2021

Evaluating the Impact of Volunteer and Facility Provided Doula Support in the Intrapartum Period on Maternal, Neonatal, and Psychosocial Outcomes in the Hospital Setting

Kayla Puent
Bethel University

Keirsta Marie Ragels
Bethel University

EVALUATING THE IMPACT OF VOLUNTEER AND FACILITY PROVIDED DOULA SUPPORT IN THE INTRAPARTUM PERIOD ON MATERNAL, NEONATAL, AND PSYCHOSOCIAL OUTCOMES IN THE HOSPITAL SETTING

A MASTER'S PROJECT

SUBMITTED TO THE GRADUATE FACULTY

OF THE GRADUATE SCHOOL

BETHEL UNIVERSITY

BY

KEIRSTA RAGELS

KAYLA PUENT

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

MASTER OF SCIENCE IN NURSE-MIDWIFERY

MAY 2021

BETHEL UNIVERSITY

Evaluating the Impact of Volunteer or Facility Provided Doula Support in the Intrapartum Period on Maternal, Neonatal, and Psychosocial Outcomes in the Hospital Setting

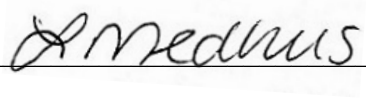
Keirsta Ragels

Kayla Puent

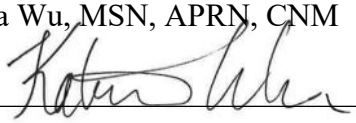
May 2021

Approvals:

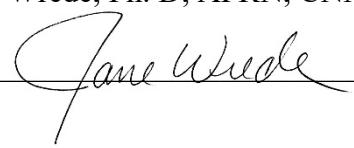
Project Advisor Name: Lillian Medhus, CNM, WHNP-BC

Project Advisor Signature: 

Second Reader Name: Katrina Wu, MSN, APRN, CNM

Second Reader Signature: 

Director of Nurse-Midwifery Program Name: Jane Wrede, Ph. D, APRN, CNM

Director of Nurse-Midwifery Program Signature: 

Acknowledgments

To my husband, Matthew, thank you for all of your love, support, and understanding on this journey. Thank you for the sacrifices you have made to allow me to make my dreams a reality. To my children, Jacob and Olivia, I hope that my journey has inspired you to reach for the stars and pursue your passions. Thank you to all of my family and friends for your continued support and words of encouragement. Kayla and I would also like to extend our gratitude to our capstone advisor Lillian Medhus, CNM, WHNP-BC and the rest of the Bethel faculty for all of the hours you committed in providing us with support, advice, and guidance on this project.

Keirsta Ragels

There are so many people to thank and express gratitude towards as I accomplish this goal that I very often didn't see possible. This capstone is dedicated to my son Ray and my husband Sam. Balancing becoming a mother along with graduate level courses and full time clinicals has been the hardest challenge to overcome in my life. My hope is that my son will forget the days and sometimes weeks of my absence but remember the hard work I have put in and understand that it is truly possible to achieve your dreams. Sam, I will be forever grateful for the countless hours you have given me to pursue my career and the endless support you have provided. Finally, I want to thank my loving parents Julie and Dan Jensen as you provided me with not only housing during long distance clinicals, but always had a positive attitude and encouraged me to continue on. Without the support of my surrounding family, amazing in-laws and empathetic friends midwifery school would have simply been a dream, and not a reality.

Kayla Puent

Abstract

Background/Purpose: The unacceptably high maternal mortality rate in the United States has demanded a call to action for evaluation and implementation of efforts to improve both maternal and neonatal outcomes. Low-resource and low-socioeconomic populations are at a higher risk of experiencing adverse birth outcomes. Doulas have continuously been recognized as key tools in improving outcomes, but not all birthing persons have access to them. The positive impact of continuous labor support in improving outcomes is recognized by the American College of Obstetricians, American College of Nurse-Midwives, the Society for Maternal-Fetal Medicine, and the March of Dimes. The purpose of this review is to critically assess the impact of continuous intrapartum support given by volunteer or facility program doulas on maternal, neonatal, and psychosocial outcomes in the hospital setting.

Theoretical Framework: Jean Watson's Philosophy and Science of Caring theory is easily tied into doula support as doulas provide holistic care to their clients. The theory is founded on 10 carative factors that help an individual achieve and maintain holistic wellbeing in reference to body, mind, and spirit in various experiences throughout the lifetime. One such experience includes childbirth.

Methods: The PRISMA model was used to search for applicable evidence across five research databases. Exclusion and inclusion criteria were applied to search for and obtain 20 studies in relation to the research topic. The studies were then critiqued utilizing John Hopkins Evidence Appraisal Tool and were categorized as level I, level II, or level III followed by either high (A), good (B), or low (C) quality evidence. A literature matrix was then used to organize the data to be synthesized for this review.

Results/Findings: Intrapartum support given by a volunteer or facility provided doula improved many outcomes researched. Maternal outcomes that demonstrated an improvement included cesarean section rates, breastfeeding initiation, and pharmaceutical pain management. Decreased preterm birth rates and increased birth weights were also identified when doula support was provided to the neonate's mother. Birth experiences were also consistently reported as positive by participants.

Implications for Practice: Doulas and doula programs improve maternal, neonatal, and psychosocial birth outcomes when provided in the intrapartum period in the hospital setting. Establishing volunteer or facility provided doula programs in maternity units across the United States could provide access to doulas for individuals at an increased risk for adverse birth outcomes that may not otherwise have access to this key tool in maternal and neonatal healthcare.

Keywords: doula, doula program, birth outcomes

Table of Contents

Acknowledgements.....3

Abstract.....4

Chapter I: Introduction.....9

Statement of Purpose…….10

Evidence Demonstrating Need……..10

Maternal Mortality and Patient Disparities……....10

Birth Outcomes…….…10

Cochrane Review……...…11

Psychosocial Experiences……..……...….11

Significance to Nurse-Midwifery…….....12

Theoretical Framework…….....13

Summary…….....15

Chapter II: Methods…….....16

Search Strategies…….....16

Inclusion and Exclusion Criteria…….....17

Summary of Selected Studies…….....17

Evaluation Criteria …….....18

Summary…….....19

Chapter III: Literature Review and Analysis…….....20

Synthesis of Matrix and Major Findings……..…..20

Maternal Outcomes…….20

Cesarean Section Rate…….……20

Breastfeeding Initiation…….……...23

Use of Anesthesia/Analgesia……..…….24

Perineal Integrity……...25

Length of Labor…….…….....25

Oxytocin Use in Labor……..…….…...26

Neonatal Outcomes……..…….....26

APGAR Scores…….…..……27

Preterm Birth/Gestational Age…….…….....28

Birth Weight…….…….....29

Psychosocial Outcomes……..…...30

Birth Satisfaction and Doula Experiences…….…….30

Anxiety Reduction……..34

Pain Perception……...35

Critique of Strengths and Weaknesses…….....35

Summary …….....36

Chapter IV: Discussion, Implications, and Conclusions.....38

Literature Synthesis…….....38

Maternal Outcomes……..…….38

Neonatal Outcomes…….……...39

Psychosocial Outcomes…….40

Trends and Gaps in the Literature…….....41

Implication for Midwifery Practice…….....42

Recommendations for Future Research…….....42

Integration of Jean Watson's Philosophy and Science of Caring Theory……44

Conclusion…….....45

References…….…...46

Appendix A: PRISMA Model…….…….....53

Appendix B: Literature Review Matrix……54

Chapter I: Introduction

In 2018, there were over 2.5 million vaginal births and nearly 1.2 million cesarean births (31.9%) that took place in the United States (Martin et al., 2019). Approximately 98 percent of those births took place in a hospital, which leaves birth as the highest indication for hospitalization in the United States (MacDorman & Declercq, 2019; Healthcare Cost and Utilization Project, 2020). There are many emotions that a person can experience during pregnancy, labor, and childbirth. At times, labor and childbirth can be associated with negative thoughts and emotions that can carry into future pregnancies. People of color and those from low-income and low-resource settings experience disproportionately higher rates of maternal and infant mortality, cesarean delivery, preterm birth, and have low birthweight infants (Thomas et al., 2017). One proposed solution is to provide a doula in the hospital setting during the intrapartum period to decrease poor birth outcomes and to improve the psychosocial experience surrounding childbirth.

Doula, a Greek word, is a person professionally trained to provide continuous emotional and physical support to a birthing person prenatally, in the intrapartum period, and in the early postpartum phase. A doula's goal is to promote healthy outcomes and to assist a birthing person to have the most satisfying birth experience possible in a holistic manner (DONA International, 2021). Some of the synonyms for doula are labor coach, birth assistant, labor companion and continuous labor support person (Simkin, 2012). As stated above, DONA considers a doula as a trained professional to provide continuous labor support. The doula does not replace a partner, father of the baby, or any other family or friends that attend the birth. The role of the doula is essentially non-medical as they do not take vital signs, complete cervical exams, or monitor the fetal heart rate (Simkin, 2012).

Statement of Purpose

The purpose of this paper is to critically assess the impact of continuous labor support provided by doulas on birthing persons during the intrapartum period in the hospital setting. More specifically, this synthesis will examine doulas provided by either a volunteer or facility-based program. This analysis will examine the evidence of volunteer or facility provided doulas effect on birthing outcomes and psychosocial experiences of the birthing person and their infant. Jean Watson's Philosophy and Science of Caring theory will be applied to further asses the critical need in relation to nurse-midwifery practice.

Evidence Demonstrating a Need for Critical Review

Maternal Mortality and Patient Disparities

In 2017, the World Health Organization (2019) reported that approximately 295,000 women died during pregnancy, birth, and into the postpartum period. The majority of deaths were seen as preventable and 94% were in low-resource settings (World Health Organization, 2019). A severe maternal complication was identified in nearly 69 per 10,000 deliveries that took place in the hospital in 2017 (Office of Disease Prevention and Health Promotion, 2021). The United States has a maternal mortality rate of 17.4 per 100,000 live births making it one of the highest rates of maternal deaths in the developed world (Martin et al., 2019).

Birth Outcomes

Measuring birth outcomes is a resourceful way of identifying areas of improvement and prevention in maternal and neonatal care. In the United States, the majority of poor birth outcomes occur to women of color or those in low-income and low-resource settings (Thomas et al., 2017). The cesarean delivery rate in 2018 was 31.9% (Martin et al., 2019). This surgery itself carries with it a number of risks to the mother and infant, especially when performed

unnecessarily. Additionally, episiotomies as well as third- and fourth-degree lacerations can result in long-term complications including anal sphincter incontinence (LaCross et al., 2015). Reassuringly, the episiotomy rate in the United States declined from 9.6% in 2016 to 7.8% in 2017 (The Leapfrog Group, 2018).

In addition to a poor maternal mortality rate, the United States has one of the highest rates of preterm births in the developed nations (March of Dimes, 2021). Nearly 1 in 10 babies is born premature. Complications can include long-term health consequences, intellectual and developmental disabilities, and chronic lung disease (March of Dimes, 2021).

Cochrane Review. A systematic review of over 15,000 women found that women who had continuous labor support were more likely to experience spontaneous vaginal birth (7.3% versus 6.8%), less likely to receive an instrumental delivery (18% versus 20%), less likely to utilize pain medication (72% versus 75%), less likely to have a cesarean birth (10.9% versus 14.6%), and experienced higher satisfaction with their labor experience (12.2% reported a negative experience compared to 17.7%) (Bohren et al., 2017). The authors also found these women tended to have shorter labors by approximately 0.69 hours. As far as neonatal outcomes, the review found that infants born to women who received continuous labor support had a decreased likelihood of having a low five-minute Apgar score. More benefits were identified when this care was provided by an individual who focused solely on providing support, was not a part of the woman's social circle, and had professional training and experience, such as a doula (Bohren et al., 2017).

Psychosocial Experiences

In the *Listening to Mothers Report* completed in 2018, one in ten birthing persons expressed experiencing severe distress throughout their pregnancy (Sakala et al., 2018). In the

same report, one in ten women had a doula present at their birth and approximately 57% of all women surveyed had interest in having a doula at their next birth (Sakala et al., 2018). Though continuous labor support can be provided by a variety of individuals, when provided by a doula compared to untrained individuals, doulas gave more culturally competent care, frequently remained at the patient's side, and utilized more touch and talk (Stuebe & Barbieri, 2020).

While the Cochrane review by Bohren et al. (2017) explored the impact that doulas have on birth outcomes, it did not look specifically at how doulas impact the outcomes of those most at risk for adverse outcomes, including non-Caucasian race, adolescents, those living in poverty, or abuse victims. Doula programs help to bridge this equity gap and provide services to individuals who may not otherwise be able to access them due to social, economic, or other factors (Gruber et al., 2013). Therefore, evaluating the outcomes in programs of this nature will be the focus of this review.

Significance to Nurse-Midwifery

The American College of Obstetricians and Gynecologists (ACOG) (2019) released a committee opinion outlining actions to reduce interventions during the intrapartum period and delivery. In this statement, ACOG (2019) recognizes that continuous holistic labor support provided by doulas in addition to routine nursing care results in improved birth outcomes for women. This statement incorporates results from a Cochrane review that found continuous labor support shortened the duration of labor, decreased the need for analgesics, resulted in fewer operative deliveries, improved the overall birth experience for the woman, and increased the incidence of spontaneous vaginal birth. Continuous labor support in the form of professional doulas was also cited as one of the most underutilized resources in preventing primary cesarean sections in an obstetric care consensus released jointly by ACOG and the Society for Maternal-

Fetal Medicine (SMFM) (ACOG, 2014). In addition to the ACOG committee opinion, the March of Dimes (2019) holds a position statement on birth outcomes associated with doula use. In an approach to address the high maternal morbidity and mortality rates that women of color experience, the March of Dimes has become a full supporter of doula care and views them as part of the maternity care team. To summarize, the March of Dimes has identified and supports the need for doulas for all patients, encourages insurance companies to cover doula services, and understands that doulas need to be trained birth professionals that can provide care to all races, ethnicities, cultures, and socioeconomic classes (March of Dimes, 2019).

Theoretical Framework

According to Petiprin (2016), Jean Watson's Philosophy and Science of Caring theory approaches nursing with a holistic ideal that addresses health as something consisting of a high level of mental and physical health, with subsequent focus on social function, and the recognition and reduction of illness. Practicing under her theory allows one to understand that all patients deserve to be valued, respected, understood, and cared for. Watson's model is composed of seven assumptions, and 10 carative factors. Watson utilizes the nursing term "carative" in reference to the caring process that assists an individual to achieve or maintain holistic health. This is in comparison to the more medical terminology "curative" in reference to curing of a disease or illness. The 10 carative factors include:

1. Forming and sustaining a humanistic-altruistic system of values throughout the lifespan and interceded with one's experience.
2. Being present and honoring the individual's faith, hope, and belief system even if there is nothing else to offer to the patient.

3. Promoting health and forming relationships through the cultivation of sensitivity to one's self and others allowing for genuine interactions.
4. Developing and maintaining a loving and trusting relationship utilizing empathy, warmth, communication, and harmonization.
5. Encouraging the voicing of both positive and negative feelings to better understand the behaviors that stem from those feelings.
6. Utilizing states of knowing, being, doing, and becoming to promote a collaborative problem-solving and decision-making process.
7. Promoting and utilizing both the teaching and learning process to create a mutual understanding of one's perceptions of experiences.
8. Creating a healing environment through means of protective as well as corrective mental, physical, cultural, and spiritual factors.
9. Preserving human dignity by respecting and promoting basic human needs while simultaneously touching the mind, body, and spirit of others.
10. The allowance of miracles and acceptance of the existential unknown.

Jean Watson's Philosophy and Science of Caring theory can be connected to doula support being provided to patients in the hospital, the effects on psychosocial experiences, and the incidence of adverse outcomes. Research has largely supported the positive impact that midwives and doulas have on improving birth outcomes such as premature deaths, cesarean deliveries, newborn deaths, and delivery complications (Christopher, n.d.; Gruber et al., 2013). Improvement of these birth outcomes does not just happen at a physical level, but rather occurs on a holistic level that embodies mind, body, and spirit. Watson's theory operates under the guise of circles of caring that connect individuals to communities, the world, planet Earth, and the

universe (Watson Caring Science Institute, n.d.). It is said that to truly understand this theory one must personally experience this interconnectedness. Doulas themselves experience this connectedness of mind, body, and spirit in their relationships with the patients they assist as they utilize the powers of art, science, and other areas of knowing. These areas can include the aesthetic of pregnancy and birth, the healing power of kinesthetic touch, intuitive knowing, and metaphysical-spiritual knowing as they assist women through the powerful experience of pregnancy, birth, and recovery (Watson Caring Science Institute, n.d.). Effectively appraising the role of the doula allows for the observation that they act largely within the 10 carative factors defined by Watson's theory. A study of volunteer doula services offered to underprivileged women in the United Kingdom found that women shared experiences of feeling understood in a non-judgmental, non-biased way as well as feeling relief from perceptions of isolation, depression, and fear in pregnancy and birth (Darwin et al., 2017). Women also experienced increased feelings of confidence, hope, safety, and communication during labor and continuing through childbirth (Darwin et al., 2017).

Summary

Continuous labor support has been identified by many leading organizations in women's health as a tool to improve birth outcomes. The need for intervention is seen in the unacceptably high maternal mortality and preterm birth rates in the United States. Doulas have consistently been proven to improve outcomes, but not all birthing persons have access to doulas. Jean Watson's Philosophy and Science of Caring theory encompasses the purpose of the doula to promote and maintain the overall health of the woman including body, mind, and spirit. Therefore, this review will criticize the impact of volunteer or facility doula programs on maternal, neonatal, and psychosocial outcomes.

Chapter II: Methods

The purpose of this chapter is to explore the methods used to obtain articles for this review. First, the search strategies and databases will be explained. Secondly, inclusion and exclusion criteria will be outlined to determine the number of articles for further review. The number of studies and criteria of selected articles will be summarized. Finally, the criteria for evaluation of the level and quality of the evidence found will be discussed. For reference, Moher et al.'s (2009) PRISMA model (see Appendix A) was utilized to guide and organize the collection of research articles.

