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**The Effects of Doula Care on Birth Outcomes and Patient Satisfaction in the United States**

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### **Abstract**

The visitor policies related to the COVID-19 pandemic limited doula care and called into question the importance of doulas in the birth process. While the Cochrane Systematic Review presents compelling evidence of the benefits of continuous birth support on outcomes ranging from shorter labors to higher 5-minute Apgar scores, there are gaps in literature that exclusively focus on continuous support from doulas. The literature review aims to determine both qualitative and quantitative outcomes of doula care on the mother and baby during the labor and post-partum periods, focusing on specific aggregates, such as adolescents, women with low incomes, and women with intellectual disabilities. CINAHL and PubMed were systematically searched, and the sixteen studies that met criteria were analyzed by study design, purpose, population characteristics, results, and variables. The analysis reveals a variety of benefits, such as lower rates of C-section, prematurity, epidural anesthesia, and higher rates of breastfeeding, associated with doula care and virtually no drawbacks. Recommendations regarding implementation of the findings include Medicaid-funded doula programs, a more culturally and ethnically diverse doula workforce, and increased doula training in communication and relationship building.

### **Introduction**

The COVID-19 pandemic has changed hospital policies and procedures in the United States, with visitor policies being one of the most dramatic and debated changes. Arora et al. (2020, p.2468) explain that the visitor policy changes stem from the fact that in a public health emergency, the focus “shifts from maximizing the best interest of individual patients to prioritizing the health of the community.” While most hospitals and healthcare professionals support limiting visitors, health care professionals and facilities have different ideas when it

comes to the degree of limitation and specific unit policies, especially in labor and delivery units. Initially, “several New York City area hospitals prohibit[ed] all visitors to labor and delivery and postpartum units,” but those policies were revoked after the New York Department of Health declared that “1 support person was essential” given the evidence-based practice on the benefit of continuous labor support (Arora et al., 2020, p. 2468).

While the loosening of some strict visitor policies put a greater emphasis on individual patient outcomes, doulas have expressed their concern as they were often not considered essential workers and could not attend births. Doulas share that even when doulas are allowed in the hospital, the mother must “choose between their partner or doula for labor” (Searcy & Castañeda, 2021, p.2). One of the doulas points out that a “doula and partner work together” to help the laboring mother, so without both members of the birth support system, both the doula and partner are less effective. Searcy & Castañeda, (2021, p.3) reveal that the advantage of doula care has always been in question, but that the “pandemic has heightened that issue.” As a result, many doulas have had to shift to virtual care for their patients. While telemedicine was present before the COVID- 19 pandemic, doula care was largely conducted in person. As a result, virtual doula care is relatively unprecedented, and efficacy data is minimal.

Doula is a Greek word meaning a woman who helps other women but is now defined as “a trained professional who provides continuous physical, emotional, and information support to a mother before, during and shortly after childbirth to help her achieve the healthiest, most satisfying experience possible” (“Benefits of a Doula,” 2021). The idea of a doula has been around for nearly all of time as pregnant women were often cared for by other women in their communities during childbirth. However, doula care has been professionalized and is given in private practices, in hospitals, and in communities. Birth doula care consists of physical support,

such as breathing and positioning techniques; emotional support; partner support; and evidence-based information and advocacy. Many doulas also provide teaching support before and after labor as well.

The 2017 Cochrane Database Systematic Review presents compelling evidence that mothers with continuous support in labor are more likely to have spontaneous vaginal births and shorter labors and less likely to have negative birth experiences, labor pain medication, epidural/spinal analgesia, instrumental vaginal births, cesarean births, and low 5-minute Apgar scores. While the study provides a comprehensive review by including nearly 16,000 women from 27 randomized controlled trials, it does not exclusively focus on continuous support from doulas but rather includes continuous support from nurses, doulas, family, or friends in the data. Additionally, the Cochrane Review does not build a full story of the impacts of doula care beyond the actual labor or distinguish between the impact of continuous support for different populations, especially high-risk groups. This literature review aims to fill the gaps in the current literature by determining both qualitative and quantitative outcomes of doula care on the mother and baby during the labor and post-partum periods, focusing on specific aggregates, such as adolescents, women with low incomes, and women with intellectual disabilities.

