitations</td></tr>
<tr><td>Purpose:
Evaluate the effects of psychosocial support during labor, delivery, and the immediate postpartum period provided by a female companion.
Sample/Setting:
724 nulliparous women with a single fetus and less than 6cm cervical dilation were randomly assigned to be accompanied by a doula or to receive routine care at a large social-security hospital in Mexico City.
Johns Hopkins Evidence Appraisal Level of Evidence:
Level I
Quality:
High</td><td>Randomized controlled trial (RCT).
361 women were assigned to be accompanied by a doula and 363 received routine care. Data was collected by blinded interviewers from clinical records and interviews during the immediate postpartum period and 40 days after birth. Outcome measures included breastfeeding practices, duration of labor, medical interventions (epidural anesthesia, forceps delivery, cesarean delivery), mother's emotional conditions (perceived control over labor, anxiety, perception of pain, satisfaction, and self-esteem), and newborn's health (Apgar scores and meconium stained fluid).</td><td>Conclusion:
Rates of exclusive breastfeeding one month after birth remained higher in the doula group, but e statistically significant. Duration of labor was significantly decreased (5.58 hours versus 4.46 hours) and higher perceived level of control over labor for the doula group. No significant effects were found for medical interventions, mothers' anxiety, self-esteem, perception of pain, satisfaction, or newborns' conditions, but the rates of epidural anesthesia and cesarean sections were decreased with doula support.</td><td>Strengths:
A blind evaluation was made by two social workers who reviewed the women's clinical records and visited them in the immediate postpartum period and at their home at one month postpartum.
Limitations:
The women who acted as doulas in this study were retired nurses, who may be less effective as doulas than non-medically trained women.</td></tr>
<tr><td colspan="4">Author Recommendations:
Psychosocial support by doulas has a positive impact on breastfeeding and duration of labor and should be included as a key component in breastfeeding promotion strategies, especially since rates of exclusive breastfeeding in Mexico are much lower than recommended.</td></tr>
<tr><td colspan="4">Implications:
Doula support may have more positive influences on aspects of labor and delivery that are under a woman's control, such as breastfeeding, and have a more limited impact on medical interventions, possibly because of the strict routine of hospital procedures.</td></tr>
</table>

<table>
<tr><td colspan="4">Source: Madi, B.C., Sandall, J., Bennett, R., & MacLeod, C. (1999). Effects of female relative support in labor: A randomized controlled trial. Birth, 26(1), 4-8. doi: 10.1046/j.1523536x.1999.00004.x</td></tr>
<tr><th>Purpose/Sample</th><th>Design (Method/Instruments)</th><th>Results</th><th>Strengths/Limitations</th></tr>
<tr><td>Purpose:
Determine the effectiveness of a female relative as a support person during labor on labor outcomes.
Sample/Setting:
109 nulliparous women in Botswana who presented with uncomplicated spontaneous labor and were randomly divided into a control group who labored without family present and a group who labored with a female relative to provide labor support.
Johns Hopkins Evidence Appraisal Level of Evidence:
Level I
Quality:
High</td><td>Randomized controlled trial (RCT). Comparisons between the groups consisted of rates of spontaneous vaginal delivery, use of intrapartum analgesia (including IM narcotics only as epidural analgesia was not available), and amniotomies to augment labor. Results were obtained via chart reviews.</td><td>Conclusion:
Women with a female relative to offer support during labor had an increase in spontaneous vaginal deliveries (71% to 91%), decrease in analgesia (73% to 53%), fewer amniotomies (54% to 30%), fewer vacuum extractions (16% to 4%), and fewer cesarean deliveries (13% to 6%). All differences were statistically significant.</td><td>Strengths:
The women in the control group labored without any family members present, creating a definite difference between the two groups.
Limitations:
Very small number of participants were included in this study.</td></tr>
<tr><td colspan="4">Author Recommendations:
All women giving birth should be offered the option of having a female relative as labor support, rather than navigating labor alone.</td></tr>
<tr><td colspan="4">Implications:
Allowing a female family member to provide continuous labor support is an extremely low-cost intervention which improves multiple birth outcomes.</td></tr>
</table>

<table>
<tr><td colspan="4">Source: McGrath, S.K., & Kennel, J.H. (2008). A randomized controlled trial of continuous labor support for middle-class couples: Effect on cesarean delivery rates. Birth, 35(2), 92-97. doi: 10.1111/j.1523-536X.2008.00221.x</td></tr>
<tr><td>Purpose/Sample</td><td>Design (Method/Instruments)</td><td>Results</td><td>Strengths/Limitations</td></tr>
<tr><td>Purpose:
Examine the perinatal effects of doula support for nulliparous middle-income women accompanied by a male partner during labor and delivery.