Search Strategies

Five databases were searched for collection of research studies. These included CINAHL, PubMed, EBSCOhost, Scopus, and Science Direct. The key terms used included doula, continuous labor support, birth outcomes, psychosocial, hospital-based doula, doula program, and volunteer doula.

The PRISMA model was then used to organize the research studies, and can be referenced in Appendix A (Moher et al., 2009). There were 1,615 articles identified through the database searches. The screening process took place after removing the 287 duplicate articles which then left 1,328 studies. Of the 1,328 articles, another 1,245 were excluded when applying inclusion and exclusion criteria to the titles and abstracts. An additional two articles were found through ancestry searching. Of those two articles found via ancestry searching, they were greater than 10 years old, but specifically related to the topic. There were then 85 full text articles assessed for eligibility. Of the 85 full text articles, 65 studies were excluded due to a lack of applicability, which left 20 studies for inclusion in this review.

Inclusion and Exclusion Criteria

Articles were further considered for review if they possessed the inclusion criteria containing labor support given by professionally trained doulas or doula trained midwifery students. These doulas were available either by voluntary means or via a facility-supported labor support program. Support had to be provided in the hospital setting during the intrapartum period. Outcome variables needed to consider birth outcomes, including intrapartum interventions or psychosocial experiences of the birthing person.

Articles were excluded if they took place in an out-of-hospital setting, only involved the antenatal or postpartum period, assessed support of doulas in the operating room for cesarean deliveries, or assessed support of doulas for miscarriages or abortions. Labor support could not be given by an individual not professionally trained as a doula including family members, friends, or other members of the healthcare team such as physicians, midwives, or nurses. Additionally, articles were excluded if the data related to psychosocial experiences were the opinions or perceptions of individuals other than the birthing person.

Summary of Selected Studies

After the removal of duplicates and application of the inclusion and exclusion criteria 20 articles were considered significant for this review. They examined professional doula support provided either voluntarily or via a facility-based program during the intrapartum period in the hospital setting. There was a total of 14 articles collected between the years of 2015 and 2020, four between 2010 and 2014, and two prior to 2010 collected via an ancestry search. One article from 1999 was included due to being a level I randomized control trial with criteria directly applicable to the specific purpose of this review. The other was a quasi-experimental article from 2008 with high quality evidence directly related to the purpose of this review.

Additionally, there was a variety of study designs included in the research articles. The total collection involved six quasi-experimental, four retrospective cohort, three randomized control trial, three qualitative, two non-experimental, one mixed method, and one cross sectional design study. The setting of the studies took place in a number of countries including Brazil, England, Iran, the Netherlands, Sweden, Taiwan, and the United States. Of note, twelve studies were in the United States.

Evaluation Criteria

The studies were evaluated using the Johns Hopkins Research Evidence Appraisal Tool which was used to find the level and quality of the 20 articles selected (Dang & Dearholt, 2018). The evidence was appraised and ranked on a scale of I to V, with I being the strongest evidence and V being the weakest. For this literature review, only levels I-III were used, and systematic reviews were excluded. The level I evidence consists of experimental studies including randomized controlled trials (RCT), some mixed method designs that include a level I quantitative study and systematic reviews of RCTs. Level II is composed of quasi-experimental, some mixed method designs including a level II quantitative study, and a systematic review which includes RCTs and quasi-experimental studies. Nonexperimental studies are listed as level III and include qualitative studies, mixed method studies, and systematic reviews. This review contains three level I studies, eight level II studies, and nine level III studies (Dang & Dearholt, 2018).

Once an evidence level is assigned to a study, it can then be reviewed for quality (Dang & Dearholt, 2018). There are three quality ratings in which an article can be assigned. These ratings include high quality (A), good quality (B), and low quality (C). The inclusion or exclusion of the following factors determine the quality of the study: adequate sample size,

generalizable results, adequate control, transparency, and consistency of the recommendations compared to previously presented scientific evidence. The selection of articles include seven high quality, ten good quality, and three low quality studies (Dang & Dearholt, 2018).

Summary

Articles for review were collected using specific search criteria across five different scholarly databases. The PRISMA model was utilized to organize articles collected. Inclusion and exclusion criteria were applied, and 20 articles were included for review. The Johns Hopkins Research Evidence Appraisal Tool was used to determine the level and quality of evidence (Dang & Dearholt, 2018).

Chapter III: Literature Review and Analysis

The purpose of this section is to explore the major findings of the 20 articles selected for this review. Organization of the studies and their findings was accomplished with the matrix tool (see Appendix B) using the headings purpose, sample, method, results, conclusion, strengths, limitations, author recommendations, and implications. Strength and quality of the evidence is also included based on the Johns Hopkins Research Evidence Appraisal Tool (Dang & Dearholt, 2012). Each article is referenced a minimum of one time under at least one major theme. The themes identified explore evidence on the effect of continuous intrapartum support given by a volunteer or facility provided doula on maternal, neonatal, and psychosocial outcomes in the hospital setting. Subthemes are then further elaborated on with evidence from the literature.

Synthesis of Matrix and Major Findings

Maternal Outcomes

Thirteen articles were cited in relevance to the theme of maternal outcomes. Doulas play a pivotal role in addressing the United States maternal health crisis (Elmann, 2020). Although they may be seen as accessible only to those who can afford their services, doulas are critical to those at risk for birth complications. This population includes those in jeopardy of bias and discrimination such as racially diverse, low resource, and low socio-economic birthing persons (Elmann, 2020). This theme will examine evidence of volunteer or facility provided doulas on cesarean section rates, breastfeeding initiation, use of anesthesia/analgesia, perineal integrity, length of labor, and oxytocin use in labor.

Cesarean Section Rate. Twelve studies evaluated the effect of doula care on cesarean section rates. Chen and Lee (2020) conducted a quasi-experimental study in Taiwan of 220 pregnant women divided into a doula support group (experimental) and a non-doula group

(control). Their study found that the experimental group was significantly less likely ($p < 0.001$) to undergo cesarean birth when compared to the control group (13.0% vs 43.2%) (Chen & Lee, 2020). A retrospective cohort study conducted by Kozhimannil et al. (2013) enrolled 1,079 Medicaid recipients from Minneapolis, MN and trained doulas were provided through the Everyday Miracles program from 2010 to 2012. This group was compared to an equipotential population of 279,008 Medicaid recipients across the nation without doula support. The Everyday Miracles group had a cesarean birth rate of 22.3% compared to 31.5% among the national population. After controlling for clinical and sociodemographic factors the doula supported participants had a 40.9% decreased likelihood of having a cesarean birth ($p < 0.001$) (Kozhimannil et al., 2013). A separate retrospective cohort study collected data from 2010 to 2014 on a group of Medicaid recipients from a large metropolitan city in the United States Upper Midwest (n=1,935) that were supported by a free nonprofit doula organization as well as data from Medicaid recipients in the surrounding region consisting of 12 states (n=65,147) (Kozhimannil, Alarid-Escudero et al., 2016). The authors concluded that the odds of a cesarean section for full-term pregnancies were significantly lower when intrapartum support was provided by a doula (20.4% vs 34.2%, AOR=0.44 [95% CI 0.39-0.49]) (Kozhimannil, Alarid-Escudero et al., 2016). The study by Futch Thurston et al. (2019) determined that Medicaid patients without doula assistance were 1.8 times more likely to give birth by cesarean section than those served by a doula through the BirthWell Partners program (OR = 1.8 [95% CI 1.1–2.9]; $p = 0.008$). Another retrospective cohort study examined the birth outcomes of 1,892 pregnant adolescents between the ages of 15 and 19-years-old supported by a doula in comparison to the national rates among United States adolescents (Everson et al., 2018). The cesarean section rate of the doula supported group was not only lower than the national

percentage for adolescents (12.6% vs 20.4%), but it also surpassed the Healthy People 2020 target goal of 23.9% (Everson et al., 2018). In Brazil, a respectful maternity care (RMC) model involving doula support was examined using a cross-sectional design study (Giordano & Surita, 2019). This model of care incorporated support from a trained midwife and/or doula. Although 75.5% of clients received doula support, it is important to note that outcomes reported were not controlled for supportive profession. Data was collected from 580 low-risk women from nine health care centers in Sao Paulo from 2014 to 2017. The RMC group had a significantly decreased overall cesarean section rate of 14.7% compared to 82% in other regional private healthcare centers for women with comparable demographics (Giordano & Surita, 2019).

Six studies found no statistical difference in overall cesarean rates for doula supported birthing persons compared to those without doula support (Bolbol-Haghighi et al., 2016; Gordon et al., 1999; Gruber et al., 2013; Mottl-Santiago et al., 2008; Thomas et al., 2017; Van Zandt et al., 2016). Of note, the Mottl-Santiago et al. (2008) quasi-experimental study examined 2,174 full-term pregnant women supported by a doula from the Birth Sisters program in comparison to 9,297 full-term pregnant women without doula support. While primary cesarean section rates between the two groups were not statistically significant (13% vs 16%, [95% CI 0.74-0.94]) the authors found that, when controlling for gravida, primiparous women who had a Birth Sister and were cared for by a midwife had statistically significant lower rates of primary cesarean deliveries (15% vs 18%, $p = 0.05$) (Mottl-Santiago et al., 2008). Interestingly, Byrskog et al. (2020) compared 880 migrant women supported by a community-based bilingual doula (CBD) to 16,789 migrant women without support in Stockholm, Sweden. Data was collected from local birth registrars over eight years. When controlling for parity, the authors found that nulliparous CBD supported migrant women had a higher emergency cesarean section rate compared to

migrant women without a CBD (17.7% vs 15.1%, OR=1.21 [95% CI 0.93-1.59]). The authors also compared data from CBD supported migrant women to 129,706 Swedish born women. It was again observed that migrant women with a CBD had a higher emergency cesarean section rate (17.7% vs 12.8%, OR= 1.47 [95% CI 1.13-1.91] (Byrskog et al., 2020).

Breastfeeding Initiation. Six studies reported information on breastfeeding initiation. Futch Thurston et al. (2019) organized a retrospective cohort study that examined 120 pregnant women from low resources families. These women received continuous labor support from a doula provided by the BirthWell Partners program in Jefferson County, Alabama from 2013 to 2014. This sample was compared to 3,782 births covered by Medicaid in which the patient did not have a doula. Participants in the BirthWell Partners group were 10.5 times more likely to initiate breastfeeding in the hospital (OR = 10.5 [95% CI 5.4–23.2]; $p < 0.001$) (Futch Thurston et al., 2019). Those in the Birth Sisters group not only had more patients intend to breastfeed (85% vs 68%; RR= 2.13 [95% CI 1.92-2.24]), but they also had more patients breastfeeding within one hour of birth (46% vs 23%; RR= 1.42 [95% CI 1.36-1.48]) (Mottl-Santiago et al., 2008). Two of the studies included found that doula supported patients had higher breastfeeding initiation rates compared to those without doula assistance (79.4% vs 67.2%, $p < 0.03$) and breastfeeding rates higher than the national average (60% vs 50.7%) (Gruber et al., 2013; Everson et al., 2018). Giordano and Surita (2019) did not have a comparable population when measuring breastfeeding rates, but they found that 94.1% of RMC doula supported participants breastfeed for at least six months.

Van Zandt et al. (2016) used a quasi-experimental study design to explore maternal and neonatal outcomes of women accompanied by doulas in the Birth Companions Program. The study took place between 1998 and 2014 in urban and suburban communities in a large east coast

metropolitan area in the United States. The program offered free services to 1,511 women during the intrapartum period using Doulas of North America (DONA) trained and certified nursing students. Those at risk for poor maternal outcomes based on social and economic factors were categorized into the vulnerable population group (n=522) and all others were in the non-vulnerable group (n=989) for comparison. Both groups were assisted by doulas through the Birth Companions Program. Upon review of breastfeeding outcomes, the authors found that neonates born to vulnerable mothers supported by doulas were significantly less likely to have a breastfeeding attempt than those born to patients considered non-vulnerable (71.8% vs 82.8%, $p < 0.01$) (Van Zandt et al., 2016). Gordon et al. (1999) found no significant difference in breastfeeding initiation between doula supported patients and a non-doula group.

Use of Anesthesia/Analgesia. Seven studies included evidence on the use of pharmaceutical pain management including epidurals and analgesics. The doula supported adolescents in the Everson et al. (2018) study were less likely to have an epidural than the national average for that age group (45.8% vs 63.5%). Two studies determined that having a doula present during the intrapartum period decreased epidural use (28.2% vs 39.6%, OR= 0.60 [95% CI 0.48-0.76]; 54.4% vs 66.1%, $p = 0.047$) (Byrskog et al., 2020; Gordon et al., 1999). Clients supported by the BirthWell Partners program were three times less likely to request an epidural during the intrapartum period compared to the relative Medicaid population (OR = 3.0 [95% CI 2.1–4.4]; $p < 0.0001$) (Futch Thurston et al., 2019). Doula supported patients in the Chen and Lee (2020) study were significantly more likely to have an unmedicated birth than those without a doula (87.0% vs 56.8%, $p < 0.001$).

Vulnerable women supported by doulas in the Birth Companions Program study were significantly more likely to use an epidural than non-vulnerable women in the program (71.5%

vs 65.4%, $p < 0.05$) and also had higher epidural rates than the 2014 national average (71.5% vs 61%) (Van Zandt et al., 2016). Mottl-Santiago et al. (2008) did not find a significant difference in epidural rates for those who received doula care compared to those who did not.

Perineal Integrity. Two of the included studies examined perineal integrity in terms of episiotomy rates and third- and fourth-degree lacerations. In Brazil, the RMC supported group had an episiotomy rate of 1.2% compared to the national rate of 56% (Giordano & Surita, 2019). On the contrary, Byrskog et al. (2020) found that having a CBD doula present did not change third- or fourth-degree laceration rates.

Length of Labor. Two studies examined the effect of having a volunteer or facility provided doula on the length of labor. Bolbol-Haghighi et al. (2016) used a RCT study design to examine the effects doula trained midwifery students had on labor and childbirth outcomes. The RCT took place at Fatemieh Hospital Maternity Ward in Shahroud, Iran. The trained midwifery students only provided supportive care measures during the intrapartum period and were not involved in the actual childbirth. Upon admission the birthing persons had a reactive non-stress test (NST) and were assigned to either the test group receiving labor support or the control group receiving care from non-doula trained students. When investigating length of labor times, the authors found that the test group had significantly shorter active labors. First stage active labor in the test group was 7.90 hours compared to 11.46 hours in the control group ($p < 0.001$). Second stage labor was also shorter, but there was no statistical significance in the difference of times (52.57 minutes vs 64.14 minutes, p= 0.06). Additionally, midwifery students from each group took a partogram workshop which was used to assess labor progress for all participants. Those in the test group were less likely to pass the alert line on the partogram ($p = 0.002$) suggesting that

participants receiving supportive care measures were more likely to experience a normal physiological labor progression (Bolbol-Haghighi et al., 2016).

Chen and Lee (2020) also examined labor length. They found the duration of first stage labor was significantly longer in the doula support group (755.50 minutes vs 482.48 minutes, $p < 0.001$). The total length of labor was also significantly longer in the doula support group compared to the non-doula group (795.76 minutes vs 517.86 minutes, $p< 0.001$). There was no significant difference discovered in the length of the second or third stages of labor (Chen & Lee, 2020).

Oxytocin Use in Labor. Four articles measured the use of oxytocin in labor. Chen and Lee (2020) found that participants in the doula supported group had a significantly higher rate of oxytocin use during labor than the non-doula group (67.4% vs 33.3%, $p < 0.001$). Similarly, vulnerable patients served by the Birth Companions doula program were more likely to require oxytocin induction and/or augmentation compared to the United States national average for oxytocin induction (55.8% vs 22.8%) (Van Zandt et al., 2016). Two studies found no significant difference in oxytocin use during labor between doula supported groups and non-doulas groups (Bolbol-Haghighi et al., 2016; Gordon et al., 1999).

Neonatal Outcomes

Twelve articles evaluated the effect of doula care on neonatal outcomes. As the United States continues to face high maternal and neonatal morbidity and mortality rates, Medicaid and other healthcare services are exploring coverage of doula services as a way to decrease these rates and provide cost-savings (Muza, 2019). Evidence relative to this theme measures the impact of doula care on APGAR scores, preterm birth, and birth weight.

APGAR Scores. Six studies evaluated neonatal APGAR scores at 1 and 5 minutes of age. Bolbol-Haghighi et al. (2016) discovered significantly higher APGAR scores at both 1 and 5 minutes of age in the group supported by doula trained midwifery students compared to the usual care group ($p < 0.001$ and $p = 0.04$). In Brazil, 100% (n=537) of the neonates had a 5-minute APGAR score greater than or equal to 7 in the RMC support group (Giordano & Surita, 2019). Only 6% of infants whose mothers had a doula required neonatal intensive care unit (NICU) admission (Giordano & Surita, 2019). Two studies found no significant difference in APGAR scores between doula supported participants and a non-doula group (Chen & Lee, 2020; Mottl-Santiago et al., 2008). Additionally, Chen and Lee (2020) found no significant difference in the reduction of meconium staining, birth injury, breech delivery, neonatal asphyxia, or congenital malformations for doula program participants.

Byrskog et al. (2020) only measured APGAR scores less than 7 at 5 minutes of age. Both nulliparous and multiparous women with a CBD had a slightly higher percentage of a 5-minute APGAR score less than 7 when compared to those without CBD support, but this difference was not significant (2.4% vs 1.8%, OR= 1.37 [95% CI 0.69-2.72]; 1.8% vs 1.3%, OR= 1.28 [95% CI 0.62-2.62]) (Byrskog et al., 2020).