## **Methods**

### *Study Design*

This work is a literature review of research on doula care in the United States.

### *Information Sources*

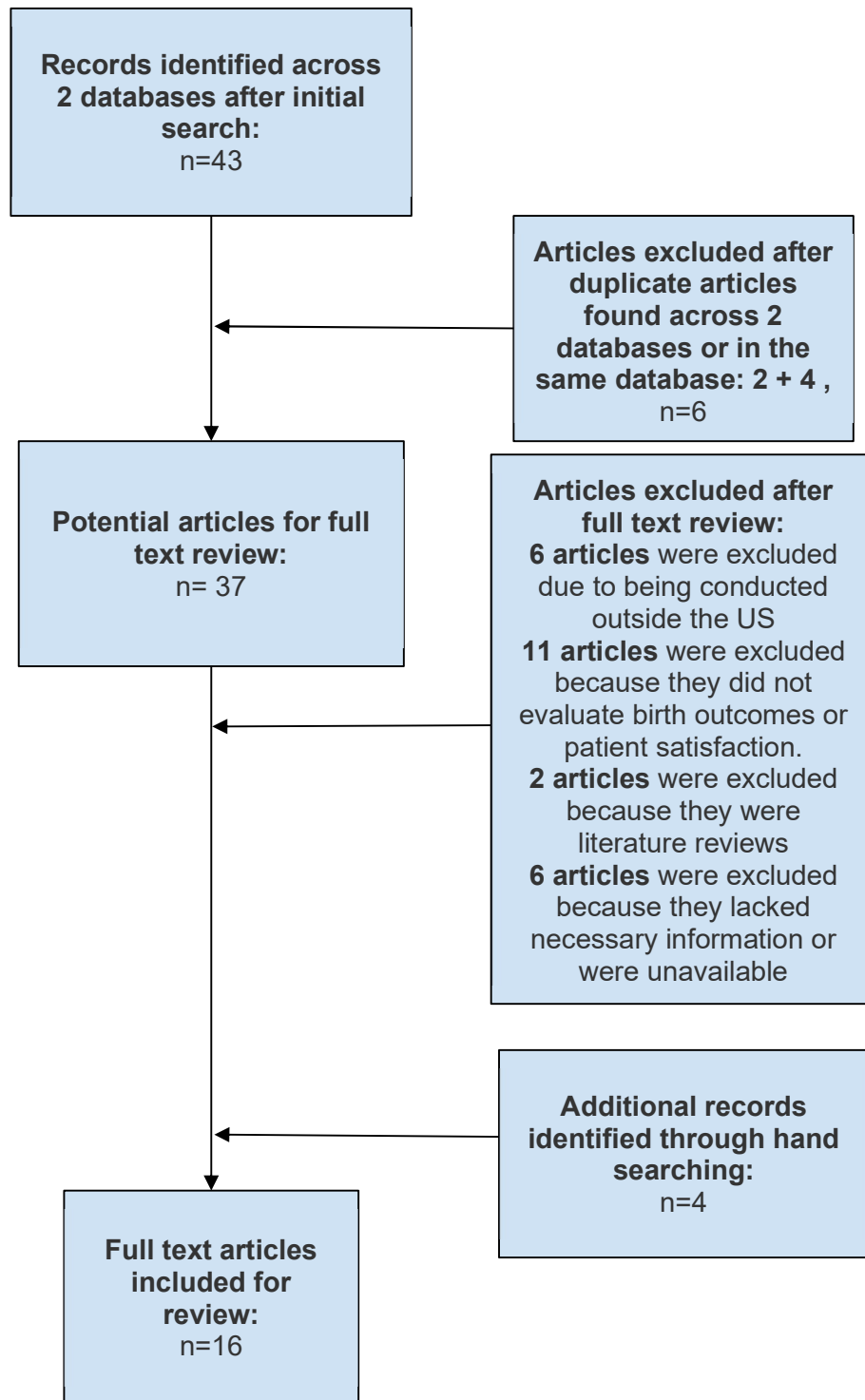
PubMed and CINAHL were searched systematically. A manual search of references from all articles that met eligibility criteria, including peer-reviewed articles and primary studies, was conducted.