Sample/Setting:
420 nulliparous women in the third trimester of an uncomplicated pregnancy enrolled in childbirth education classes in Cleveland, Ohio, Participants were accompanied by a male partner during labor and delivery.
Johns Hopkins Evidence Appraisal Level of Evidence:
Level I
Quality:
High</td><td>Randomized controlled trial (RCT).
196 women randomized into the control group and 224 women randomized into the doula group which included doula support techniques such as closer physical proximity, touch, and eye contact with the laboring woman, and teaching, reassurance, and encouragement of the woman and her male partner. Rates of labor induction, epidural analgesia, mode of delivery, maternal temperature, and evaluation of laboring were all assessed by chart reviews and two questionnaires.</td><td>Conclusion:
The doula group had a significantly lower cesarean delivery rate than the control group (13.4% to 25%) as well as a lower rate of epidural analgesia (64.7% to 76%) in spontaneous labor. In induced labors, the decrease in cesarean delivery rate was even more significant (12.5% to 58.8%). 100% of couples rated their experience with the doula positively.</td><td>Strengths:
This study included the support of a doula in additional to a chosen support person, which is unique as many studies compare the use of a doula to no support at all.
Limitations:
Many laboring women are not accompanied by a male partner during labor and delivery, and this study doesn't take that aspect into account. 78% of participants were white, 88% were married, and 57% had a college degree. These demographics are not an accurate representation of the average laboring woman.</td></tr>
<tr><td colspan="4">Author Recommendations:
Doula support is an effective pain management technique that is less expensive and virtually risk-free, benefiting all laboring women and should be made available in all maternity units.</td></tr>
<tr><td colspan="4">Implications:
Even in women who have adequate support available, the use of a doula for labor support can still improve outcomes. Almost all male support persons feel a benefit from having a doula.</td></tr>
</table>

<table>
<tr><td colspan="4">Source: 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. Australia & New Zealand Journal of Obstetrics & Gynecology, 49(2), 145-150. doi: 10.1111/j.1479-828X.2009.00983.x</td></tr>
<tr><td>Purpose/Sample</td><td>Design (Method/Instruments)</td><td>Results</td><td>Strengths/Limitations</td></tr>
<tr><td>Purpose:
Assess what effect psychosocial support has on labor outcome.
Sample/Setting:
585 women with anticipated vaginal delivery at the University College Hospital in Ibadan, Nigeria. Women were randomized into two groups during the antenatal period.
Johns Hopkins Evidence Appraisal Level of Evidence:
Level I
Quality:
Good</td><td>Randomized controlled trial (RCT).
292 women were randomized to receive routine care, while 293 had companionship in addition to routine care throughout labor until two hours after delivery. The primary outcome measure was cesarean section rate, but others included duration of active phase, pain score, time of breastfeeding initiation, and description of labor experience. Outcomes were determined via chart review and patient interviews.</td><td>Conclusion:
Women who were allowed companionship during labor were five times less likely to deliver via cesarean, had significantly shorter duration of active phase, lower pain scores, shorter interval between delivery and initiation of breastfeeding, and a more satisfying labor experience.</td><td>Strengths:
Women were randomized prenatally, rather than randomizing once in labor and were able to spend the majority of their labor experience either with or without companionship.
Limitations:
In the group randomized to receive companionship, approximately 2/3 of companions were husbands and 1/3 were someone else, typically a female friend or family member, but not every support companion was the same.</td></tr>
<tr><td colspan="4">Author Recommendations:
Women should be allowed companionship during labor to improve labor outcomes. It is an effective strategy to provide comparable quality services to laboring women.</td></tr>
<tr><td colspan="4">Implications:
Companionship during labor, whether husband, female family member, or friend, has a positive effect on labor outcomes, even when the companion is not trained or knowledgeable about labor or birth practices.</td></tr>
</table>

<table>
<tr><td colspan="4">Source: 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</td></tr>
<tr><td>Purpose/Sample</td><td>Design (Method/Instruments)</td><td>Results</td><td>Strengths/Limitations</td></tr>
<tr><td>Purpose:
Determine differences in birth and breastfeeding outcomes for women who received labor support through a hospital-based doula program versus those who did not.