Everson et al. (2018) did not collect data on APGAR scores specifically for neonates born to doula supported adolescent mothers. However, it is important to note that only 9% of neonates had immediate health concerns after delivery and 5.6% were admitted to the NICU. There was a total of 10 fetal demises in the sample providing a fetal demise rate of 5.27/1,000 (95% CI 2.53-9.69). This rate was lower than both the national fetal demise rate for adolescents (6.6/1,000) and the Healthy People 2020 standard (5.6/1,000) (Everson et al., 2018).

Preterm Birth/Gestational Age. The doula supported adolescents in the Everson et al. (2018) study showed improved preterm birth rates when compared to the national average. Participants in the sample demonstrated a preterm birth rate of 4.9% in comparison to 9.91% nationally for the relative population. This rate yet again surpassed the Healthy People 2020 benchmark of 11.4% for preterm births (Everson et al., 2018). The preterm birth rate for vulnerable women in the Birth Companions Program was 4.0% which was noticeably lower than the 2014 national average of 11.5% (Van Zandt et al., 2016). Futch Thurston et al. (2019) also found that neonates born to mothers in the BirthWell Partners program had a lower incidence of preterm birth when compared to the Medicaid population, but this difference was not statistically significant (8.6% vs 12.3%). Kozhimannil, Alarid-Escudero, et al. (2016) reported a lower preterm birth rate in participants supported by a doula program than in the non-doula group (4.7% vs 6.3%). When adjusting for covariates, the authors proposed that providing doula care to Medicaid recipients would result in a 22% decreased chance of having a preterm birth (AOR=0.77 [95% CI 0.61-0.96]). This would ultimately lead to 3,288 fewer preterm births per year with a cost savings of $58.4 million annually (Kozhimannil, Alarid-Escudero, et al., 2016). Participants in the Everyday Miracles doula program also had a lower preterm birth rate than the national percentage for Medicaid beneficiaries, but the difference was not statistically significant (6.1% vs 7.3%) (Kozhimannil et al., 2013).

Thomas et al. (2017) conducted a quasi-experimental study that examined birth outcomes of the By My Side doula program in New York. The sample consisted of 560 women and 489 infants partaking in the Women, Infants, and Children (WIC) nutrition program. Participants were provided a doula through the By My Side Birth Support Program and a post-birth interview was used to evaluate the program. Preterm birth rates were significantly lower in the doula

supported group when compared to the average percentage for the region (6.3% vs 12.4%, $p < 0.001$) (Thomas et al., 2017).

Birth Weight. Thomas et al. (2017) concluded there was a lower incidence of low birthweight (LBW) infants in the By My Side doula group when compared to data for the region (6.5% vs 11.1%, $p = 0.001$). Women in the Birth Companions Program had a lower incidence of LBW infants than the 2014 national average (3.4% vs 8.0%) (Van Zandt et al., 2016). However, vulnerable women were more likely to have a LBW infant than non-vulnerable women despite both groups having a doula (4.8% vs 2.7%) (Van Zandt et al., 2016). Participants supported by doulas in the BirthWell Partners program also had a lower incidence of LBW infants than the comparable Medicaid population, but this difference was not found to be statistically significant (9.8% vs 14.1%) (Futch Thurston et al., 2019).

A non-experimental study design was used to compare birth outcomes between pregnant clients who chose to have intrapartum support provided by the YWCA Greensboro Healthy Beginnings Doula Program (n=97) to those who opted not to have doula assistance (n=128) (Gruber et al., 2013). Data was collected from January 2007 through December 2010. The authors found that those in the non-doula group were four times more likely to have a LBW infant than those in the Healthy Beginnings Doula Program (8.6% vs 2.1%, $p < 0.04$). Of note, the difference was not statistically significant when controlling for age of the birthing person (adolescents vs adults). Additionally, the authors found that doula supported mothers were two times less likely to experience birth complications for both mother and baby compared to non-doula assisted mothers (10.3% vs 19.5%, $p < 0.04$) (Gruber et al., 2013).

Everson et al. (2018) found that doula supported adolescents in their study had higher rates of LBW infants. The rate of LBW infants in the study population was 10.2% which was

greater than both the national rate for adolescents (9.48%) and the Healthy People 2020 benchmark (7.8%) (Everson et al., 2018).

Psychosocial Outcomes

Ten articles measured the effect of doula care on psychosocial outcomes. Doulas work to holistically support mothers; thus, it is important that they not only address the physical challenges of birth but also the mental and emotional aspects. These studies evaluated evidence on birth satisfaction, anxiety, and pain perception reported by patients supported by doulas during the intrapartum period.

Birth Satisfaction and Doula Experiences. Chen and Lee (2020) asked participants to provide childbirth satisfaction scores on a scale of 0 to 10. Women in the doula group reported a mean satisfaction score with the support provided by the doula of 9.12 ± 1.48. The doula support group provided higher scores in both childbirth support and overall satisfaction with their birth experience than the non-doula group, although neither difference was statistically significant (8.15 ± 1.16 vs. 7.87 ± 1.25; 7.77 ± 1.61 vs. 7.71 ± 1.64) (Chen & Lee, 2020).

Lanning and Klaman (2019) used a descriptive quantitative study design to survey birthing persons supported by a hospital-based volunteer doula program at the University of North Carolina Medical Center. Data was collected over a period of three years. General satisfaction with doula care was expressed by 96.34% of participants with 96.88% reporting satisfaction with emotional support. Overall satisfaction with birth experience (with doula support) was recorded in 91.91% of birthing persons and 97.63% reported overall satisfaction with physical support provided by the doula. The authors concluded that the results could also be applied to doula programs at other facilities (Lanning & Klaman, 2019).

In Brazil, 83.1% of women in the RMC group reported a positive experience with their birth (Giordano & Surita, 2019). Positive birth practices were reported in 80% of births which included: discussing the patient's birth plan (97.6%), providing respect and privacy (85.8%), had a support person present (100%), were offered nonpharmacological pain relief options (90.5%), had freedom to move and speak (96.8% and 97.1%), and was supported in immediate skin-to-skin care (95.9%). Only 5.7% of women had an experience of obstetric violence, compared to Brazil's 25% rate of report of mistreatment during childbirth care (Giordano & Surita, 2019).

Darwin et al. (2017) used a mixed method study design to evaluate the health and psychosocial impacts of volunteer doula services on women in underserved communities in England. The authors used a questionnaire consisting of both open and closed-ended questions. Women reported their relationship with the volunteer doula by seeing her "as a friend" (74.6%); "like a professional" (32.2%); "like a family member" (31.4%); "like a sister" (21.2%); "like a mother" (17.8%); "like an advocate" (17.8%); "someone like me" (16.9%); and "like a role model" (14.4%). Benefits reported included feeling listened to by a non-judgmental and non-biased party, relief of feelings of isolation, depression, pregnancy worries, and birth fears, feeling supported in choices, being more in control of their maternity care, improved confidence, improved communication with healthcare professionals, and help in navigating services. Negative experiences were also reported in 15 of the women who felt the doula did not help them the way that had hoped, inability to provide continuity of care, and limitation of services provided (such as not assisting with household chores or care for other children) (Darwin et al., 2017).

Gordon et al. (1999) conducted a RCT in three different hospitals in Northern California. Participants were randomly assigned to either receive a hospital provided doula upon admission

or receive usual cares without a doula. Women assigned to the doula support group were significantly more likely to rate their birth experience as "good" (82.5% vs 67.4%, $p = 0.005$). Those assisted by a doula felt they coped well with labor significantly more than the non-doula group (46.8% vs 28.3%, $p = 0.003$). Doula supported participants reported a greater positive impact on feelings as a woman (58.0% vs 41.0%, $p = 0.21$), feelings of self-worth (54.5% vs 45.1%), and feelings about their body's capability (58.0% vs 41.0%, $p = 0.006$) (Gordon et al., 1999).

Ooijens et al. (2018) used a quasi-experimental design to launch a pilot study at the Academic Medical Centre in Amsterdam. Data was collected through questionnaires from April of 2011 through April of 2013 and focused primarily on women with a history of trauma, had limited social support, and had increased fears of childbirth. Birthing persons were referred to the study by their physicians and received continuous labor support by a doula. The study showed that 86.6% of the women agreed that every woman should have a doula during their labor and 94.03% of participants said they would use a doula again. Four of the participants were not satisfied with their doula care and would not use a doula again (Ooijens et al., 2018).

A qualitative descriptive study performed by Kozhimannil, Vogelsang, et al. (2016) interviewed women regarding their experience with their doula during childbirth. Feelings of respect and providing knowledge were consistent themes observed with the interviews. Participants also acknowledged a feeling of agency, or autonomy, with a doula at their birth stating, "My husband and I are taking childbirth classes, but we still feel [a] need for a doula. You can't remember everything and having experienced person around is important. Especially if we want to avoid a c-section… (Kozhimannil, Vogelsang, et al., 2016)." Personal security was expressed through comments such as "… It's very comforting to know that you have somebody

[who] has your back and explaining everything (Kozhimannil, Vogelsang, et al., 2016).” Finally trust and connectedness emerged as a common theme among doula supported participants quoting, “I definitely think doulas are helpful like with mental-especially with stress because even if you’re not alone, sometimes you may feel alone. You might not want to talk to anyone else except for the person that actually wants to talk about babies (Kozhimannil, Vogelsang, et al., 2016).” Kozhimannil, Vogelsang, et al. (2016) also cited, “I’m really stressed out and worry about things a lot and [a] doula is there to support you and help you through stressful moments… [She] communicates with you and helps you along the way…”

McLeish and Redshaw (2018) used a descriptive qualitative study design to interview birthing persons receiving care from three different community doula projects in England. The authors compiled data collected from interviews to create common themes regarding doula care. Those themes included doulas giving constant emotional care to patients and their partners (when present), bridging the care between the patient and the midwife, creating a team atmosphere to ensure the birthing person was not alone, and advocating for the patient even if there was resistance from the midwife (McLeish & Redshaw, 2018).

Additionally, Hunter (2012) utilized an ethnographic qualitative study design in which doula supported birthing persons were interviewed after their childbirth experience. Data was collected over a period of three years in a Midwestern American town. Participants perceived their doulas as creating a birthing environment of “holding space” to allow for the establishment of an intimate relationship between the doula and birthing person as well as promoting positive birth experiences. It was reported that doulas “hold space” through hand holding, breathing, creating a relationship that allowed for advocacy of the mother’s birth wishes, allowing movement and providing emotional support. Doulas created and maintained an intimate

relationship by establishing comfort and trust beyond the professional relationship as well as being a part of the participant's team in a more intimate manner than what the hospital staff could provide. Care provided by doulas was interpreted as providing "woman support" by offering food and beverages and wiping away bodily fluids when necessary as well as providing a "closeness" that was "very personal" when compared to usual care by hospital staff. Interestingly, it was reported that doulas may move into a "mother role" that can be offensive to the birthplace staff as they are members of the care team that are specifically dedicated to caring for the birthing person (Hunter, 2012). Birthing persons served by Birth Companions doulas in the Van Zandt et al. (2016) study were not measured for psychosocial outcomes. However, it is worthy to note that birthing persons considered vulnerable were significantly more likely to have no other support person during the intrapartum period other than their doula compared to participants considered non-vulnerable (8.4% vs 2.2%, $p < 0.00$) (Van Zandt et al., 2016).

Anxiety Reduction. In the Taiwan doula program study, authors measured prenatal and postnatal anxiety scores in participants and compared the differences (Chen & Lee, 2020). Mothers supported by doulas experienced a greater level of anxiety reduction in childbirth than the non-doula group, but this difference was not statistically significant (-14.61% vs -8.92%) (Chen & Lee, 2020). Doula supported patients in England felt their doula reduced fear and anxiety surrounding birth as doulas "gave them a voice" when they lacked confidence in communicating with their midwives (McLeish & Redshaw, 2018).

A RCT set at the Towhid Hospital of Jam in Bushehr, Iran in 2015 examined women's anxiety and pain levels with and without a doula present at their birth (Ravangard et al., 2017). Nulliparous women were randomly assigned to an experimental group receiving doula support in labor and a non-doula support group receiving usual care. There was no significant difference in

anxiety levels prior to birth between the two groups, but the doula supported group showed significantly lower levels of anxiety during childbirth (48.04 vs 57.76, $p < 0.001$). The authors hypothesized that the reduction in anxiety was due to a combination of "presence, massage, physical contact, reassurance, explanation, and guidance" (Ravangard et al., 2017).

Pain Perception. Chen and Lee (2020) found that participants supported by the doula program had increased levels of post-birth pain when compared to the non-doula group (22.96% vs 12.88%). This difference was not statistically significant and is believed to be attributable to a higher level of unmedicated births in the doula support group (Chen & Lee, 2020). Participants in the doula supported group of the Ravangard et al. (2017) study showed significantly lower pain perception levels than the group receiving usual cares (36.52 vs 41.72, $p < 0.001$). This was attributable to the doula's part in providing physical support, promoting autonomy, and instilling confidence in the birthing persons (Ravangard et al., 2017).

Critique of Strengths and Weaknesses

One strength of this review is that it incorporates a variety of quantifiable outcomes as identified in the research as well as qualitative outcomes surrounding patient's perceptions of their experience with a doula. Many of the studies compared the influence of doula care on outcomes to either an equitable non-doula care population or to the national population. This allowed for generalization of the findings to facilities outside of the study setting. There was also a variety of populations studied in the review which included adolescents, immigrants, and nulliparous women. The majority of the articles critiqued were of either high (A) or good (B) quality due to demonstrating some level of control, yielding consistent results, and providing definitive conclusions with reasonable recommendations. This makes the findings of this review reliable.

One weakness to note was the lack of level 1 randomized control trials. The majority of articles were either level 2 studies or qualitative studies. The lack of control for variables such as the need for induction of labor made it difficult to yield consistent representation of maternal risk during the intrapartum period that may have skewed the results of outcomes. While the sample size of most of the qualitative studies was small there was still consistent identification of common themes that resulted in quality findings.

Summary

In conclusion, results of the review supported an overall improvement of maternal outcomes. The presence of a volunteer or facility-provided doula resulted in either a decrease of cesarean section rates or no difference at all when compared to a non-doula population. One study did find an increase in emergency cesarean section rates in CBD supported migrant women compared to Swedish born women (Byrskog et al., 2020). This was hypothesized to be due to an increase in risk and poor health amongst nulliparous refugee women (Byrskog et al., 2020).

Breastfeeding initiation rates were consistently higher in doula supported women. Mottl-Santiago et al. (2008) suggested this could lead to long-term successful breastfeeding and ultimately an increase in infant and child health. The review found that intrapartum doula support also led to a decrease in pharmaceutical pain management. In turn, this conclusion insinuates an increase in physiological labor amongst women with doula support (Bolbol-Haghighi et al., 2016). Doulas are trained to provide non-pharmaceutical pain management techniques such as massage, heat therapy, cold therapy, visualization, and emotional support. Bolbol-Haghighi et al. (2016) utilized doula trained midwifery students because of their availability and the cost savings.

Two studies measured episiotomy rates and perineal integrity. One study found no difference in these rates and one found a decrease in the amount of third- and fourth-degree

lacerations in doula supported participants (Byrskog et al., 2020; Giordano & Surita, 2019). Two studies also examined length of labor. Bolbol-Haghighi et al. (2016) found a decrease in the length of the first stage of labor. This is most likely due to the supportive care measures provided by doulas. Chen & Lee (2020) found an increase in the length of labor, but also found higher rates of natural birth. Amongst the studies that measured oxytocin use in labor, half found an increase in the use of oxytocin and half found no difference between doula supported participants and a non-doula group.

A handful of studies examined APGAR scores with mixed results on if doula support results in an increase, decrease, or no difference in APGAR scores. However, there was a consistent decrease in both preterm birth rates and low birth weight amongst neonates born to doula supported mothers. Of note, Kozhimannil, Alarid-Escudero, et al. (2016) suggested that providing a doula during the intrapartum period could be cost-effective due to the decrease in preterm births and operative deliveries.

The presence of other support people was not consistently measured amongst all studies in the review. However, Van Zandt et al. (2016) found that a significant number of participants in their study only had the program provided doula as a support person during the intrapartum period. This is pertinent as the review found an overall increase in participant satisfaction with their birth experience and doula support. There was also a decrease in anxiety and pain perception. Consistent themes identified included that doulas provided continuous physical and emotional support during labor and delivery, helped to create a line of communication between the birthing person and their provider, and supported patient autonomy. Furthermore, Hunter (2012) examined how doulas "hold space" during labor and delivery on multiple levels to improve patient outcomes.

Chapter IV: Discussion, Implications, and Conclusions

The final chapter will synthesize the results found, review the trends and gaps that were found in the literature, discuss the implications for midwifery practice, and make recommendations for future research. This paper analyzed the evidence surrounding volunteer or facility provided doulas, the effects they have on birthing outcomes, and psychosocial experiences of the birthing person and their infant.

Literature Synthesis

After reviewing the 20 applicable articles, there were three primary themes created and critiqued. Those themes were maternal outcomes, neonatal outcomes, and psychosocial outcomes. Each theme was further examined, and specific subthemes were created to answer the research question.

Maternal Outcomes

There were 13 studies that reviewed how volunteer or provided doulas are relevant to maternal outcomes. Overall, doulas decreased the likelihood of a cesarean delivery, though some studies found no difference in cesarean section rates when a doula was present. One study by Byrskog et al. (2020) found an increase in emergency cesarean section rates in vulnerable populations with the presence of a doula.

It was determined that having a doula in the intrapartum period increased the likelihood of early initiation of breastfeeding. However, Gordon et al. (1999) found no difference in breastfeeding rates and one study found that breastfeeding initiation rates within a vulnerable population decreased (Van Zandt et al., 2016).

Overall, doula care reduced the use of anesthesia or analgesia during labor and birth. The synthesis concluded that doula supported birthing persons were less likely to request an epidural

or use an epidural and were more likely to have an unmedicated birth. Of note, Van Zandt et al. (2016) found that the use of epidurals was increased in vulnerable populations regardless of doula support.