*Search Strategy*

The investigator searched the PubMed and CINAHL databases for journal articles from 2011 to 2021. The search terms “doula,” (title) “labor and delivery,” “United States,” and NOT “midwifery” (Publication name) were the MeSH terms used to search for articles in PubMed. The CINAHL subject headings used were “doula,” (title) “labor and delivery or birth or labor”, and United States or America or USA or U.S., and NOT “midwifery” (Publication name).

*Inclusion/Exclusion Criteria*

The study eligibility was determined using the PICO elements: (a) Pregnant, laboring, or postpartum women in the United States (P); (b) intervention of doula care at any point during the pregnancy or post-partum period (I); (c) compared women with standard prenatal and post-partum care/ no doula care (C); (d) the effects on maternal and newborn birth outcomes and patient satisfaction (O). Studies were excluded if the study (a) was conducted outside the United States (b) did not evaluate birth outcomes or patient satisfaction (c) was a literature review (d) lacked essential information or was unavailable.



**Figure 1:** Selection Process of Selected Studies

### *Data Extraction*

Information extracted from each study included information on publication year, sample size, characteristics of study participants, study location, study design, and purpose of the study.

### *Search Results*

The search of two databases led to the retrieval of 43 studies (5 articles from the PubMed and 38 from the CINAHL). Four articles were duplicates in CINAHL, and two articles were duplicates between CINAHL and PubMed. All 6 duplicates were removed. The remaining 37 articles qualified for full text review. Twenty-four articles were taken out following full text review either due to other country of interest (n=6), incorrect evaluation focus (n=11), being a literature review in and of themselves (n=2), or lacking necessary information or availability (n=6). Also, four articles were included for the literature review by manually searching for references from retrieved articles. One study referenced was published before the date of interest (2008) but was included because of applicability. Finally, a total of sixteen articles were included for this review. The entire process for selecting articles is presented in Figure 1.

## **Results**

### *Characteristics of Identified Studies*

#### *Major Findings*

<b>Title, Year of Publication</b>	<b>Study Design, Sample Size</b>	<b>Purpose of the Study</b>	<b>Population</b>	<b>Results</b>	<b>Variables, if applicable</b>
<b>Doula Services Within a Healthy Start Program: Increasing Access for an Underserved Population, 2017</b>	<b>Retrospective analysis, N=489 from 2010-2015 Project area N=34912 from 2010-2015</b>	<b>To determine effectiveness of doula care on birth outcomes in high poverty neighborhoods</b>	<b>Mothers in the By My Side Birth Support program (part of the New York City Department of Health and Mental Hygiene's Healthy Start Brooklyn) from 2010-2015 n=489 infants born</b>	<b>Compared to the project area, program participants had lower rates of preterm birth (6.3 vs. 12.4%, <math>p &lt; 0.001</math>) and low birthweight (6.5 vs. 11.1%, <math>p = 0.001</math>); however, rates of cesarean birth did not differ significantly (33.5 vs. 36.9%, <math>p = 0.122</math>). Feedback from</b>	<b>Dependent: participation in the Healthy Start Doula program, By My Side Independent Variable: cesarean section, preterm birth, low birthweight, qualitative satisfaction via</b>