Sample/Setting:
11,471 women who gave birth to singleton, live infants at 37 weeks or greater at Boston Medical Center.
Johns Hopkins Evidence Appraisal Level of Evidence:
Level II
Quality:
High</td><td>Quasi-experimental.
All women were eligible to receive doula services from Birth Sisters, and of those women in the study 9,297 declined the services and did not receive doula support, whereas 2,174 women received doula support. This support included prenatal meetings with the doula and doula services throughout active labor, birth, and the first several hours postpartum. Using chart reviews, outcomes measured included differences in cesarean delivery rates, epidural use, operative vaginal delivery, Apgar scores, breastfeeding intent, and early breastfeeding initiation rates.</td><td>Conclusion:
Between the two groups there were no significant differences in cesarean delivery rates, epidural rates, operative vaginal deliveries, or Apgar scores. But having doula support was significantly correlated with lower rates of cesarean deliveries for nulliparous women with a midwife provider. Women who received doula support also had statistically significant higher rates of breastfeeding intent (85% to 68%) and early initiation of breastfeeding (46% to 23%).</td><td>Strengths:
This study looked at all women, not just nulliparous women, and compared data from women cared for by physicians versus those cared for by midwives.
Limitations:
Women chose to receive or not receive doula care, rather than being randomly assigned to a group. Those women who choose doula support may have also been more invested in the type of labor outcomes they wanted or in their desire to breastfeed, thus making them request the doula support.</td></tr>
<tr><td colspan="4">Author Recommendations:
Culturally competent, lay perinatal social support is an important component of care for multicultural laboring women. Additional studies are necessary to fully understand the effects hospital-based doula support programs have in improving intrapartum and breastfeeding outcomes for diverse populations.</td></tr>
<tr><td colspan="4">Implications:
Even if a woman has the support of a doula, the type of care provider she chooses can also have an impact on her birth outcomes.</td></tr>
</table>

<table>
<tr><td colspan="4">Source: 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</td></tr>
<tr><td>Purpose/Sample</td><td>Design (Method/Instruments)</td><td>Results</td><td>Strengths/Limitations</td></tr>
<tr><td>Purpose:
Describe specific doula interventions, explore differences in doula interventions by attending provider (CNM versus obstetrician), and examine associations between doula interventions, labor analgesia, and cesarean birth in women receiving doula care from student nurses.
Sample/Setting:
678 birth records from women in the East Baltimore area in the Birth Companions Program database who received continuous labor support from students at John Hopkins University School of Nursing with doula training.
Johns Hopkins Evidence Appraisal Level of Evidence:
Level III
Quality:
High</td><td>Non-experimental.
A secondary analysis of birth record from patients from the Birth Companions Program database. Interventions utilized by doulas were divided into physical interventions or emotional and informational interventions, with each being measured. Use of pain medication (IV analgesia or epidural) and mode of delivery (vaginal or cesarean) were also measured.</td><td>Conclusion:
Doulas used one more intervention with patients cared for by CNMs rather than those attended to by obstetricians. This statistically significant increase in the total number of interventions provided by doulas was associated with decreased odds of epidural and cesarean birth, especially if those interventions were physical interventions rather than emotional/informational interventions.</td><td>Strengths:
This study compared specific interventions used by doulas, rather than just the overall use of a doula on labor and delivery outcomes.
Limitations:
Patient characteristics external to the study could have influenced their choice of provider, and the study doesn't state whether the doulas knew what type of provider was caring for their patient. It would be interesting to know if the doulas used more interventions with certain patients because the patients were more open to the interventions, possibly the reason they chose a midwife, or if the doula assumed the midwives would be okay with more interventions than obstetricians would.</td></tr>
<tr><td colspan="4">Author Recommendations:
More qualitative studies should be done to better understand the psychosocial impacts of doula support during labor.</td></tr>
<tr><td colspan="4">Implications:
Doulas may perform differently when caring for different patients or when caring for patients with different types of care providers.</td></tr>
</table>

<table>
<tr><td colspan="4">Source: Safarzadeh, A., Beigi, M., Salehian, T., Khojasteh, F., Burayri, T., Navabirigi, S.D., & Ansari, H. (2012). Effect of doula support on labor 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</td></tr>
<tr><td>Purpose/Sample</td><td>Design (Method/Instruments)</td><td>Results</td><td>Strengths/Limitations</td></tr>
<tr><td>Purpose:
Determine the effect of doula support on labor pain and outcomes.