There were two studies that compared the rates of episiotomies and third- and fourth-degree lacerations with doula presence. The Byrskog et al. (2020) study found that having a community-based bilingual doula present did not change third- or fourth-degree laceration rates. However, Giordano and Surita (2019) discovered that the episiotomy rate was significantly reduced when using an RMC model of care which included doula support.

There was limited data available from the 20 applicable studies on length of labor and oxytocin use in labor. The length of labor results was inconclusive; the article written by Bolbol-Haghighi et al. (2016) found that women had a shorter labor with a doula present, while the Chen and Lee (2020) article found the opposite. There was an increase in oxytocin use in labors with a doula present in the two articles by Chen and Lee (2020) and Van Zandt et al. (2016). The remaining studies by Bolbol-Haghighi et al. (2016) and Gordon et al. (1999) found that there was not a difference in oxytocin use when a doula was present during labor and birth.

Neonatal Outcomes

The three specific neonatal outcomes researched were APGAR scores, preterm birth rate, and the number of low birthweight infants. Overall, there was not a strong correlation between doula use and increased APGAR scores in this literature synthesis. Mottl-Santiago et al. (2008) and Chen and Lee (2020) found no difference in APGAR scores. Byrskog et al. (2020) found that APGAR scores were decreased with doula use, but this was not statistically significant. APGAR scores were noted to be increased with doula support in the Bolbol-Haghighi et al.

(2016) study. All of the neonates in the Giordano and Surita (2019) study born to doula supported mothers had a 5-minute APGAR greater than or equal to 7.

Overall, there was an improvement in preterm birth rates and a decrease in low birthweight infants seen in doula supported groups across the studies synthesized. Of note, Everson et al. (2018) found an increase in low birthweight infant rates for doula supported adolescents.

Psychosocial Outcomes

There were 10 articles synthesized that specifically measured the effect of doula care on psychosocial outcomes. The psychosocial outcomes evaluated included birth satisfaction, anxiety level, and pain perception during labor and childbirth. Doula supported birthing persons consistently reported higher rates of birth satisfaction. Participants in the Gordon et al. (1999) study were significantly more likely to rate their birth experience as "good." Overall, doula supported birthing persons had improved outcomes of coping with labor and higher feelings of self-worth (Chen & Lee, 2020; Giordano & Surita, 2019; Hunter, 2012; Lanning & Klaman, 2019). Many studies revealed that participants favored having a doula present during their labor and birth, they felt more supported in their choices, had more control, and had less feelings of fear (Darwin et al., 2017; Kozhimannil, Vogelsang et al., 2016; Lanning & Klaman, 2019; McLeish & Redshaw, 2018; Ooijens et al., 2018).

Two studies compared women's anxiety levels in the prenatal and postpartum period. Chen and Lee (2020) found that mothers who were supported by doulas in the intrapartum period experienced a greater level of anxiety reduction. While the authors also found that participants had higher levels of post-birth pain, they hypothesized this could be due to the higher number of unmedicated childbirths (Chen & Lee, 2020). Ravangard et al. (2017) found that doula supported

nulliparous women had significantly lower levels of anxiety and pain perception during childbirth.

Trends and Gaps in the Literature

Synthetization of the evidence revealed some trends and gaps in the literature. The research question for this review specifically examined maternal, neonatal, and psychosocial outcomes related to labor and birth, or the intrapartum period. One trend identified was that the majority of the articles were very thorough on measuring the different outcomes on primiparous women versus multiparous women. There was a large focus on primiparous women and how doula use changed the outcomes of their pregnancy and birth. Additionally, doula support in the studies was provided free of charge or at a low-cost via the research team, volunteers, or facility provided program. This further reinforced the benefits of such programs to all socioeconomic classes including those at higher risk of poor outcomes who may be unable to financially afford doula care. The evidence was consistently of high (A) or good (B) quality, and there was a lack of bias seen among the studies. While there was not a large amount of randomized control trials, reasonable control and consistent results were demonstrated among the majority of the research articles.

One gap in the literature to note is the lack of identification of the birthing person's medical risk factors. Some studies mentioned low risk level as part of the inclusion criteria, but not all. Also, there was a lack of consistency in how outcomes were reported based on the tool used by the specific research team. This could lead to underreporting or overreporting of different outcomes. The lack of randomization introduced a bias in participants who actively sought doula care, accepted doula care, or refused doula care for personal reasons. There was also no control for the experience level of the doulas provided. One prominent gap identified bias

in the lack of representation of gender identity and sexual orientation of the birthing person. It was assumed that all of the participants were heterosexual ciswomen.

Implications for Midwifery Practice

Doulas can improve a patient's health literacy and enhance communication within the healthcare team. Support and encouragement from doulas during pregnancy appeared to improve birth outcomes and birth experiences of the mothers. The reduction of cesarean births and birth complications demonstrates that doula involvement early in pregnancy can also be beneficial in reducing the risk of adverse birth outcomes. In addition, doula support may improve breastfeeding rates which can have an impact on long-term health outcomes for mothers and infants. Incorporating volunteer doulas can be constructive in reducing adverse birth outcomes in at-risk populations while simultaneously reducing financial burdens.

In the United States, women of color and those in low-income and low-resource areas are more likely to experience poor birth outcomes (Thomas et. al., 2017). Black women have a 35.4% rate of cesarean birth compared to 31.1% for White women (March of Dimes, n.d). When providing women with resources, such as doula care in the intrapartum period, the odds of having a cesarean birth decrease. The evidence also supports improvement of outcomes such as breastfeeding initiation, episiotomy rates, preterm birth rates, APGAR scores, birth weight, anxiety and pain perception, and overall birth experience. These benefits in comparison with the minimal risk suggests that offering doula support in the intrapartum period, either through volunteers or facility provided programs, can improve maternal and neonatal outcomes.

Recommendations for Future Research

There were various recommendations for future research discovered while conducting this review. One recommendation found consistently was the need for more level I randomized

control trials to further identify the effect volunteer doulas and doula programs have on patient outcomes. Including a diverse population sample would allow for findings to be more applicable to the general population. Although this review focused on hospital-based doulas, future research should involve measuring outcomes in a variety of birth settings including home births, birth centers, and maternity wards (Chen & Lee, 2020).

Conducting studies that control for variables such as parity, risk level, and primary obstetrical provider could identify areas of impact and improvement not only for doula care, but for other practitioners, as well (Everson et al., 2018). Futch Thurston et al. (2019) suggested controlling for elective induction and elective cesarean cases, as well as comparing outcomes of those who are referred to doula care and those who actively seek it out.

As previously mentioned, one of the gaps was the limited information on the pregnant and birthing population who do not identify as heterosexual or cis female. Every article reviewed referred to their participants as women or mothers and did not mention their sexual orientation. It would be beneficial to research the impact that doulas have on this vulnerable population.

This review focused on doula care in the intrapartum period, but further research is recommended to assess for the ideal time to initiate doula care (Gruber et al., 2013). Specifically, it would be beneficial to research if doula care in the prenatal period has an impact on informed decision making, prenatal care compliance, maternal health, and birth outcomes (Gruber et al., 2013). This should also include availability of a diverse group of doulas from different ethnicities and races so they can be viewed as more accessible to a variety of birthing persons (Kozhimannil, Vogelsang et al., 2016).

Finally, more research should be done to evaluate the economic impact of volunteer doulas and doula programs in regard to birth outcomes (Kozhimannil et al., 2013). This could

include childbirth related hospitalizations as well as instrumental and cesarean birth costs. Furthermore, analyzing outcomes contributing to maternal and neonatal morbidity and mortality including hemorrhage, hypertension, infection, and complications from delivery could identify if providing doula care is an effective tool in decreasing these rates (WHO, 2019).

Integration of Jean Watson's Philosophy and Science of Caring Theory

Jean Watson's Philosophy and Science of Caring incorporates 10 "carative" factors that contribute to promoting overall holistic health of the individual (Petiprin, 2016). Doulas play a special role in patient care as they promote a connection of the physical, mental, and emotional aspects in their relationships with their clients. This review demonstrated improvements in physical outcomes, cesarean birth rates, breastfeeding initiation, pharmaceutical pain management, perineal integrity, oxytocin use, APGAR scores, preterm birth, and birth weight. However, the theory fully comes to light in analyzing the psychosocial impacts reported by birthing persons, as the doulas embodied the 10 carative factors. Participants reported positive birth experiences in the consistent presence of doulas as they provided care utilizing touch, support, and a variety of other support measures (Watson Caring Science Institute, n.d.). Relationships between the birthing person and their doula were perceived as different from relationships with other healthcare team members, and participants repeatedly reported that their doulas helped them find their "voice" in their healthcare. It is important to note that, in some cases, a doula is the only support person a woman may having during her childbirth experience. Feelings of pain and anxiety were decreased by doulas using support measures and understanding of the process of labor and birth (Gordon et al., 1999). Finally, healthy environments were established as doulas "held space" and promoted physical, emotional, and spiritual comfort for the birthing person (Hunter, 2012).

Conclusion

A doula's goal is to promote healthy birth outcomes and to assist a person during labor and childbirth in order to have the most satisfying birth experience possible. This literature review was performed to assess the impact that a volunteer or facility provided doula had on birth outcomes when care was given in the intrapartum period. There was an improvement seen in cesarean section rates, breastfeeding initiation rates, and use of pharmaceutical pain management with mixed evidence on length of labor, perineal integrity, and oxytocin use in labor. When addressing neonatal outcomes, this review discovered an improvement in preterm birth rates as well as a decrease in low birthweight infant. An increase in APGAR scores was seen in the literature though this evidence was not statistically significant. Finally, overall psychosocial outcomes were improved with doula care including birth experience, anxiety reduction, and pain perception. Jean Watson's Philosophy and Science of Caring Theory was integrated as doulas tend to encourage and provide holistic care to pregnant and birthing persons. This review demonstrates that offering doula support to birthing persons in the intrapartum period, either through volunteers or facility provided programs, can improve maternal, neonatal, and psychosocial outcomes.

References

American College of Obstetricians and Gynecologists [ACOG]. (2014). Safe prevention of the primary cesarean delivery: Obstetric care consensus no. 1. *American Journal of Obstetrics and Gynecology, 123*(3)*,* 693-711. https://doi.org/10.1097/01.aog.0000444441.04111.1d

American College of Obstetricians and Gynecologists [ACOG]. (2019). Approaches to limit intervention during labor and birth: Committee opinion no. 766. *American Journal of Obstetrics and Gynecology, 133*(2)*,* e164-173. https://www.acog.org/-/media/project/acog/acogorg/clinical/files/committee-opinion/articles/2019/02/approaches-to-limit-intervention-during-labor-and-birth.pdf

Bohren, M. A., Hofmeyr, J. G., Sakala, C., Fukuzawa, R. K. & Cuthbert, A. (2017). Continuous support for women during childbirth. *Cochrane Database of Systematic Reviews*, (8). https://doi.org/10.1002/14651858.CD003766.pub6

Bolbol-Haghighi, N., Masoumi, S. Z., & Kazemi, F. (2016). Effect of continued support of midwifery students in labour on the childbirth and labour consequences: A randomized controlled clinical trial. *Journal of Clinical and Diagnostic Research: JCDR, 10*(9), QC14–QC17. https://doi.org/10.7860/JCDR/2016/19947.8495

Byrskog, U., Small, R. & Schytt, E. (2020). Community-based bilingual doulas for migrant women in labour and birth- findings from a Swedish registered-based cohort study. *BMC Pregnancy and Childbirth, 20*(721) 1-12. https://doi.org/10.1186/s12884-020-03412-x

Chen, C. C., & Lee, J. F. (2020). Effectiveness of the doula program in Northern Taiwan. *Tzu Chi Medical Journal, 32*(4), 373–379. https://doi.org/10.4103/tcmj.tcmj_127_19

Christopher, M. (n.d.). ACNM applauds critical research that links integration of midwifery into state health care systems to improved birth outcomes. *American College of Nurse-Midwives.* https://www.midwife.org/ACNM-Applauds-Critical-Research-on-Improved-Birth-Outcomes

Dang, D. & Dearholt, S. L. (2018). *Johns Hopkins nursing evidence-based practice: Model and guidelines* (3rd ed.). Sigma Theta Tau International.

Darwin, Z., Green, J., McLeish, J., Willmot, H., & Spiby, H. (2017). Evaluation of trained volunteer doula services for disadvantaged women in five areas in England: Women's experiences. *Health and Social Care in the Community, 25*(2), 466-477. https://doi.org/10.1111/hsc.12331

Declercq, E.R., Sakala, C., Corry, M.P., Applebaum, A., & Herrlich, A. (2013). Listening to mothers III pregnancy and birth, report of the third national U.S. survey of women's childbearing experiences. *Childbirth Connection*. https://www.nationalpartnership.org/our-work/resources/health-care/maternity/listening-to-mothers-iii-pregnancy-and-birth-2013.pdf

DONA International. (2021). *What is a doula?* https://www.dona.org/what-is-a-doula/

Ellmann, N. (2020). Community-based doulas and midwives. *Center for American Progress.* https://www.americanprogress.org/issues/women/reports/2020/04/14/483114/community-based-doulas-midwives/

Everson, C. L., Cheyney, M., & Bovbjerg, M. L. (2018). Outcomes of care for 1,892 doula-supported adolescent births in the United States: The DONA International Data Project, 2000 to 2013. *The Journal of Perinatal Education, 27*(3), 135–147. https://doi.org/10.1891/1058-1243.27.3.135

Futch Thurston, L.A., Abrams, D., Dreher, A., Ostrowski, S.T., & Wright, J.C. (2019). Improving birth and breastfeeding outcomes among low resource women in Alabama by including doulas in the interprofessional birth care team. *Journal of Interprofessional Education & Practice, 17*. https://doi.org/10.1016/j.xjep.2019.100278

Giordano, J. & Surita, F. (2019). The role of the respectful maternity care model in Sao Paulo, Brazil: A cross-sectional study. *Birth Issues in Perinatal Care, 46,* 509-516. https://doi.org/10.1111/birt.12448

Gordon, N. P., Walton, D. McAdam, E. Derman, J. Gallitero, G. & Garrett, L. (1999). Effects of providing hospital-based doulas in health maintenance organization hospitals. *Obstetrics & Gynecology, 93*(3), 422-426. https://doi.org/10.1016/S0029-7844(98)00430-X

Gruber, K. J., Cupito, S. H., & Dobson, C. F. (2013). Impact of doulas on healthy birth outcomes. *The Journal of Perinatal Education, 22*(1), 49–58. https://doi.org/10.1891/1058-1243.22.1.49

Healthcare Cost and Utilization Project (HCUP). (2020). HCUP Fast Stats. *Agency for Healthcare Research and Quality*. www.hcup-us.ahrq.gov/faststats/national/inpatientcommondiagnoses.jsp.

Hunter, C. (2012). Intimate space within institutionalized birth: Women's experiences birthing with doulas. *Anthropology & Medicine, 19*(3), 315-326. http://dx.doi.org/10.1080/13648470.2012.692358

Kozhimannil, K. B., Alarid-Escudero, F., Vogelsang, C. A., Blauer-Peterson, C., Hardeman, R. R., & Howell, E. A. (2016). Modeling the cost-effectiveness of doula care associated with reductions in preterm birth and cesarean delivery. *Birth: Issues in Perinatal Care, 43*(1), 20–27. https://doi.org/10.1111/birt.12218

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. https://doi.org/10.2105/AJPH.2012.301201

Kozhimannil, K. B., Vogelsang, C. A., Hardeman, R. R. & Prasad, S. (2016). Disrupting the pathways of social determinants of health: Doula support during pregnancy and childbirth. *Journal of the American Board of Family Medicine 29*(3), 308-317. https://doi.org/10.3122/jabfm.2016.03.150300

LaCross, A., Groff, M., & Smaldone, A. (2015). Obstetric anal sphincter injury and anal incontince following vaginal birth: A systematic review and meta-analysis. *Journal of Midwifery & Women's Health, 60*(1), 37-47. https://doi.org/10.1111/jmwh.12283

Lanning, R. K., & Klaman, S. L. (2019). Evaluation of an Innovative, Hospital-Based Volunteer Doula Program. *JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing, 48*(6), 654–663. https://doi.org/10.1016/j.jogn.2019.08.004

MacDorman, M. F., & Declercq, E. (2019). Trends and state variations in out-of-hospital births in the United States, 2004-2017. *Birth, 46*(2), 279–288. https://doi.org/10.1111/birt.12411

McLeish, J., & Redshaw, M. (2018). A qualitative study of volunteer doulas working alongside midwives at births in England: Mothers' and doulas' experiences. *Midwifery, 56*, 53–60. https://doi.org/10.1016/j.midw.2017.10.002

March of Dimes. (2019, January 30). *March of Dimes position statement: Doulas and birth outcomes.* https://www.marchofdimes.org/materials/Doulas%20and%20birth%20outcomes%20position%20statement%20final%20January%2030%20PM.pdf#:~:text=The%20American%2

0College%20of%20Obstetrics%20and%20Gynecologists%20%28ACOG%29,and%20the%20Obstetric%20Care%20Consensus%20%28with%20Society%20for

March of Dimes. (2021). *Fighting premature birth: The prematurity campaign.* https://www.marchofdimes.org/mission/prematurity-campaign.aspx

March of Dimes. (n.d). Final natality data. *National Center for Health Statistics*. www.marchofdimes.org/peristats.