				participants indicates that doula support is highly valued and helps give women a voice in consequential childbirth decisions.	follow-up telephone interviews
Evaluation of an Innovative, Hospital-Based Volunteer Doula Program, 2019	Descriptive quantitative, N=519 (80 volunteer doulas, 24 labor and delivery nurses, and 415 women supported by doulas)	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	Participants included volunteer doulas, labor and delivery nurses, and women who were supported by doulas from US Hospital w/ approximately 4000 birth/year	From 2012 to 2018, the number of Birth Partners doulas increased from 25 to 80. The annual number of women who received intrapartum care from doulas increased from 88 in 2012 to 477 in 2018.. Of the 1,185 women who received doula support from 2015 to 2018, 415 (35%) responded to the patient satisfaction survey. Most were satisfied with the physical support (n = 379, 97.63%), emotional support (n = 384, 96.88%), doula care (n = 410, 96.34%), and support for family/friends (n = 346, 95.38%). All the labor and delivery nurses who responded (n = 24, 100%) agreed or strongly agreed that doulas were important members of the maternity care team.	Dependent: 2012 and 2018 Independent: number of the birth partners doulas, number of women who received intrapartum care, doula characteristics, satisfaction (physical, emotional support, doula care, support from family/friends), opinion if doula was important member of maternity care team
Randomized Controlled Trial of Doula-Home Visiting Services: Impact on Maternal and Infant Health, 2018	Randomized Controlled Trial of Interviews during pregnancy and at 3-weeks and 3-months postpartum, N=312	To examines the impact of doula-home-visiting on birth outcomes, postpartum maternal and infant health, and newborn care practices	Young (M = 18.4 years), pregnant women across four communities with demographics as follows: African American (45%), Latina (38%), white (8%), and multiracial/other (9%)	Intervention-group mothers were more likely to attend childbirth-preparation classes (50 vs. 10%, OR = 9.82, p < .01), but there were no differences on Caesarean delivery, birthweight, prematurity, or postpartum depression. Intervention-group mothers were less likely to use epidural/pain medication during labor (72 vs. 83%; OR = 0.49, p < .01) and more likely to initiate breastfeeding (81 vs. 74%; OR = 1.72, p < .05), although the breastfeeding impact was not sustained over time. Intervention-group mothers were more	Dependent: intervention of home-visiting doula Independent: caesarean delivery, birth weight, prematurity, postpartum depression, use of epidural/pain meds during labor, breastfeeding, infant back sleep, car seat use at 3 weeks

				likely to put infants on their backs to sleep (70 vs. 61%; OR = 1.64, $p < .05$ ) and utilize car-seats at three weeks (97 vs. 93%; OR = 3.16, $p < .05$ ).	
Outcomes of Care for 1,892 Doula Supported Adolescent Births in the United States: The DONA International Data Project, 2018	Retrospective analysis, N = 1,892	To report on outcomes of care for a national sample of doula-supported adolescent births	Adolescent birth entries in the dataset between 2000 and 2013, where “adolescent” is defined as all clients in the DONA Master Data File who were between the ages of 15 and 19 years at the time of birth	Rates of cesarean surgery (12.6%) and prematurity (4.9%) are substantially lower than rates reported nationally for adolescent childbearing women (20.4% for cesarean nationally, 9.91% for prematurity nationally), as is the epidural anesthesia rate for vaginal births (45.8% in this sample vs. 63.5% nationally. The initial doula breastfeeding rate was 59.7% compared with 50.7% nationally and fetal demise rate was 5.27/1000 compared with 6.66/1000 nationally.	Dependent variable: presence of doula Independent variables: cesarean, preterm birth, low birth weight, fetal demise, epidural use for singleton, initial breastfeeding
Doula Care, birth outcomes, and costs among Medicaid beneficiaries, 2013	Multivariate regression $n=279,008$ in control group of Medicaid-funded births nationally and $n=1079$ births in intervention group with doula care	To compare childbirth-related outcomes for Medicaid recipients who received prenatal education and childbirth support from trained doulas with outcomes from a national sample of similar women and to estimate potential cost savings	The study population comprised 2 groups: women who had Medicaid-funded singleton births nationwide with data provided by NIS and HCUP in 2009 and Medicaid beneficiaries whose labor and delivery were supported by doula care provided by Everyday Miracles in Minneapolis, MN from Jan 2010-April 2012	The cesarean rate was 22.3% among doula-supported births and 31.5% among Medicaid beneficiaries nationally. The corresponding preterm birth rates were 6.1% and 7.3%, respectively. After control for clinical and sociodemographic factors, odds of cesarean delivery were 40.9% lower for doula-supported births (adjusted odds ratio = 0.59; $P < .001$ ). Under the assumption that a state could reduce cesarian rate to 22.3% with birth doula, approximately half of states would experience cost savings at a \$200 birth doula reimbursement rate. Other scenarios evaluated demonstrate cost savings to varying degrees.	Dependent variable: doula care Independent variables: primarily, cesarean delivery and preterm birth; cost savings
A Hospital-Based Doula	Retrospective analysis, N=11471	To compare differences in	Women giving birth to singleton,	For the whole cohort, women with doula	Dependent variable