Sample/Setting:
150 primiparous women with a term, singleton fetus, in active labor in the maternity wards of Zahedan and Mirjaveh in Iran.
Johns Hopkins Evidence Appraisal Level of Evidence:
Level I
Quality:
Good</td><td>Randomized controlled trial (RCT).
Women were randomly selected from the total patient population and then randomly divided into two groups, with 75 women receiving standard care and 75 women receiving doula support from an untrained woman of the mother’s choice, typically a mother, sister, or friend. The severity of pain was measured, as was duration of active phases of labor, use of medication, and type of delivery. This information was obtained via chart reviews.</td><td>Conclusion:
No difference in pain between the groups was noted at the beginning of active labor, but pain was statistically significantly decreased at the end of the second phase of labor in women receiving doula support. Those receiving doula support also had statistically significantly shorter durations of active labor. There were no significant differences in duration of second stage of labor, use of medication, or type of delivery (97.2% NSVD).</td><td>Strengths:
Great care was taken during the study to keep the two groups separate, including separate labor rooms, screens between beds, or beds at the opposite ends of the same room. This allowed the control group receiving standard care to not be influenced by the doulas..
Limitations:
Small sample size. The women for the study were randomly chosen from the general population, meaning there could have been a much larger number of women included.</td></tr>
<tr><td colspan="4">Author Recommendations:
Doula support could be introduced as a way to support women during delivery, as it is a proven supportive role. A doula can act as emotional support to decrease pain, fear, and anxiety during labor and delivery.</td></tr>
<tr><td colspan="4">Implications:
Having doula support, even in the way of untrained family members, can provider a decrease in fear and anxiety during the labor process, which can lead to a decrease in pain as well.</td></tr>
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<tr><td colspan="4">Source: Shahshahan, Z., Mehrabian, F., & Mashoori, S. (2014). Effect of the presence of support person and routine intervention for women during childbirth in Isfahan, Iran: A randomized controlled trial. Advanced Biomedical Research, 3(155). doi: 10.410312277.9175.137865.</td></tr>
<tr><td>Purpose/Sample</td><td>Design (Method/Instruments)</td><td>Results</td><td>Strengths/Limitations</td></tr>
<tr><td>Purpose:
Examine the effects of the presence of a continuous support person and routine interventions during labor and delivery in Isfahan, Iran.
Sample/Setting:
100 nulliparous women in spontaneous labor with a normal full-term pregnancy and desire to have a natural vaginal delivery in Shahid Beheshti hospital in Isfahan, Iran.
Johns Hopkins Evidence Appraisal Level of Evidence:
Level I
Quality:
High</td><td>Randomized controlled trial (RCT).
Women were divided into four groups of 25 women each. Group 1 included women with routine intervention plus support person, Group 2 included women with routine intervention, Group 3 included support person without routine intervention, and Group 4 did not have a support person or routine intervention. Following delivery, patients were interviewed about their experiences. Outcomes measured included length of first and second stage of labor, perineal tears, pain before and after labor, and satisfaction with labor experience.</td><td>Conclusion:
Overall, the presence of a support person decreased duration of labor and improved labor outcomes. Women with a support person and no routine interventions had the highest satisfaction scores, whereas women with only routine interventions and no support person had the lowest satisfaction scores. Routine interventions along with a support person had the most statistically significant decrease in duration of labor compared to any group. The rate of perineal tears and pain before and after labor were statistically decreased with use of a support person as well.</td><td>Strength:
This study shows how the additional of a doula can affect two different styles of care in the same location. This shows the outcomes are related to the doula intervention rather than other factors outside the study.
Limitations:
The study never defined what the routine interventions consisted of. It also only looked at nulliparous women, meaning these findings cannot be generalized to apply to multiparous women as well.</td></tr>
<tr><td colspan="4">Author Recommendations:
The presence of a support person during labor and delivery in Iranian women can decrease the length of labor and improve labor outcomes, but more studies need to be done. Routine interventions should also be discussed with patients, as they decrease the duration of labor, but also decrease a women’s satisfaction.</td></tr>
<tr><td colspan="4">Implications:
While having a doula can be very beneficial, both improving satisfaction and labor outcomes, the environment and hospital interventions also play a role as well.</td></tr>
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<tr><td colspan="4">Source: 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. doi: 10.1624/105812400X87608</td></tr>
<tr><td>Purpose/Sample</td><td>Design (Method/Instruments)</td><td>Results</td><td>Strengths/Limitations</td></tr>
<tr><td>Purpose:
Evaluate the efficacy of the support given by a doula during labor to reduce the cesarean rate.