Martin, J. A., Hamilton, B. E., & Osterman, M. J.K. (2019). Births in the United States, 2018, NCHS data brief, no. 346. *U. S. Department of Health and Human Services*. https://www.cdc.gov/nchs/data/databriefs/db346-h.pdf

Moher, D., Liberati, A., Tetzlaff, J., Altman, D.G., & The PRISMA Group (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Med 6*(7): e1000097. https://doi.org/10.1371/journal.pmed1000097

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 and Child Health Journal, 12*, 372-377. https://doi.org/10.1007/s10995-007-0245-9

Muza, S. (2019). Research review: Doula care not only improves outcomes but it is cost-effective also. *Lamaze International.* https://www.lamaze.org/Connecting-the-Dots/research-review-doula-care-not-only-improves-outcomes-but-it-is-cost-effective-also-1

Office of Disease Prevention and Health Promotion. (2021). Reduce severe maternal complications identified during delivery hospitalizations. *U.S. Department of Health and Human Services: Healthy People 2030*. https://health.gov/healthypeople/objectives-and-

data/browse-objectives/pregnancy-and-childbirth/reduce-severe-maternal-complications-identified-during-delivery-hospitalizations-mich-05

Ooijens, J. C., Bakker, J. J. H, & de Graaf, I. M. (2018). Hospital-based birth support for women with trauma: A pilot study of a clinical doula program in the Netherlands. *Journal of Prenatal and Perinatal Psychology and Health, 32*(3), 242-249.

Petiprin, A. (2016). Watson's philosophy and science of caring. *Nursing Theory.* http://nursing-theory.org/theories-and-models/watson-philosophy-and-science-of-caring.php

Ravangard, R., Basiri, A., Sajjadnia, Z. & Shokrpour, N. (2017). Comparison of the effects of using physiological methods and accompanying a doula in deliveries on nulliparous women's anxiety and pain: A case study in Iran. *The Health Care Manager, 36*(4), 372-379. https://doi.org/10.1097/HCM.0000000000000188

Sakala, C., Declercq, E. R., Turon, J. M. & Corry, M. P. (2018). Listening to mothers in California: A population-based survey of women's childbearing experiences, full survey report. Na*tional Partnership for Women & Families.* https://www.chcf.org/wp-content/uploads/2018/09/ListeningMothersCAFullSurveyReport2018.pdf?utm_source=National%20Partnership&utm_medium=PDF_Link&utm_campaign=Listening%20to%20Mothers

Simkin, P. (2012). Position paper: The birth doula's role in maternity care. *DONA International.* https://www.dona.org/wp-content/uploads/2018/03/DONA-Birth-Position-Paper-FINAL.pdf

Stuebe, A., & Barbieri, R.L. (2020). Continuous labor support by a doula. In V. Berghella & B.A. Barss (Eds.), *UpToDate.* https://www.uptodate.com/contents/continuous-labor-support-by-a-doula

The Leapfrog Group. (2018). *New report on maternity care in the U.S. shows encouraging progress reducing episiotomies, but none reducing c-sections.* https://www.leapfroggroup.org/news-events/new-report-maternity-care-us-shows-encouraging-progress-reducing-episiotomies-none

Thomas, M. P., Ammann, G., Brazier, E., Noyes, P., & Maybank, A. (2017). Doula services within a Healthy Start Program: Increasing access for an underserved population. *Maternal and Child Health Journal, 21(*1), 59–64. https://doi.org/10.1007/s10995-017-2402-0

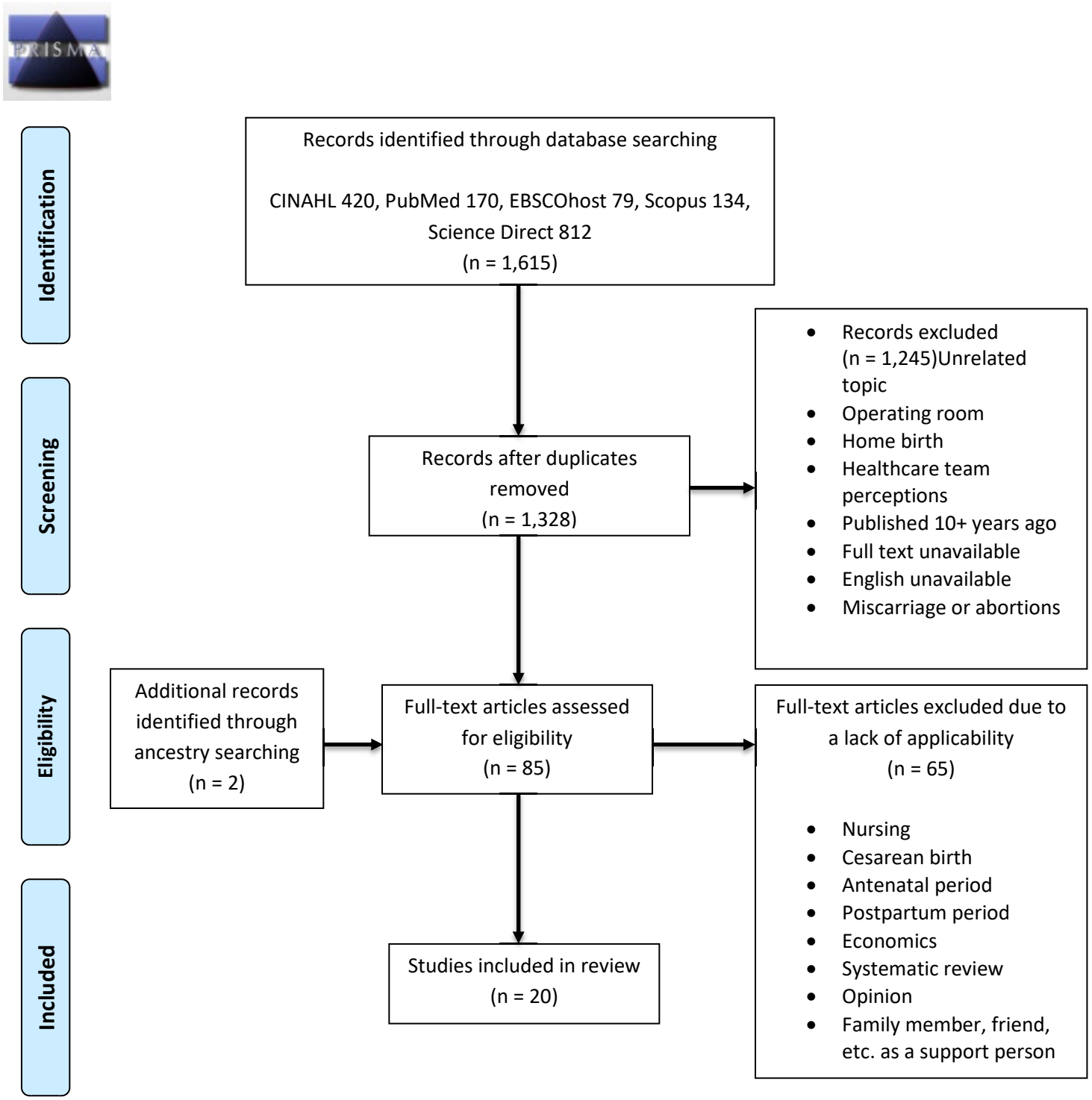
Van Zandt, S.E., Kim, S., & Erickson, A. (2016). Nursing student birth doulas' influence on the childbearing outcome of vulnerable populations. *Journal of Community Health Nursing, 33*(3), 128-138. http://dx.doi.org/10.1080/07370016.2016.1191869

Watson Caring Science Institute. (n.d.). *Caring science theory*. https://www.watsoncaringscience.org/jean-bio/caring-science-theory/

World Health Organization. (2019). *Maternal mortality*. https://www.who.int/news-room/fact-sheets/detail/maternal-mortality

Appendix A

PRISMA Model



Appendix B

Literature Review Matrix

Source: Bolbol-Haghighi, N., Masoumi, S. Z., & Kazemi, F. (2016). Effect of continued support of midwifery students in labour on the childbirth and labour consequences: A randomized controlled clinical trial. *Journal of Clinical and Diagnostic Research: JCDR*, *10*(9), QC14–QC17. https://doi.org/10.7860/JCDR/2016/19947.8495

Purpose/Sample	Design (Method/Instruments)	Results	Strengths/Limitations
Purpose: To examine the effect of continuous labor support supplied by trained midwifery students on labor and childbirth outcomes. Supportive care measures training is considered similar to that of doulas. **Sample/Setting:** The study was conducted between October 2013 and June 2015 at the Fatemieh Hospital maternity ward in Shahroud, Iran. 100 pregnant women between the ages of 18-45 years with a singleton live fetus and reactive non-stress test (NST) upon admission were randomly assigned to the test group and control group. The midwife students did not participate in the actual childbirth. **Johns Hopkins Evidence Appraisal** **Strength:** Level 1 **Quality:** B	Randomized control trial. -40 midwife students were randomly assigned to a support group and non-support group. 20 in the support group received formal continuous labor support training in addition to a partogram workshop, whereas the other 20 only participated in the partogram workshop. -Participants were randomly assigned to either the test or control group in a ratio of 1:1 using a randomized block design and computer-generated random numbers. -Those in the test group received care from one of the 20 midwifery students trained specifically for continuous labor support. These participants received a minimum of 30 minutes of support therapy in the active phase of labor. These support therapies included massage, heat therapy, cold therapy, concentration and distraction, creative visualization, birth ball, acupressure, aromatherapy, and music. -Those in the control group received routine care from non-supportive trained midwifery students. -SPSS-21.0 was used to perform data analysis. The Kolmogorov-Smirnov test normalized inspection of data. A chi-square test, Fisher-exact test, independent t-test, and the Mann-Whitney test were used to evaluate outcomes between the two groups. The significance level was marked at >0.05.	-Variables of both groups were consistent excluding age and education level. The average age of those in the test group was 25.60 years and in the control group was 23.42 years. The support group also had significantly more prevalence of those with a high school diploma or higher form of education. Other variables including BMI, occupation, employment status, gestational age, parity, and cervical dilation upon admission were statistically similar between the two groups. -Those in the test group demonstrated significantly shorter active labor times with an average of 7.90 hours compared to the control group with an average of 11.46 hours ($p<0.001$). -The duration of second stage labor was shorter in the test group with an average of 52.57 minutes compared to 64.14 minutes in the control group ($p=0.06$) but this was not found to be statistically significant. -Apgar scores in the test group were significantly higher at both one minute of age ($p<0.001$) and five minutes of age ($p=0.04$) compared to those in the control group. -No statistical significance was observed in any of the other labor and delivery outcomes including type of delivery (vaginal versus cesarean section) and the need for oxytocin in labor. -In reference to labor progress using the partogram, those in the test group were less likely to pass the alert line than those in the control group ($p=0.002$). This suggests that participants in the supportive care group were more likely to experience normal physiological labor progression than those in the control group. **Conclusion:** Having supportive care provided during labor significantly reduces the duration of the first stage of labor, improves the physiological labor progress, as well as improves neonatal Apgar scores at 1 and 5 minutes of age. Use of the partogram during lab can also help to improve quality of childbirth care by bringing awareness to physiological labor events. In addition, utilizing facility labor support trained and supplied staff (midwife students in this case) can be a cost-effective strategy in improving labor and delivery outcomes.	**Strengths:** -Exclusion criteria included presence of disease, psychological disorders including depression, pregnancy complications, placenta abruption, placenta previa, fetal anomaly, and previous uterine surgery. -The use of continuous labor support (doula) trained midwives in facilities in Iran are priceless for patients due to limited resources. **Limitations:** -Small sample size -There was no control over the performance of interventions by attending doctors and midwives such as amniotomy, vaginal exam, labor induction, and episiotomy.
Author Recommendations: Midwifery students should be utilized and trained in supportive labor measures as well as application of partograms for pregnant women during labor and delivery.			
Implications: Utilizing facility supplied staff trained specifically in supportive labor measures is a cost-effective strategy that can improve labor and delivery outcomes including length of labor, normal progression of labor, and neonatal Apgar scores at 1 and 5 minutes of age.			

Source: Byrskog, U., Small, R. & Schytt, E. (2020). Community-based bilingual doulas for migrant women in labour and birth- findings from a Swedish registered-based cohort study. *BMC Pregnancy and Childbirth, 20*(721) 1-12. https://doi.org/10.1186/s12884-020-03412-x

Purpose/Sample	Design (Method/Instruments)	Results	Strengths/Limitations
Purpose: To compare the birth outcomes of migrant women who had usual care without a community-based bilingual doula (CBD), migrant women who had CBD care, and Swedish-born women given birth with usual care. **Sample:** -880 migrant women that received CBD between 2008 and 2016 - 16,789 migrant women who did not have CBD support - 129,706 all Swedish-born women who gave birth in the same hospitals during the same time-period as the migrant women. Total of 147,375 women (Excluded incomplete data, ABs, and multiple gestation pregnancies) **Setting:** Stockholm, Sweden **Johns Hopkins Evidence Appraisal** **Strength:** Level III **Quality:** B	Quasi-experimental Participants were divided into a doula support group (experimental) and no doula group (control). Psychological outcomes were measured with postlabour questionnaires. Anxiety was measured using the State-Trait Anxiety Inventory scale. Depression was measured using the Edinburgh Postnatal Depression Scale. Pain scores were measured using the Visual Analog Scale. Satisfaction was measured using the Mother's Level of Childbirth Satisfaction Rating Scale. The Statistical Package for SPSS, Version 19 was used for statistical analysis. A chi-square and t-test compared variables.	**Results:** *Birth Outcomes (experimental vs. control, significant):* Oxytocin use: 66.7% vs 33.3% ($p < 0.001$) Natural childbirth: 87.0% vs 56.8% ($p < 0.001$) Cesarean birth: 13.0% vs 43.2% ($p < 0.001$) Total labor time: 795.76 min vs 517.86 min ($p < 0.001$) Duration of first stage: 755.50 min vs 482.48 min ($p < 0.001$) Not significant for Apgar scores at 1 and 5 min, use of epidural or analgesia, instrumental delivery, or rates of neonatal asphyxia, meconium staining, birth injury, breech delivery, or congenital malformations. *Psychological outcomes (experimental vs control):* Satisfaction rates: 9.12 ± 1.48 vs 8.80 ± 1.74, not significant Anxiety reduction: −14.61% vs. −8.92%, not significant Level of pain after childbirth: 22.96% vs. 12.88%, not significant **Conclusion:** Women in the doula group had higher rates of oxytocin use but this could be correlated with higher rates of vaginal deliveries. Doulas can also effectively reduce the rates of PPD.	**Strengths:** -Some control -Definitive conclusions -Consistent results **Limitations:** -Only one institute was observed so results cannot be generalized across all maternity units -Selection bias as doula services are aimed at low-risk women -Control bias as mothers may reject doulas services and opt for a c/s

Author Recommendations: There needs to be more studies on the use of community-based bilingual doulas for vulnerable women.

Implications: Having bilingual community focused doulas for vulnerable populations may decrease the rates of epidural rates but may increase the chance of having an emergency cesarean.

Source: Chen, C. C., & Lee, J. F. (2020). Effectiveness of the doula program in Northern Taiwan. *Tzu Chi Medical Journal*, *32*(4), 373–379. https://doi.org/10.4103/tcmj.tcmj_127_19

Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: To examine the influence of a trained doula program on birth outcomes and psychological factors. **Sample:** 220 women **Setting:** Taiwan **Johns Hopkins Evidence Appraisal** **Strength:** Level II **Quality:** B	Quasi-experimental Participants were divided into a doula support group (experimental) and no doula group (control). Psychological outcomes were measured with postlabour questionnaires. Anxiety was measured using the State-Trait Anxiety Inventory scale. Depression was measured using the Edinburgh Postnatal Depression Scale. Pain scores were measured using the Visual Analog Scale. Satisfaction was measured using the Mother's Level of Childbirth Satisfaction Rating Scale. The Statistical Package for SPSS, Version 19 was used for statistical analysis. A chi-square and t-test compared variables.	**Results:** *Birth Outcomes (experimental vs. control, significant):* Oxytocin use: 66.7% vs 33.3% ($p < 0.001$) Natural childbirth: 87.0% vs 56.8% ($p < 0.001$) Cesarean birth: 13.0% vs 43.2% ($p < 0.001$) Total labor time: 795.76 min vs 517.86 min ($p < 0.001$) Duration of first stage: 755.50 min vs 482.48 min ($p < 0.001$) Not significant for Apgar scores at 1 and 5 min, use of epidural or analgesia, instrumental delivery, or rates of neonatal asphyxia, meconium staining, birth injury, breech delivery, or congenital malformations. *Psychological outcomes (experimental vs control):* Satisfaction rates: 9.12 ± 1.48 vs 8.80 ± 1.74, not significant Anxiety reduction: −14.61% vs. −8.92%, not significant Level of pain after childbirth: 22.96% vs. 12.88%, not significant **Conclusion:** Women in the doula group had higher rates of oxytocin use but this could be correlated with higher rates of vaginal deliveries. Doulas can also effectively reduce the rates of PPD.	**Strengths:** -Some control -Definitive conclusions -Consistent results **Limitations:** -Only one institute was observed so results cannot be generalized across all maternity units -Selection bias as doula services are aimed at low-risk women -Control bias as mothers may reject doulas services and opt for a c/s

Author Recommendations: Future studies involving a wider range of facilities can help to better generalize the results across multiple maternity units in different healthcare institutions.

Implications: Continuous labor support provided by a doula can help to reduce cesarean rates. Women with cesareans experiencing higher anxiety. Thus, doula services promoting vaginal deliveries can assist to reduce maternal anxiety.