<p><b>Program and Childbirth Outcomes in an Urban, Multicultural Setting, 2008</b></p>	<p>(2174 mothers in Birth Sister/doula group, 9297 mothers in control group without doula)</p>	<p>birth outcomes between births at 37 weeks or greater with doula support and births at 37 weeks or greater without doula support through the first seven years of a hospital-based doula program</p>	<p>live infants at 37 weeks or greater between January 1, 1999 and December 31, 2005 at Boston Medical Center, an urban, academic, safety net, tertiary care center serving a diverse multicultural population of 2000 childbearing families per year.</p>	<p>support had significantly higher rates of breastfeeding intent and early initiation. Subgroup analysis showed that having doula support was significantly related to: (a) higher rates of breastfeeding intent and early initiation rates for all women regardless of parity or provider with the exception of multiparous women with physician providers; (b) lower rates of cesarean deliveries for primiparous women with midwife providers</p>	<p>enhanced Birth sister/doula intervention Independent variables: breastfeeding rates, cesarean deliveries, operative vaginal deliveries, and use of pain medication</p>
<p><b>Amazing Things Happen When Student Nurses Are Given Birth Doula Training, 2018</b></p>	<p>Qualitative Study</p>	<p>To examine impact of student-nurse trained doulas and their experiences</p>	<p>Duke University School of Nursing BSN students trained w/ DONA training to be a doula</p>	<p>Student experiences about positive interactions</p>	<p>After the birth was finished, I left feeling overjoyed that we played such an important role in this woman and baby's life. It was even better to feel recognition when the patient's mother asked to take a picture of us because she was so happy with the care we gave her daughter. I am proud of my clinical group that we took the initiative to labor sit and act as doulas.</p>
<p><b>Understanding Factors that Influence Adolescent Mothers' Doula Use: A Qualitative Study</b></p>	<p>Qualitative study (case study approach) The study design for the evaluation consisted of prenatal and postpartum interviews and a focus group with adolescent clients, interviews with current program</p>	<p>To examine factors that influenced doula use among adolescents in community-based childbirth education and doula program and gather perspectives form adolescent</p>	<p>Pregnant and parenting adolescent moms apart of YWCA's support program in the Southeastern US from Dec 2010-Jan 2012</p>	<p>Adolescent perceptions of having enough support and misperceptions of the doula role (individual level) appeared to be major reasons why adolescents opted out of the doula program rather than negative perceptions of doulas. Likewise, logistical difficulties (structural</p>	