Sample/Setting:
100 nulliparous women in a public general hospital in Mexico City who were term, in active labor, 3cm or more dilated, without a previous uterine incision, with adequate pelvises.
Johns Hopkins Evidence Appraisal Level of Evidence:
Level I
Quality:
High</td><td>Randomized controlled trial (RCT).
Women were randomly divided into two groups of 50 women each, one group receiving standard care and the other receiving the support of a childbirth educator trained as a doula. Outcome measures included duration of labor, use of oxytocin, epidural use, and mode of delivery (vaginal or cesarean).</td><td>Conclusion:
Support by doulas during labor was associated with a statistically significant reduction in both oxytocin administration (96% versus 42%) and cesarean delivery (12 women versus 1 woman, a 1,100% reduction). There was also a decrease in duration of labor (19:38 hours versus 14:51 hours) and use of epidural (32% versus 8%), but these outcomes were not statistically significant.</td><td>Strengths:
Before the women were admitted and assigned to a group, none of them had received professional preparation for their births. All information they received during labor in regards to relaxation, breathing techniques, expected sensations, or typical emotions was from the doula, if they had one.
Limitations:
There was no substitute intervention for the group receiving standard care and the physicians and nurses were also aware of the study going on, which could have shaped their interventions. Prior knowledge of labor/birth was not assessed. Although no women attended a class, their level of preparedness was likely not all the same.</td></tr>
<tr><td colspan="4">Author Recommendations:
Clear benefits with physical, emotional, and financial implications are found following doula support, and there are no known risks. Every reasonable effort should be made to ensure that laboring women receive support from those close to them, and additionally from doulas. Further studies are necessary to determine the level of doula training that creates the best outcomes.</td></tr>
<tr><td colspan="4">Implications:
Childbirth educators make ideal doulas because they already have much of the skills and training in place. Having a doula greatly impacts labor and delivery outcomes, especially if a woman has not been educated or prepared for labor before it begins.</td></tr>
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<tr><td colspan="4">Source: 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</td></tr>
<tr><td>Purpose/Sample</td><td>Design (Method/Instruments)</td><td>Results</td><td>Strengths/Limitations</td></tr>
<tr><td>Purpose:
Examine the association between number and type of interventions of baccalaureate nursing students, trained as doulas, with epidural anesthetic use.
Sample/Setting:
Retrospective review of 89 vaginal deliveries attended by student nurse doulas in the John Hopkins University School of Nursing Birth Companions Program.
Johns Hopkins Evidence Appraisal
Level of Evidence:
Level III
Quality:
High</td><td>Non-experimental: observational, retrospective analysis. 89 charts were reviewed to measure parity, epidural use, length of labor, and types/number of interventions performed by the doula. Types of interventions included standard or complementary. Standard included routine interventions provided by a nurse such as positioning, easing fears, encouragement, or breathing techniques. Complementary interventions included more hands-on techniques such as continuous presence, massage, showering, counter pressure, or hip squeeze.</td><td>Conclusion:
Regardless of types and number of interventions, nulliparous women received epidurals more frequently than multiparous women (88.1% nulliparous, 46.6% with 1 previous birth, 51.1% with 2 or more previous births). As length of labor increased, so did the rate of epidurals, with an 18% greater likelihood of epidural for longer labors. The more complementary doula interventions used during labor, the lower the epidural use (38% less likely), for both nulliparas and multiparas.</td><td>Strengths:
In addition to studying the likelihood of doulas affecting labor and delivery outcomes, this study examined the way doulas are able to affect those outcomes.
Limitations:
Small sample size limited this study, as well as the inability to compare the quality of the doula interventions.</td></tr>
<tr><td colspan="4">Author Recommendations:
Further study of the use of doula interventions in labor and delivery are necessary. This study also shows that we should be advocating for lower nurse-to-patient ratios, increasing the opportunity for nurses to be the ones providing those standard and complementary interventions, rather than relying a woman’s ability to have a doula to do those interventions.</td></tr>
<tr><td colspan="4">Implications:
Doula care and the corresponding complementary interventions are low technology, yet have such an impact on the high technology world of obstetrics. Just by providing a continuous presence and hands-on interventions, a doula can make a positive impact on a woman’s labor and delivery experience.</td></tr>
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