Source: Darwin, Z., Green, J., McLeish, J., Willmot, H., & Spiby, H. (2017). Evaluation of trained volunteer doula services for disadvantaged women in five areas in England: Women's experiences. *Health and Social Care in the Community, 25*(2), 466-477. https://doi.org/10.1111/hsc.12331

Purpose/Sample	Design (Method/Instruments)	Results	Strengths/Limitations
Purpose: To examine the health and psychosocial impacts on women who utilized volunteer doula services in underserved communities in England. **Sample:** 137 women who utilized the volunteer doula services prior to December 2012. **Setting:** Five different (non-specified) low-income communities in England. **Johns Hopkins Evidence Appraisal:** **Strength:** Level III **Quality:** A	Mixed-method study. Yates' continuity correction utilized descriptive statistics and chi-squared to analyze quantitative questionnaire data. The qualitative data interview transcripts and questionnaires were manually coded to identify themes. Both qualitative and quantitative data were integrated to form a comprehensive narrative. A questionnaire containing both open and closed-ended questions was utilized. A semi-structured interview guide was created to explore women's experiences with key issues raised by informants. Women were invited to share their experience via a questionnaire and/or interview which was completed either by telephone or self-completed via post. Interviews were audio-recorded and transcribed.	**Results:** Of the 137 participants, 47.8% of participants reported receiving volunteer doula support during antenatal, intrapartum, and post-natal periods. 26.5% of participants reported pregnancy and post-natal support without intrapartum support. Only 75 of the women (54.7%) had their birth attended by a volunteer doula for various reasons, however, this did not greatly affect the impacts felt by the participants. Women reported their relationship with the volunteer doula by seeing her 'as a friend' (88/118; 74.6%); 'like a professional' (32.2%); 'like a family member' (31.4%); 'like a sister' (21.2%); 'like a mother' (17.8%); 'like an advocate' (17.8%); 'someone like me' (16.9%); and 'like a role model' (14.4%). Benefits reported included feeling listened to by a non-judgmental and non-biased party, relief of feelings of isolation, depression, pregnancy worries, and birth fears, feeling supported in choices, being more in control of their maternity care, improved confidence, improved communication with healthcare professionals, and help in navigating services. Negative experiences were also reported in 15 of the women who felt the doula did not help them the way that had hoped, inability to provide continuity of care, and limitation of services provided (such as not assisting with household chores or care for other children). **Conclusion:** Volunteer doula support in conjunction with proper maternity services is potentially beneficial for disadvantaged (ie: low-income) women.	**Strengths:** Interpreter services were utilized for those that did not speak English so that data could still be collected Largest independent evaluation of trained doula support services in the UK Utilizing both questionnaires and interviews allowed for more detailed exploration of experiences Data collected from five different communities Qualitative coding was utilized to identify themes and synthesize data **Limitations:** Two communities restrict doula services to women from ethnic minority groups Small sample size Difficulty contacting participants who utilized the volunteer doula service years prior A beginning timeframe was not set therefore memory bias could be present

Author Recommendations: Further consideration should be paid to ending the professional doula-client relationship as this was identified as an object of distress during an emotionally heightened period.

Implications: Doula support services offered to disadvantaged women may help to improve health and psychosocial outcomes during pregnancy, delivery, and the post-natal period. Consideration should be given to extend the post-natal support period to decrease feelings of loss once the professional relationship is ended.

Source: Everson, C. L., Cheyney, M., & Bovbjerg, M. L. (2018). Outcomes of care for 1,892 doula-supported adolescent births in the United States: The DONA International Data Project, 2000 to 2013. *The Journal of Perinatal Education*, *27*(3), 135–147. https://doi.org/10.1891/1058-1243.27.3.135

Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: To report on outcomes of adolescent childbearing women supported by doulas in the intrapartum period in the United States. **Sample**: 1,892 pregnant adolescent patients between 15 and 19-years-old who utilized doula support in the intrapartum period. 87.6% of the doulas were either hospital supplied or volunteer. (90% were nulliparous) **Setting**: U.S. -87.8% gave birth at a hospital -11.5% gave birth at a hospital-affiliated or freestanding birth center -0.7% gave birth at home **Johns Hopkins Evidence Appraisal** **Strength**: Level II **Quality:** B	A national retrospective cohort study. Data was collected from the Doulas of North America (DONA) International birth doula Master File from 2000 to 2013. This registry records data on doula supported births in the United States related to 35 demographic and perinatal health statistics of doula attended births. Outcomes of care were analyzed by common denominators including variations of labor length in hours, doula support length in hours, pharmacologic pain relief, interventions, monitoring, mode of birth, gestational age at birth, birth weight, NICU admissions, and initial breastfeeding. Calculation of frequency, measures of central tendency, measures of variability, and confidence intervals was completed using IBM SPSS Version 22.0.	Length of Labor and Doula Support: -Average length of doula support during labor was 8.0 hours -The average length of labor via maternal self-report was 12.0 hours -The average length of labor from time of admission to birth was 10.0 hours The data collected was then compared to overall adolescent birth data in the United States. The rate of cesarean section was 12.6% in this sample size compared to the national rate of 20.4% for adolescent childbearing women. The rate of prematurity was 4.9% compared to 9.91% nationally. The epidural anesthesia rate was also lower in this sample size at 45.8% compared to 63.5% nationally. The breastfeeding initiation rate was 60% compared to 50.7%. When compared to Healthy People 2020 goals, doula supported women in this sample surpassed target goals as demonstrated by a 12.6% cesarean rate versus 23.9% target rate and 4.9% preterm birth rate versus 11.4% target rate. The SGA rate (10.2%) was higher than the Healthy People 2020 target rate of 7.8% and national rate of 9.48%. Breastfeeding initiation for this sample was also worse than national rates. **Conclusion**: In relation to adolescent deliveries in the United States, this doula supported sample size demonstrated improved health outcomes and lower rates of intervention.	**Strengths**: -Adequate sample size -Comparison of sample data to national data -Measurement of pertinent maternal and neonatal health outcomes **Limitations**: -The data collection tool was not designed by researchers and therefore has weaknesses in wording of question and co-variables -The data collection tool does not account for number of prenatal visit nor services provided prior to the intrapartum period -There is a chance for data entry errors as data was first entered into the Master File by the supporting doula then by DONA International volunteers -Information such as gestational age and timing of fetal demises is limited

Author Recommendations: Perform a matched cohort study to control for risk level of doula supported versus non-doula supported adolescents to examine the possible presence of increased improvement in the variables aforementioned. Additionally, model of care (obstetric versus midwifery) as well as duration, timing, and quality of doula support should be included as control variables.

Implications: Women in the adolescent age group are at the beginning of their reproductive lifestyle, and if they so choose to have more children it is important to keep their birth options open as demonstrated by a significant decreased cesarean rate in the doula supported intrapartum period. Furthermore, the introduction of a birth doula in the prenatal period is hypothesized to contribute to decreased rate in premature births seen. Interprofessional collaboration amongst childbirth educators, providers, and doulas is vital to address the social drawback of health experienced by adolescent mothers that lead to poor outcomes related to SGA, prematurity, fetal demise, and breastfeeding initiation. Insurers, perinatal educators, clinicians, and public health policies should recognize and support doulas as a cost-effect approach in improving maternal and neonatal health outcomes while simultaneously decreasing gaps of care for adolescents.

<table>
<tr><td colspan="4">Source: Futch Thurston, L.A., Abrams, D., Dreher, A., Ostrowski, S.T., & Wright, J.C. (2019). Improving birth and breastfeeding outcomes among low resource women in Alabama by including doulas in the interprofessional birth care team. Journal of Interprofessional Education & Practice, 17. https://doi.org/10.1016/j.xjep.2019.100278</td></tr>
<tr><td>Purpose/Sample</td><td>Design (Method/Instruments)</td><td>Results</td><td>Strengths/Limitations</td></tr>
<tr><td>Purpose: To assess if doulas included in the birth care team for low resource mothers in Alabama improved birth outcomes.

Sample: 120 pregnant women from low resource families receiving continuous labor support by doulas provided by the BirthWell Partners program were compared to 3,782 patients who received Medicaid covered births but did not have a doula.

Setting: Births from 2013-2014 in Jefferson County, Alabama, United States.

Johns Hopkins Evidence Appraisal
Strength: Level II
Quality: B</td><td>Retrospective cohort study

Data was collected from the Alabama Vital Events Database. Outcomes assessed included incidence of induction, preterm birth, low birth weight infants, epidural anesthesia, birth by cesarean, and breastfeeding initiation in the hospital. Incidence percentages were reported using descriptive statistics. Outcomes were compared using maximum likelihood odds ratios and 95% confidence intervals. A p-value of less than or equal to 0.05 was considered significant.</td><td>Results: When compared to the doula supported group, mothers in the Medicaid group were:
-3x more likely to receive an epidural
-1.8x more likely to give birth by cesarean

Women in the doula supported group were 10.5x more likely to initiate breastfeeding in the hospital. When further comparing White to Black mothers, Black mothers receiving doula support were significantly less likely to have an epidural and significantly more likely to breastfeed.

Babies born to doula supported mothers had a lower incidence of preterm birth and low birth weight, however, this difference was not statistically significant.

Conclusion: Including doulas in the birth care team led to statistically significant reduced epidural and cesarean rates and increased breastfeeding rates for low resource mothers in Alabama.</td><td>Strengths:
-The doula supported low-resource population was compared to Medicaid recipients rather than the general population better controlling for socioeconomic variables
-The BirthWell Partners program is a group of trained doulas certified by DONA International

Limitations:
-Small sample size
-Insufficient time spent with the client in the prenatal period
-Limited racial diversity among doulas
-Possibility for underreported induction rates in data
-Clients in the doula supported group could have been predisposed to being more motivated for a birth with less interventions and initiating breastfeeding</td></tr>
<tr><td colspan="4">Author Recommendations: Future studies should include a larger sample size, determining the optimal amount of time spent between the doula and client in the prenatal period, and allowing for racial matching between doulas and clients. Also, obtaining more accurate reporting on induction and elective cesarean rates can further clarify the impact doulas have on these birth outcomes. Further studies can also aim to control for mothers referred to doula care versus those who seek it out independently.</td></tr>
<tr><td colspan="4">Implications: Funding doulas as a part of the birth care team can be a cost-effective strategy to improve birth outcomes. Further comparing data by race determined that doulas could help to decrease the effects of poor health outcomes amongst Black women due to social detriments. In addition, the positive impact on breastfeeding initiation can have a positive long-term impact on health outcomes. Furthermore, doulas can improve patient’s health literacy and enhance communication with the healthcare team.</td></tr>
</table>

<table>
<tr><td colspan="4">Source: Giordano, J. & Surita, F. (2019). The role of the respectful maternity care model in Sao Paulo, Brazil: A cross-sectional study. Birth Issues in Perinatal Care, 46, 509-516. https://doi.org/10.1111/birt.12448</td></tr>
<tr><td>Purpose/Sample</td><td>Design (Method/Instruments)</td><td>Results</td><td>Strengths/Limitations</td></tr>
<tr><td>Purpose: To assess the effectiveness of respectful maternity care (RMC) groups on cesarean rates, frequency of various childbirth practices, perinatal outcomes, and the birth experience in Brazilian women.

Sample: 580 low-risk women that participated in the RMC support group.
-All of the participants had to receive medical care from one of the 18 private care doctors and their practice often included: midwives and doulas, valued physiological process of labor, and had a csec rate near 15%

Setting: Hospital births that took place in 9 private health care centers in Sao Paulo from 2014-2017.

Johns Hopkins Evidence Appraisal Strength: Level II

Quality: B</td><td>Cross-sectional study
Online questionnaire
Pearson chi-square test performed- the significance level for all tests was 5% and the SAS System on Windows software was used.</td><td>Results:
-75.5% of the births of women that received care from the RMC were attended by a doula
-Women who used RMC had a cesarean rate of 14.7%, Private maternity centers (similar to the centers in this study) had an 82% cesarean rate
-Positive birth practices were reported in 80% of births
(positive birth practices: discussed birth plan, had respect and privacy, had a support person present, had nonpharmacological methods for pain relief, freedom to move and be verbal, support of immediate skin-to-skin care.)
-Women in RMC group had an episiotomy rate was 1.2%, compared to the 56% episiotomy rate in Brazil
- Women in RMC group: 83.1% had a positive birth experience, and only 5.7% had an experience of obstetric violence- compared to 25% reporting mistreatment during childbirth care in Brazil
-2.4% of women needed a blood transfusion (0.26% rate in the US)

(Additional data on women who were apart of the RMC group that had no direct comparative data: 63.1% had a perineal tear, 94.1% breastfed for at least 6 months, VBAC rate was 87.1%, 5-min Apgar score greater than or equal to 7: 100%, 6% of infants went to the NICU)

Conclusion:
-There were better perinatal outcomes associated with the RMC group and nearly 90% of women were able to breastfeed for at least 6 months. The epidural rate was less than 50%, with women having full access to anesthesia if requested. There was a higher rate of the feeling of satisfaction around birth, and minimal obstetric violence was noted 5.7% compared to the national average of 25%.</td><td>Strengths:
-Large sample size
-Thorough systematic review included

Limitations:
-The study did not explain the doulas training that were present or if the doulas were self-employed or provided by the hospital
- The sample size was mainly white, middle to high income participants-could not be generalized
- Private care doctors may not be covered under state issued insurance so also not being able to apply to other populations
-Some of the participants in this group became birth activists and would not be considered ‘general population’
-Women that had a bad experience may have decided to not partake in the survey after their poor outcomes. The attrition rate was 249 from the first sample of 1012 (before the inclusion criteria was introduced).</td></tr>
<tr><td colspan="4">Author Recommendations: That this model of care should be applied throughout Brazil and internationally. Further research should be done on the use of RMC and the effect it has on hemorrhage.</td></tr>
<tr><td colspan="4">Implications: When a patient has access to an interdisciplinary team of midwives, doulas, and a support group, there is a lower cesarean rate, adverse birth outcomes, and women have an overall ‘positive experience’ surrounding their birth.</td></tr>
</table>

Source: Gordon, N. P., Walton, D. McAdam, E. Derman, J. Gallitero, G. & Garrett, L. (1999). Effects of providing hospital-based doulas in health maintenance organization hospitals. *Obstetrics & Gynecology, 93(*3), 422-426. https://doi.org/10.1016/S0029-7844(98)00430-X

Purpose/Sample	Design (Method/Instruments)	Results	Strengths/Limitations
Purpose: To evaluate whether providing doulas during hospital-based labor affects mode of delivery, epidural use, breast-feeding, and postpartum perceptions of the birth, self-esteem, and depression. **Sample/Setting:** Nullipara enrollees in a group-model health maintenance organization who delivered in one of three health maintenance organization–managed hospitals in Northern California 149 women had doulas 165 had usual care Total of 314 **Johns Hopkins Evidence Appraisal** **Strength:** Level 1 **Quality:** C	RCT Invited to be in a randomized study of doula-assisted labor and delivery -assigned at the time of admission to the L&D unit Data was obtained from the mothers' medical charts, study intake forms, and phone interviews conducted 4-6wks postpartum	Women who had doulas: -less epidural use 54.4% versus 66.1%, p<.05 -more likely to rate the birth experience as good 82.5% versus 67.4% -feel they coped very well with labor 46.8% versus 28.3% -felt labor had a very positive effect on their feelings as women 58.0% versus 43.7% -perception of their bodies' strength and performance 58.0% versus 41.0%. -The two groups did not differ significantly in rates of cesarean, vaginal, forceps or vacuum delivery, oxytocin admin, or breastfeeding, nor did they differ on PPD or self-esteem measures. **Conclusion:** Labor support from doulas had a desirable effect on epidural use and women's perceptions of birth but did not alter need for operative deliveries.	**Strengths:** Somewhat of a standardized training of doulas: they had to attend an approved training program, be supervised at two births, and attend a half day at the hospital on the L&D unit. -Had one interviewer for all cases and was unaware of which group the woman was in until the end of the survey **Limitations:** -Small sample size -Many women were excluded due to strict requirements and age -More than half of the participants were white and college graduates -Limited comparison between different races -Thought that the reason there was no difference in the c-sec rate was because of the experience of the doulas and when they began to interact with the laboring women. In this study the doulas were called in from the home to come to the hospital which at that point the patient may have already asked for an epidural or labor has progressed passed the benefit of having a doula.

Author Recommendations: Try to have a large sample size to have more statistically significant data. Author stated "Over the years, technology has replaced the human aspect of patient care without any improvement of outcomes, and it might be appropriate to reassess the effect of experienced women labor companions on labor and delivery.

Implications: Guaranteeing to provide women with doulas during the prenatal period and having the doulas begin to work with the women soon after, or even before hospital admission, might cut costs and medical consequences associated with epidurals. This study did not find any statistical significance in their doula program and decreasing cesarean rates.