	doulas, and participant observations of childbirth classes.	mothers and doulas		level), particularly spotty communication with doulas, greatly impeded the likelihood that doulas would attend the adolescent mothers' labor. Buy-in from adolescents and doulas, when it was achieved, appeared to enhance doula use among participants. Doulas who maintained clear communication and built more intimate relationships appeared to enhance the adolescents' satisfaction with doula services.	
Modeling the Cost-Effectiveness of Doula Care Associated with Reductions in Preterm Birth and Cesarean Delivery, 2016	Retrospective, multivariable regression analysis was used to estimate associations between doula care and preterm and cesarean births. A probabilistic decision-analytic model was used for cost-effectiveness estimates. N= 67082	To compare rates of preterm and cesarean birth among Medicaid recipients with prenatal access to doula care with preterm and cesarean birth rates for Medicaid beneficiaries regionally, and to use data on this association to mathematically model the potential cost effectiveness of Medicaid coverage of doula services	Control Group: Medicare-funded singleton births regionally Intervention Group: Medicaid-funded births w/ doula care provided by a nonprofit doula organization in a large metro city in upper midwest (n=1935) identified by telephone that received at least 1 prenatal doula visit born between Jan 1, 2010 and Jan 31, 2014	The doula-supported births had lower preterm births rates (4.7 percent) than Medicaid births regionally (6.3 percent) in uncontrolled comparisons (p<0.001). Doula care was associated with 22 percent lower odds of preterm birth ( <a href="#">Table 2</a> ; Adjusted Odds Ratio (AOR)=0.77, 95% Confidence Interval (CI)= [0.61–0.96]), compared with Medicaid births regionally, after controlling for maternal race-ethnicity, age, hypertension and diabetes. Among preterm births, doula support was not associated with odds of cesarean delivery (AOR=1.63, 95% CI [0.99–2.64]); however doula support was associated with substantially lower odds of cesarean among full-term births (AOR=0.44, 95% CI [0.39–0.49]), consistent with prior research ( <a href="#">2,8,11,15</a> ). doula-supported deliveries among Medicaid beneficiaries regionally would save \$58.4 million and avert 3,288 preterm births each year. Of the 10,000 simulated scenarios	Dependent Variable: presence of doula care Independent: cesarean sections, preterm labors, and cost

				comparing Medicaid-funded deliveries with doula support to Medicaid-funded deliveries regionally, 73.3 percent resulted in cost savings (i.e., a greater effectiveness at a lower cost) and 25.3 percent were cost-effective (i.e., greater effectiveness at a higher cost). Average cost equivalency point: \$986	
Potential benefits of increased access to doula support during childbirth, 2014	Retrospective analysis of a nationally-representative survey, N=2400	to document the relationship between doula support, desire for doula support and cesarean delivery, distinguishing cesarean deliveries without a definitive medical indication	Mothers from the Listening to Mothers III survey, a nationally-representative sample of women who gave birth to a single infant in a U.S. hospital between July 1, 2011 and June 30, 2012	Doula-supported women had lower odds of cesarean overall (AOR=0.41 [0.18, 0.96]; and AOR=0.31 [0.13, 0.74]) and non-indicated cesarean (AOR=0.17 [0.07, 0.39]; and AOR=0.11 [0.03, 0.36]) compared to those without doula support and compared to those who desired but did not have doula support.	Dependent variables: doula support and desire for doula support Independent: any cesarean and non-indicated cesarean
Breastfeeding and Complementary Food: Randomized Trial of Community Doula Home Visiting, 2013	Randomized, controlled trial, N=248	To examine the effects of a community doula home visiting intervention on infant feeding practices among young mothers	Low-income African American pregnant women less than 34 weeks pregnant, under 22 years of age, and planning to deliver at the affiliated major urban university hospital recruited January 2001 and April 2004 through a community health center and prenatal clinic affiliated with the university hospital.	Intent-to-treat analyses showed that doula-group mothers attempted breastfeeding at a higher rate than control-group mothers (64% vs 50%; P = .02) and were more likely to breastfeed longer than 6 weeks (29% vs 17%; P= .04), although few mothers still breastfed at 4 months. The intervention also impacted mothers' cereal/solid food introduction (P = .008): fewer doula-group mothers introduced complementary foods before 6 weeks of age (6% vs 18%), while more waited until at least 4 months (21% vs 13%) compared with control-group mothers.	Dependent: intervention of services from paraprofessional doulas: specializes home visitors trained as childbirth educators and lactation counselors, providing home visits from pregnancy through 3 months postpartum and support during childbirth vs standard prenatal care Independent: breastfeeding rates and time of introduction to complementary foods
The Cost Effectiveness of Professional Doula Care for a Woman's	Theoretical cost effective model, N= 1.6 million women	To evaluate the potential cost-effectiveness of professional doula support during a	Theoretical cohort of 1.6 million women, the approximate number of annual	In this theoretical model, professional doula care during the first birth resulted in fewer cesarean births and	Dependent: doula care Independent: Birth outcomes and cost