Source: Gruber, K. J., Cupito, S. H., & Dobson, C. F. (2013). Impact of doulas on healthy birth outcomes. *The Journal of Perinatal Education*, *22*(1), 49–58. https://doi.org/10.1891/1058-1243.22.1.49			
Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: Compare birth outcomes of mothers participating in the same childbirth education program but divided into a non-doula support group and a doula support group. **Sample:** Pregnant females aged 13-30 years who attended at least 3/8 offered childbirth classes through the Healthy Beginnings Doula Program (HBDP) were given the choice to have a volunteer doula during labor and delivery or not. Of the qualifying participants 128 mothers chose not to have a doula and 97 mothers did have a doula. **Setting:** Hospital based deliveries of those participating in the YWCA Greensboro Healthy Beginnings Doula Program from January of 2008 through December 2010. **Johns Hopkins Evidence Appraisal:** **Strength:** Level III **Quality:** B	Nonexperimental design. Participants were separated into two groups: non-doula mothers versus mothers with doulas. This separation was based on the personal choice of the participant which did not involve randomized assignment. A z-test analysis was used to compare data collected. Variations between the two groups were considered significant demonstrated by a *p* value of less than 0.05. Participants in the HBDP were identified to be pregnant females at an increased risk for adverse birth outcomes due to factors such as domestic violence, substance abuse, poverty, young age, or insufficient socioeconomic resources. Eight *Healthy Moms Healthy Babies* childbirth classes offered through the program mirrored the foundational aspects of Centering Pregnancy. It was expected that women involved in the program would attend at least three of these classes in order to adequately benefit from the program in reducing the risk for adverse birth outcomes. Volunteer certified doulas were then offered to those who met the criteria. Doulas were expected to meet with mothers at least twice during pregnancy, offer continuous support during labor and delivery, and remain for at least one hour during the immediate postpartum period.	-Measures assessed included method of delivery, occurrence of a low birth weight (LBW) infant, birth complications experienced by either the mother or infant, and initial breastfeeding success. -Of the 225 qualifying participants, 128 (57%) chose not to have a doula and 97 (43%) had a doula. -Method of delivery: Of the non-doula mothers, 28 (21.9%) had vaginal birth, 68 (53.1%) had a vaginal birth with an epidural, 31(24.2%) had a cesarean section, and 1(0.8%) was not reported on. The results were not found to be significantly different compared to doula mothers of which 26 (26.8%) had a vaginal birth, 52 (53.6%) had a vaginal birth with an epidural, and 19 (19.6%) had a cesarean section. Of note, the doula support group had few cesarean section cases though the difference was not found to be statistically significant. -LBW infant: Defined as less than 5.5 pounds at birth for a term infant. Statistical significance ($p<0.04$) was found when comparing total cases between the two groups. It was discovered that participants in the non-doula support group (n=11 (8.6%)) were four times more likely to have an LBW infant than those that received doula support (n=2 (2.1%)). There was no significant difference found when comparing age groups (adolescent versus adult) alone. -Birth complications: Though doula assisted mothers were two times less likely to experience birth complications (n=10 (10.3%)) compared to non-doula assisted mothers (n=25 (19.5%)) this difference was not found to be statistically significant. -Initiation of breastfeeding: Breastfeeding initiation amongst the mothers with doula support (n=77 (79.4%)) was found to be significantly greater ($p<0.03$) compared to mothers without doula assistance (n=86 (67.2%)). **Conclusion:** Doula support can motivate mothers to maintain healthy pregnancies, autonomous and supported labors, and improved birth outcomes.	**Strengths:** -The two groups were significantly similar in accounting for ethnicity, socioeconomic status, age, and geographical location. -Adequate time period for gathering data. Sufficient sample size for the purpose of the study. **Limitations:** -Participant self-selection to study groups -Lack of control over the influence of non-doula support persons -Doula support was not independent of other benefits of the program
Author Recommendations: Further research involving volunteer doula assistance should be done to account for the ideal time for initiation of doula services, the impact of individual versus group care, the impact on informed decision making, and women's' feelings and reasoning for choosing to utilize doula support versus declining doula support.			
Implications: Support and encouragement from doulas during pregnancy combined with provided childbirth education classes seems to improve prenatal care and health decisions of the mothers as evidenced by fewer incidences of LBW infants. The reduction of cesarean births and birth complications as well as the significant success of initiation of breastfeeding shows that doula involvement early in pregnancy can be beneficial in reducing the risk of adverse birth outcomes. Volunteer doulas especially can be constructive in reducing adverse birth outcomes in at-risk populations while simultaneously reducing financial burdens.			

Source: Hunter, C. (2012). Intimate space within institutionalized birth: Women's experiences birthing with doulas. *Anthropology & Medicine, 19*(3), 315-326. http://dx.doi.org/10.1080/13648470.2012.692358			
Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: Assess the dynamics of the patient and doula relationships during the birth experience. **Sample:** Nine doulas and nine mothers that did not enter the study as dyads. **Setting:** A Midwestern American town with mostly middle-class white individuals and a larger than average number of professionals. **Johns Hopkins Evidence Appraisal:** **Strength:** Level III **Quality:** A	Ethnographic qualitative design as researchers observed behaviors then conducted interviews to explore themes. Recruiting was done on a snowball basis via recommendations. Purposeful sampling was used to represent the clientele population. Data was collected over a period of three years (2003-2006). Mothers were interviewed after their childbirth experience with their doula. Interviews were approximately 1.5 hours in length. Critical ethnographic analysis was used to establish common themes of behaviors utilized by doulas during the birth experience and mothers perceptions of those themes. An Atlas ti qualitative software was used to analyze and organize the data.	**Results:** *Holding space (behaviors enacted by doulas during birth):* -doula techniques (hand holding, breathing, etc.) -relationships, which allowed for advocacy of the mother's birth wishes as well as knowledge of personal beliefs and values -physical support (movement, walking, etc.) -emotional support (recognizing and responding to emotional changes) *Creating and maintaining intimacy:* -Going beyond the professional relationships to establish comfort and trust -Being a part of the woman's team in a more intimate manner than hospital staff -Doulas develop a one-sided 'motherly' relationship that ceases after the birth experience -Participants viewed the relationship as 'being with me' allowing for surrender to the process *Interpretation of care:* -Doulas provided 'woman support' (offering water, wiping away blood or other secretions, etc.) -Doulas provided a different kind of care, a 'closeness' that was 'very personal' than medical staff -The 'mother role' could be offending to staff as there was woman specifically dedicated to caring for the mother **Conclusion:** Doulas create an environment of 'holding space' to allow for the establishment of intimate relationships with their clients and positive birth experiences.	**Strengths:** -An external data reviewer was used during data analysis to avoid researcher bias -Notes were shared with participants to ensure they agreed with the recorded data -Recurring themes emerged in the first level of coding that included doulas' behaviors during the childbirth experience. The second level analysis overlapped mothers' feelings of those behaviors which allowed for more complex themes of both the doula behavior and the mothers' perception of that behavior **Limitations:** -Lack of diversity in the population as only one participant was non-white, unmarried, and of lower socioeconomic status -It may be difficult to replicate these results on an institutional level as women spent a considerable amount of time with their doulas leading up to the birth experience
Author Recommendations: Assess diverse doula populations using a critical qualitative design technique to better examine community-based doulas projects.			
Implications: The role of the doula is unique, effective, and important as they provide a level of intimacy that is not replicated by others. The doulas primary goal is care of the mother and upholding her needs and wishes. In doing so, they create an environment of 'holding space' for women's' birth experience. This refers to both physical and emotional aspects of 'holding space.'			

Source: Kozhimannil, K. B., Alarid-Escudero, F., Vogelsang, C. A., Blauer-Peterson, C., Hardeman, R. R., & Howell, E. A. (2016). Modeling the cost-effectiveness of doula care associated with reductions in preterm birth and cesarean delivery. *Birth: Issues in Perinatal Care*, *43*(1), 20–27. https://doi.org/10.1111/birt.12218

Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: To compare the rates of preterm birth and cesarean sections while using a doula and without a doula. This study also reviewed the potential cost effectiveness that a doula can bring to Medicaid insurance customers **Sample:** -Medicaid-funded singleton births regionally N=65,147 -Medicaid-funded births with doula care provided by a nonprofit doula organization in a large metropolitan city in the upper Midwest N=1935 -All members of the doula group received at least one prenatal visit by a doula **Setting:** Medicaid insured patients in MN, ND, SD, MI, IA, IL, IN, OH, MO, NE, KS, WI and doula attended births were in a large metropolitan city in the upper Midwest -Births between 01/01/2010- 01/31/2014 **Johns Hopkins Evidence Appraisal:** **Strength:** Level III **Quality:** B	Retrospective study that used secondary data analysis and an observational study design -Looked at preterm birth (<37wks) rates and cesarean rates of both populations - Used the National Inpatient Sample (NIS) to view a 20% sample of discharges from U.S. hospitals -State data on preterm birth rates from HCUPNet	-In the preterm birth group there was not a decrease in odds of a cesarean birth -In the full-term birth group, if a doula was present 20.4% vs without doula 34.2% (AOR=0.44, 95%CI {0.39-.49}) -Women with doula care had 22% lower odds of having a preterm birth compared with other Medicaid users. (4.7% vs 6.3%) -The savings associated with doula care at births for Medicaid patients would be $58.4 million and have a decrease of 3,288 preterm births per year. **Conclusion:** -Providing a doula both during labor and during the prenatal period may be associated with lower risk of preterm birth and cesarean section. Providing a doula may be cost-effective due to the decreased number of associated costs with preterm births and operative deliveries.	**Strengths:** -Large sample size **Limitations:** -Unable to know how many prenatal doulas visits they had or how much time the doula was there for the intrapartum period. -First cost-effective analysis of doula care in the US Medicaid program. -The doula data came from one program in one state, so we may be unable to apply it to every population of people. -Risk of selection bias -It was difficult to measure if the general population of Medicaid patients had a doula present or not. So, some of the comparisons could have been with both births having a doula present.

Author Recommendations: It would be beneficial to have future studies compare women with and without access to a doula between women who had a doula present. Then, analyze doula care through a RCT to see how prenatal doula support can affect cesarean and preterm birth rates.

Implications: There were no increased risks of preterm birth and cesarean section found when having a doula present in the prenatal period and in labor. If doulas are provided to our patients there can be a decrease in preterm births and cesarean deliveries. Providing a doula to women in labor may decrease the costs of hospitalizations associated with preterm births and operative deliveries.

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. https://ajph.aphapublications.org/doi/10.2105/AJPH.2012.301201

Purpose/Sample	Design (Method/Instruments)	Results	Strengths/Limitations
Purpose: To compare birth outcomes for patients who use Medicaid insurance who had prenatal education and labor support from trained doulas with a similar sample of women nationally. Then the authors estimated the cost savings of using a doula for childbirth education and labor support. **Sample**: All participants had Medicaid-funded births in the US. One group of women had a doula care (provided by Everyday Miracles) and the other group did not have doula care during their labor and delivery. -Women on Medicaid with a doula: 1079 -Women on Medicaid without a doula (nationwide): 279,008 **Setting**: The Everyday Miracles program took place from 2010-2012 in Minneapolis, MN. **Johns Hopkins Evidence Appraisal** **Strength**: Level III **Quality**: A	Women with Medicaid insurance were referred to Everyday Miracles to be provided with childbirth and lactation education, prenatal care, care during labor and postpartum care from a doula at no cost. Everyday Miracles attempted to match doulas to clients with the same language, race and ethnicity. The data on patients with a doula at their birth came from the anonymous information collected on enrollment of the program and after childbirth. The outcomes (found in the HCUP NIS) and costs (from HCUPNet) were compared between every (singleton) birth in the US in 2009 and the (singleton) births that were attended by a doula from Everyday Miracles between January 2010 and April 2012. The outcomes reviewed included cesarean rate and preterm birth rate.	When compared to the general population the doula supported women: -Lower rates of gestational hypertension (3.8% vs 7.8%) -No statistically significant change for GDM -more ethnically/racial diverse -Lower c-section rates: 22% compared to 31% -Lower preterm birth rate: 6.1% vs. 7.3% -Doula care decreased the odds of having a cesarean birth by 40.9%. Factors found to be associated with c-section and PTB: -Black race -AMA -Gest HTN -GDM **Conclusion**: Providing a doula to women on state insurance who may have a lower socioeconomic status, can decrease the chance of having a cesarean section, preterm birth, gestational hypertension, and gestational diabetes. If a state insurance program like Medicaid offered funding for doulas, they may be able to improve birth outcomes and reduce the cost of childbirth related hospitalizations.	**Strengths**: -The doulas (at Everyday Miracles) all had the same training requirements and were all leading towards becoming certified doulas. -There were doulas of different nationalities assisting women of different nationalities:12 white, 4 Latino, 3 Somali 2 Hmong and 1 Black **Limitations**: - All of the doulas came from one program in one state -Two different time periods (2009) compared to 2010-2012. -Did not have data on the general population regarding their additional risk factors, education, marital status or access to prenatal care. -The doula group of women may have had bias in what childbirth education to use since the doulas also provided education. -It was difficult for the authors to find an accurate cost for childbirth-related hospitalizations.

Author Recommendations: States should consider creating their own cost analysis comparing the cost of childbirth related hospitalizations with more instrumental births and cesareans to providing the cost of a doula resulting in a less expensive birth. With the high maternal mortality rate associated with racial/ethnic disparities, maybe doulas should be considered to be included in childbirth care to improve birth outcomes.

Implications: When providing women with low-cost resources like childbirth education and the continuous labor support of a doula the odds of having a cesarean birth decreases dramatically. There are also decreased odds of having a preterm birth, gestational hypertension, and gestational diabetes. Women should be provided with free or low-cost doulas during labor and childbirth to improve birth outcomes.

<table>
<tr><td colspan="4">Source: Kozhimannil, K. B., Vogelsang, C. A., Hardeman, R. R. & Prasad, S. (2016). Disrupting the pathways of social determinants of health: Doula support during pregnancy and childbirth. Journal of the American Board of Family Medicine 29(3), 308-317. https://doi.org/10.3122/jabfm.2016.03.150300</td></tr>
<tr><td>Purpose/Sample</td><td>Design (Method/Instruments)</td><td>Results</td><td>Strengths/Limitations</td></tr>
<tr>
<td>Purpose:
To assess the perspectives of how a doula may influence a woman’s social determinant of health (SDOF), and their outcomes of pregnancy and birth on ethnically diverse and low socioeconomic class women.

Sample: 13 women, 4 focus groups consisting of racially/ethnically diverse pregnant women in a low socioeconomic class
-Had to be fluent in English to participate

Setting: Minneapolis, MN
-Recruited based on flyers, emails and word of mouth

Johns Hopkins Evidence Appraisal:
Strength: Level III
Quality: A</td>
<td>Descriptive Qualitative Study:
Used the Gelberg-Anderson model of health behavior and parts of the Good Birth Framework to create a model to describe the role of doulas, medical care which aligns the pathway for birth outcomes. The social determinants of health also contributed to this model.

Found themes that aligned with the good birth framework: agency, personal security, respect, knowledge, and connectedness

Data analyzed separately then the researchers reviewed the transcripts from the discussions to find specific how mechanisms of doula support associated with birth outcomes</td>
<td>Results:
-76.9% had a doula with current pregnancy
- About 40% of women who were in the study disclosed they had a pregnancy complicated by a comorbidity.

Themes:
Agency-the birthing woman had the choice and ability to be in control of their healthcare. “My husband and I are taking childbirth classes but we still feel need for a doula. You can’t remember everything and having experienced person around is important. Especially if we want to avoid a c-section….”

Personal security- the feeling of being in a safe environment “… It’s very comforting to know that you have somebody [who] has your back and explaining everything.”

Connectedness-having someone that the birthing woman can trust “I definitely think doulas are helpful like with mental-especially with stress because even if you’re not alone, sometimes you may feel alone. You might not want to talk to anyone else except for the person that actually wants to talk about babies.” “I’m really stressed out and worry about things a lot and [a] doula is there to support you and help you through stressful moments… [She] communicates with you and helps you along the way….”

Conclusion: The responses of the participants stated that having a doula may be a way to help women overcome the barriers that prevent them from having a healthy pregnancy and childbirth.
-Doulas helped provide social support to women to help improve the communication between women and their health care providers and increase their knowledge around pregnancy.</td>
<td>Strengths:
-Thorough, analyzed by two separate researchers.
-The researchers were able to get saturated data from the 4 focus groups
-Consistent themes identified

Limitations:
-Small convenience sample that can’t be applied to the general population
-Not all women in the study had a doula or had access to a doula</td>
</tr>
<tr><td colspan="4">Author Recommendations: Although doula services can be a potential benefit, there is a lack of diversity in doulas which can then be seen as a barrier of their use. There needs to be more research done on providing nonmedical support to pregnant women who have underlying comorbidities.</td></tr>
<tr><td colspan="4">Implications: Doula support is a nonmedical way to not only acknowledge social determinants of health (SDOH), but to provide care to women when the impacts of SDOHs are heightened. Doula support helps women feel connected, empowers them to make decisions regarding their healthcare, and the capability to feel safe while birthing.</td></tr>
</table>

<table>
<tr><td colspan="4">Source: Lanning, R. K., & Klaman, S. L. (2019). Evaluation of an Innovative, Hospital-Based Volunteer Doula Program. JOGNN: Journal of Obstetric, Gynecologic & Neonatal Nursing, 48(6), 654–663. https://doi.org/ 10.1016/j.jogn.2019.08.004</td></tr>
<tr><td>Purpose/Sample</td><td>Design (Method/Instruments)</td><td>Results</td><td>Strengths/Limitations</td></tr>
<tr><td>Purpose: To evaluate program growth, doula characteristics, patient satisfaction, and characteristics and perceptions of labor and delivery nurses who work with volunteer doulas in a hospital-based volunteer doula program

Sample/Setting: University of North Carolina Medical Center with approximately 4,000 births per year. 30% c-sec rate.

Total number participants: 519
Volunteer doulas: 80
L&D nurses: 24, women supported by doulas: 415.

Johns Hopkins Evidence Appraisal:
Strength: Level III
Quality: B</td><td>Descriptive quantitative study

Program growth: over time, including the total number of volunteer doulas and the total numbers of women supported in the L&D rooms and OR.

Characteristics of doulas: entrance survey which consisted of questions about race, ethnicity, gender, and age of the doulas, students or community residence and if they speak Spanish.

Patient satisfaction: 5 questions rating their birth experience, doula care, physical support from doula, and support of family/friends by doula. Likert scale with responses 1-4.</td><td>Program Growth: Total number of program doulas increased by 220% (from 2012 to 2018). The total number of women supported annually by a doula in an L&D room increased by 315% from 88 to 365. OR increased by 70%.

Characteristics of doulas: 80 volunteer doulas in 2018. 50 (63%) were non-Hispanic white, 14 (17%) were non-Hispanic black, and 8 (10%) were Hispanic/Latina. 51 (64%) were students, and 22 (28%) spoke Spanish.

Patient satisfaction: 1185 women received doula support from 2015 thru 2018. 415 women returned the patient surveys. Satisfaction with emotional support doula provided: n=384, 96.88%, satisfaction with doula care n=410, 96.34%, and support for family/friends: n=346, 95.38%.
-Overall satisfaction with birth experience (with doula support): n=371, 91.91%
- Overall satisfaction with physical support the doula provided: n=379, 97.63%

Conclusion:
A hospital-based volunteer doula program is a successful way to provide improved birth experiences and approved by most L&D nurses.
Clinicians who aim to provide supportive and evidence-based maternity care should consider adoption of a hospital-based volunteer doula program.</td><td>Strengths: Standardized questions on a Likert scale. Large sample size. Can be applied to other hospitals and situations.

Limitations:

Only one study site/group.