First Two Births: A Decision Analysis Model, 2019		woman's first birth in a theoretical population of US women, with all women having a second birth without doula care	low-risk, nulliparous, term, singleton births in the United States	improved QALYs. Additionally, doula support resulted in 202,538 fewer cesarean births, 46 fewer maternal deaths secondary to fewer cesarean births, 99 fewer uterine ruptures, and 26 fewer hysterectomies, with an additional cost of \$185 million and 7617 increased QALYs for the first and subsequent births. Sensitivity analyses demonstrated a professional doula was potentially cost-saving up to \$884 and cost-effective up to \$1360 per doula.	
An economic model of the benefits of professional doula labor support in Wisconsin births, 2013	Cost analysis, N=9042	To estimate the immediate cost savings per delivery with in-hospital professional doula labor support in Wisconsin	'Low-risk' cesarean deliveries were from singleton, full-term deliveries after accounting for VBAC success rate, gestational hypertension, gestational diabetes and fetopelvic disproportion disorder from the Wisconsin birth statistics in 2010	For 2010 data, estimated savings of 28,997,754.80 dollars could have been achieved if every low-risk birth were attended in-hospital by a professional doula. A professional doula providing only in-hospital labor support would yield an estimated cost savings of 424.14 dollars per delivery or 530.89 dollars per low-risk delivery.	Dependent variable: presence of doula Independent Variable: cost
How Do Women with an Intellectual Disability Experience the Support of a Doula During Their Pregnancy, Childbirth and After the Birth of Their Child?, 2016	Interview transcript analysis using interpretive phenomenological analysis (IPA), N=4	To gain insight into the experiences of parents who received support from Doulas during pregnancy, birth and following the birth of their child	4 women w/ an intellectual disability receiving support from a doula	Pre-natally, the Doula was considered helpful and a reliable source of information about pregnancy. Each mother perceived Doula support as a means of keeping her child in her care. Post-natally, mothers described a trusting relationship with their Doula, who enabled them to make informed choices.	Observational, qualitative information