Since the surveys for patient satisfaction came back as positive, it is difficult to know if the unhappy patients, or if the patients with bad outcomes, filled out the survey.</td></tr>
<tr><td colspan="4">Author Recommendations: The Birth Partners' program offers valuable insights for clinicians in other hospitals who are considering initiating a volunteer doula program.</td></tr>
<tr><td colspan="4">Implications: A volunteer doula program has a lot of success in patient satisfaction and is approved by L&D nurses. A similar set up program can be used at any other hospital.</td></tr>
</table>

<table>
<tr><td colspan="4">Source: McLeish, J., & Redshaw, M. (2018). A qualitative study of volunteer doulas working alongside midwives at births in England: Mothers' and doulas' experiences. Midwifery, 56, 53–60. https://doi.org/10.1016/j.midw.2017.10.002</td></tr>
<tr><td>Purpose/Sample</td><td>Design (Method/Instruments)</td><td>Results</td><td>Strengths/Limitations</td></tr>
<tr><td>Purpose: To gain a better understanding of disadvantaged mothers' experiences of having a trained volunteer doula

Sample:
16 "disadvantaged" mothers: women with no partner/alone at birth, or other vulnerabilities (abuse or migration), and women who have been seen by social services.
Mothers were referred to these programs.
-Race: 6 White British, 2 British Asian, 8 born in Asia, Africa and the Middle East
-Volunteer doulas: would see patients weekly in pregnancy and on-call for labor and birth

Setting: 3 different community doula projects in England: Bradford, Hull, and Essex.
-June 2015-March 2016
-Hospital births

Johns Hopkins Evidence Appraisal:
Strength: Level III
Quality: B</td><td>Qualitative descriptive study
Semi-structured, in-depth interviews
-Used inductive thematic analysis
-All women who received doula support were interviewed

Mother's interview:
-One interview postpartum
-25-75 minutes per interview
-Topics on experience of using this maternity service, antepartum doula support, intrapartum doula support, and postpartum doula support, and the impact of the support they received.</td><td>Results:
Emerging themes:
-Doulas complement the midwives
-Doulas act as a colleague to the midwives
-Doulas can present as a challenge to midwives

Sub-themes (for the mothers interviewed):
- Doulas provide skilled physical and emotional support
-Doulas offer continuous presence
-Mothers are understood and have an understanding
-Counterbalancing disempowering treatment

-One patient stated, 'You need to build the relationship up first'. which is not able to be done with the midwife since there is a new midwife at the end of the shift and they have not seen them before.

Conclusion:
-The doulas gave constant emotional care to patients (and partners when present)
-They bridged the care between the patient and the midwife
-Many mothers stated that they had anxiety surrounding birth and lacked confidence to communicate with their midwives. Doulas helped give the patient their voice when it was difficult to talk and reduced fear and anxiety.
-Doulas created a team atmosphere with patients to ensure she wasn't laboring and birthing alone.
-Advocacy for the patient was one of the doula's top priorities, even if there was resistance from the midwife</td><td>Strengths:
-There was no prior interaction with the participants before this study
-Each researcher analyzed the transcripts of patients surveys separately
-Interviews were done for both the volunteer doulas and mothers to compare and analyze together

Limitations:
-Two participants needed the interview to be interpreted and was by a non-professional interpreter
-The doulas were not as diverse as the participants in the study
- Each doula had a different experience level, with one never attending a birth and with four attending over 10
-Some doulas had met their clients before at prenatal appointments and some met them for the first time in labor
- The clients were a part of a very diverse group and it may not appropriately reflect all patients using voluntary doulas
- Midwives were not a part of the study, although they are referenced frequently</td></tr>
<tr><td colspan="4">Author Recommendations: It would be beneficial to create clearer guidelines/scope of practice for midwives and doulas since it can be unclear to patients and each of the care providers.</td></tr>
<tr><td colspan="4">Implications: Midwives practicing in the hospital are often unable to provide continuous labor support to patients. Some patients are alone or have limited support during their labor and birth. Having a volunteer doula present in the intrapartum period can help fulfill the needs that the midwife is unable to meet while taking care of many patients at once. Doulas also decrease anxiety surrounding birth and can help mothers have a better birth experience.</td></tr>
</table>

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 and Child Health Journal, 12,* 372-377. https://doi.org/10.1007/s10995-007-0245-9

Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: To assess the impact on birth outcomes and breastfeeding for women who received labor support via a hospital-based doula program compared to those who did not. **Sample**: 11,471 pregnant women who gave birth at 37 0/7 weeks or greater to liveborn singleton infants. 2,174 received support from a doula provided by the Birth Sisters program and 9,297 did not. **Setting**: The Birth Sisters doula program at Boston Medical Center (BMC), an urban and multicultural setting, from January 1, 1999 to December 31, 2005. **Johns Hopkins Evidence Appraisal:** **Strength**: Level II **Quality**: A	Quasi-experimental retrospective analysis Outcomes measured included cesarean deliveries, epidural anesthesia, operative vaginal deliveries, Apgar scores, breastfeeding intent, and initiation of breastfeeding in the hospital. All women at BMC had access to the Birth Sisters doula program free of charge. Data between the two groups was analyzed using SAS version 8.2. Log-binomial regression models analyzed the variable relationships while also controlling for confounders. A p-value of less than 0.05 was considered statistically significant.	Women apart of the Birth Sisters doula group versus usual care without doula - Intend to breastfeed 85% vs 68% - Early initiation of breastfeeding 46% vs 23% -There was no statistically significant difference between the two groups for cesarean births, receiving an epidural, operative vaginal delivery, or Apgar scores. When controlling for primiparous and multiparous women it was found that primiparous women who had a Birth Sister and were cared for by a midwife also had statistically significantly lower rates of cesarean deliveries 15% compared to physician service with doula 25% and without doula 27%. There were no significant differences for other outcomes regardless of parity. **Conclusion**: Hospital-based doula support programs can positively impact breastfeeding outcomes and ultimately infant health as a long-term effect of successful breastfeeding.	**Strengths**: -The population studied was diverse consisting of 30 different ethnic groups speaking 20 different languages -Large sample size -The Birth Sister (doula) shares the same culture and language with the client **Limitations**: -Possibility for bias in the experimental group -Not able to control for medical risk factors, presence of family and friends, or prenatal preparation for labor and/or breastfeeding

Author Recommendations: Prospective studies should be conducted to address similar outcomes while also controlling for the limitations mentioned in this study. Other outcomes that could be measured include maternal isolation, maternal depression, utilization of health care and social services, and satisfaction with care.

Implications: Culturally competent labor support for women is an important in caring for multicultural populations. Breastfeeding rates are greater which can provide long-term improved health outcomes for both the mother and infant.

Source: Ooijens, J. C., Bakker, J. J. H, & de Graaf, I. M. (2018). Hospital-based birth support for women with trauma: A pilot study of a clinical doula program in the Netherlands. *Journal of Prenatal and Perinatal Psychology and Health, 32*(3), 242-249.			
Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: To see if a doula is helpful for women on an obstetric unit and to the providers taking care of her. **Sample**: The study focused on women who had a history of trauma, were alone or had limited social support, and increased fears of childbirth. -Between April of 2011 and April of 2013. 81 women received care by a doula in the program, 72 women were sent actual questionnaires-, only 67 responded. -History of respondents: Hx of trauma: 53.1% Social problems and/or poor social network: 18.5%. Above average fear of birth: 27.2% **Setting**: Obstetric unit at the Academic Medical Centre (AMC), in Amsterdam, the Netherlands **Johns Hopkins Evidence Appraisal:** **Strength**: Level II **Quality**: C	Quasi-experimental pilot study (due to financial constraints) Patients were given a referral from their physician to join the pilot study. Once the patients were accepted into the study, they were offered two 2-hour visits at home or in the hospital to discuss personal expectations and needs for the doula. The main focus of this study was to offer continuous labor support to each patient by a doula. A questionnaire created by NBvD (Netherlands Professional Association for Doulas) and TNO (Netherlands Organization for Applied Scientific Research) was sent electronically to each participant six weeks after the birth. The questions addressed topics such as socioeconomic factors, safety of mother and child during birth, and satisfaction with the doula's continuous supportive presence	86.6% of women in the study agreed that every woman should have a doula during their labor. 63 out of 67 of the participants would use a doula again. 4 of those participants were not satisfied and would not use a doula again. **Conclusion**: Having a doula present with needed care can provide a more positive birth experience for patients and the families and providers close to her. This facility's obstetric unit turned the doula position into a full-time position.	**Strengths**: -Consistent questions for all participants. -Offered to a wide range of patients with varying histories. **Limitations**: -No randomization. -The creator of the study provided doula care in the study. -The selection of candidates was based on certain provider's preferences. -Only took English speaking patients
Author Recommendations: Perform a cost-analysis review of having a staffed doula, specifically look at how much is saved with decreased medical interventions and mental health costs.			
Implications: Having a doula present during labor and birth, in addition to hospital staff, can lead to a more positive birth experience for the patient giving birth and their involved support system. Patients who have increased fear about birth can benefit from having a doula present at their birth.			

<table>
<tr><td colspan="4">Source: Ravangard, R., Basiri, A., Sajjadnia, Z. & Shokrpour, N. (2017). Comparison of the effects of using physiological methods and accompanying a doula in deliveries on nulliparous women's anxiety and pain: A case study in Iran. The Health Care Manager, 36(4), 372-379. https://doi.org/10.1097/HCM.0000000000000188</td></tr>
<tr><td>Purpose/Sample</td><td>Design (Method/Instruments)</td><td>Results</td><td>Strengths/Limitations</td></tr>
<tr><td>Purpose: To compare the difference of women's anxiety and pain levels with and without a doula present

Sample: 150 Nulliparous women with inclusion criteria of: living cephalic fetus, intact membranes, Iranian nationality, no previous pregnancy hospitalizations and generally healthy.

Setting: Towhid Hospital of Jam, Bushehr, Iran- in 2015

Johns Hopkins Evidence Appraisal
Strength: Level I
Quality: C</td><td>Randomized control trial

-The intervention group was randomly assigned to receive a doula in labor and took an additional 6 sessions of childbirth classes that focused on relaxation and positioning in labor

-2 types of questionnaires were given: Spielberger (anxiety rate) and McGill (subjective experience of pain). One set prior to birth and one set after birth
-Data was analyzed using SPSS 18.0</td><td>Results:
-no significant difference between the average hidden anxiety rate
- there was less anxiety in doula group but this was not statistically significant
- mean pain was significantly less 36.52% in the doula-supported birth compared to no doula support 41.72% and that value was statistically significant
- doula supported group showed significant lower levels of anxiety during childbirth (48.04 vs 57.76, $p<0.001$)

Conclusion:
Having a doula present at the birth and completing additional childbirth courses primarily about relaxation and coping with labor, can reduce your pain during labor and anxiety levels before, during and after labor.</td><td>Strengths:
-There was a clearly listed control group that had similar characteristics and an intervention group that also had similar characteristics
- The significance level was considered 5%

Limitations:
-Only one nationality with all interviewed having the culture and beliefs
- Did not state how the randomization was performed
- The intervention group technically had two interventions, a doula presence and additional childbirth classes
- There is limited information on the doulas present at the births
- Did not state limitations</td></tr>
<tr><td colspan="4">Author Recommendations: There should be increased use of doulas in the hospitals throughout Iran to help with the reduction of anxiety and pain in labor.</td></tr>
<tr><td colspan="4">Implications: Having a doula present during labor and birth can reduce anxiety and significantly reduce pain. Maternal satisfaction surrounding birth can be improved by reducing anxiety and pain in childbirth. A doula can provide emotional and physical care to women to promote a calmer and less painful labor.</td></tr>
</table>

<table>
<tr><td colspan="4">Source: Thomas, M. P., Ammann, G., Brazier, E., Noyes, P., & Maybank, A. (2017). Doula services within a Healthy Start Program: Increasing access for an underserved population. Maternal and Child Health Journal, 21(1), 59–64. https://doi.org/10.1007/s10995-017-2402-0</td></tr>
<tr><td>Purpose/Sample</td><td>Design (Method/Instruments)</td><td>Results</td><td>Strengths/Limitations</td></tr>
<tr><td>Purpose: To determine if supplied doula support during labor and birth via the By My Side Birth Support Program helped to improve birth outcomes in women of color including cesarean section, preterm birth, low birthweight, and infant mortality.

Sample: 560 women and 489 infants born to By My Side program clients between 2010 and 2015. Women must meet income eligibility requirements set by the Women, Infants, and Children (WIC) nutrition program.

Setting: By My Side program births occurring in Brownsville, East New York, Bedford-Stuyvesant, and Bushwick, New York communities.

Johns Hopkins Evidence Appraisal
Strength: Level II
Quality: A</td><td>Quasi-experimental. There is initiation of the By My Side program to study its effects on birth outcomes. There was no randomization.

A chi-squared test was used to measure demographic and birth outcome differences between program births and resident births.

Doulas employed by the By My Side program conduct three prenatal home visits, labor and delivery support, four postpartum visits, and also screen for depression, food insecurity, intimate partner violence, and medical risk factors. These doulas collect and track demographic and birth record data of their clients (this instrument was not specified in the study). Follow-up interviews were conducted via telephone utilizing a semi-structured questionnaire to evaluate client satisfaction with the program.</td><td>Results: Compared to resident births, By My Side program participants were more likely to seek prenatal care in the first trimester (80% vs. 64%), showed lower rates of preterm birth (6.3% vs. 12.4%), and lower rates of low birthweight infants (6.5% vs 11.1%). Cesarean section rates were statistically similar between both groups (22.5% vs 36.9%).

Conclusion: Doula services may be important in improving birth outcomes especially in populations where birth inequities exist (ie: low income and women of color).</td><td>Strengths: Sufficient sample size
Adequate time period of measurement (5 years)
Adequate birth record keeping

Limitations: Self-selection (no randomization)
Possible bias (though not specified by the authors)
Women had to meet income standards set by the WIC program</td></tr>
<tr><td colspan="4">Author Recommendations: Further research is necessary to explore the reasoning for statistically similar cesarean section rates between the By My Side program participants and general resident births. Further research is also needed to study the effect of doula support services in populations with chronic diseases such as obesity, hypertension, and diabetes.</td></tr>
<tr><td colspan="4">Implications: Doula support services supplied to populations experiencing birth inequities such as women of color or low-income women can help to improve pregnancy and birth outcomes. Furthermore, doula support services covered by Medicaid programs and private insurers may help to address inequities in birth support.</td></tr>
</table>

<table>
<tr><td colspan="4">Source: Van Zandt, S.E., Kim, S., & Erickson, A. (2016). Nursing student birth doulas' influence on the childbearing outcome of vulnerable populations. Journal of Community Health Nursing, 33(3), 128-138. http://dx.doi.org/10.1080/07370016.2016.1191869</td></tr>
<tr><td>Purpose/Sample</td><td>Design (Method/Instruments)</td><td>Results</td><td>Strengths/Limitations</td></tr>
<tr><td>Purpose: To explore the outcomes experienced by women and their infants cared for by the Birth Companions Program from 1998 to 2014. The Birth Companions Program provides free intrapartum services via DONA certified nursing student doulas.

Sample: 1,511 women served by Birth Companions (BC). 522 were considered vulnerable and 989 were non vulnerable.

Setting: Urban and suburban communities in a large east coast metropolitan area in the United States

Johns Hopkins Evidence Appraisal:
Strength: Level II
Quality: A</td><td>Quasi-experimental. Collection of data was approved by Johns Hopkins University IRB. Records were compiled in a Family Folder after completion of at least one prenatal visit, the labor and birth, and at least one postpartum visit. Data included patient demographics, maternal markers (use of oxytocin, epidural rates, and cesarean section), and neonatal markers (birth weight, gestational age at birth, and breastfeeding attempt).

Patients were divided into two groups: vulnerable and non-vulnerable populations. This was based on established criteria prior to the beginning of the study. Patients were appointed to the vulnerable population group if they were a refugee, non-English speaking, less than 19-years-old, low income, or of low educational status. A Fischer exact test, chi-squared, and t-tests were used to assess significance of the variables.</td><td>Results: Vulnerable vs. non vulnerable outcomes:
Maternal:
Cesarean delivery: 26.8% vs 23.1%
Epidural use: 71.5% vs 65.4%
Oxytocin induction or augmentation: 55.8% vs 49.5%
Preterm birth: 4.0% vs 3.3%

Neonatal:
Low birth weight: 4.8% vs 2.7%
Breastfeeding attempt: 71.8% vs 82.8%

BCP vulnerable women vs national average (in 2014):
Cesarean delivery: 26.8% vs 32.7%
Epidural use: 71.5% vs 61%
Oxytocin induction or augmentation: 55.8% vs 22.8%

Neonatal:
Preterm birth: 4.0% vs 11.5%
Low birth weight: 4.8% vs 8.0%

Conclusion:
Vulnerable women were statistically significantly more likely to use an epidural ($p < 0.05$). Vulnerable neonates were statistically significantly less likely to have a breastfeeding attempt ($p < 0.00$). There was no significance found for cesarean section rates ($p= 0.26$), oxytocin induction or augmentation ($p= 0.064$), preterm birth rates, or low birth weight neonates.

Vulnerable patients were significantly more likely to have no other support besides their BC than non-vulnerable women (8.4% vs 2.2%, $p < 0.00$).</td><td>Strengths:
-Adequate sample size
-Adequate time period for data collection

Limitations:
-The data collection tool was updated over the 16-year time period so collection was not always consistent
-Quality of data varied based on experience and comfort of the BC so there is missing data for all variables
-Participation for patients in the BCP was voluntary so there may have been bias as higher risk populations may need these services more</td></tr>
<tr><td colspan="4">Author Recommendations: Future research would include a randomized control trial comparing patients supported by a BC versus those with no support. Also, it may be beneficial for the comparison of experienced doulas to novice doulas.</td></tr>
<tr><td colspan="4">Implications: The program allowed for an increase of knowledge on cultural and social differences between vulnerable and non-vulnerable populations as well identification of areas of need. BC were also able to provide physical as well as emotional support to patients who would have otherwise been alone.</td></tr>
</table>