Evaluation of a student nurse doula program: an analysis of doula interventions and their impact on labor analgesia and cesarean birth, 2012	Multi variable analysis n=648 births	To describe specific doula interventions, explore differences in doula interventions by attending provider (certified nurse-midwife vs obstetrician), and examine associations between doula interventions, labor analgesia, and cesarean birth in women receiving doula care from student nurses	Data from the Birth Companions Program at the Johns Hopkins University School of Nursing n=648	In the 648 births in the sample, doulas used approximately 1 more intervention per labor with certified nurse-midwife clients compared to obstetrician clients. In multivariate analysis, the increase in the total number of interventions provided by doulas was associated with decreased odds of epidural (adjusted odds ratio [AOR] 0.92; 95% confidence interval [CI], 0.86-0.98) and cesarean birth (AOR 0.90; 95% CI, 0.85-0.95). When examined separately, a greater number of physical interventions was associated with decreased odds of epidural (AOR 0.85; 95% CI, 0.78-0.92) and cesarean birth (AOR 0.80; 95% CI, 0.73-0.88), but number of emotional/informational interventions was not.	Dependent Variable: midwife or OB provider Independent: interventions, odds of epidural, cesarean birth
Disrupting the Pathways of Social Determinants of Health: Doula Support during Pregnancy and Childbirth, 2016	4 Semi-structured focus groups facilitated by two of the authors (RRH and CAV) analyzed using Goodbirth framework themes (agency, personal security, respect, knowledge, and connectedness) in a deductive approach to code the transcripts	to assess perspectives of racially/ethnically diverse, low-income pregnant women on how doula services (nonmedical maternal support) may influence the outcomes of pregnancy and childbirth.	Thirteen racially/ethnically diverse, low-income pregnant women participated in four focus group discussions that were held at three locations in Minneapolis, MN in November and December of 2014. Multiple methods (flyers, emails and word of mouth) were used for recruitment. Inclusion criteria included pregnancy and fluency in English.	Participant responses revealed that non-medical support from a doula could play a role in helping women overcome barriers to achieving a healthy pregnancy and childbirth by addressing their health literacy and social support needs and also through interaction w/ prenatal and intrapartum care providers. Doulas also acted as facilitators of improved patient/provider interactions that influence the satisfaction of the birth experience and favorable birth outcomes.	Dependent variable: Doula support Independent variables: being impact women's birth satisfaction and health, particularly focused on agency, personal security, respect, knowledge, and connectedness

## Discussion

The effectiveness and satisfaction of doula care was evaluated for three different subpopulations: adolescent and young mothers, mothers in poverty, and mothers with intellectual



disabilities. The adolescent mothers that received doula care experienced lower rates of C-section, prematurity, and epidural anesthesia than adolescents nationally from a sample size of 1892 participants from DONA entries. Additionally, when sampling adolescent mothers from a major urban university hospital that received doula home visits from pregnancy to 3 months postpartum and labor support, the mothers attempted breastfeeding at higher rates, were more likely to breastfeed longer than 6 weeks, less likely to introduce complementary foods before 6 weeks, and more likely to wait until at least 4 months to introduce foods than adolescent mothers nationally. Based on anecdotal evidence, it appeared that doulas who maintained clear communication and built more intimate relationships with adolescent clients enhanced the adolescents' satisfaction with the doula services.

When focusing on women in poverty, doula care seemed to provide a protective factor against an unhealthy birth. In New York, the mothers who received doula care via the By My Side Birth Support Program had lower rates of preterm birth and of low birth weight. Though, C-section rates did not differ significantly between low-income mothers who received doula support and those that did not. Qualitatively, the mothers in the program expressed that they valued the doula support and that it gave women a voice. The mothers from the focus groups reflected positively on their doulas as women who provided confidence, relieved stress, and advocated for them. Another study conducted in Minnesota supported the findings from the New York study. Mothers on Medicaid that received doula care through the Everyday Miracles program had lower rates of pre-term birth and lower C-section rates. A cost analysis study was conducted to determine the cost-effectiveness of providing doula care to mothers on Medicaid. The study found that 73.3 percent resulted in cost savings (i.e., a greater effectiveness at a lower



cost) and 25.3 percent were cost-effective (i.e., greater effectiveness at a higher cost). The average cost equivalency point was \$986.

The third subpopulation, or women with intellectual disabilities, had strictly anecdotal evidence to evaluate doula care. They commented that doulas were a helpful and reliable source of information and a resource that enabled them to keep their children. During the post-partum period, the doulas provided a trusting relationship that enabled the mothers with intellectual disabilities to make decisions. While the clinical and cost effectiveness of doula care specifically for mothers with intellectual disabilities is unknown, the mothers do perceive doula care as valuable. Overall, the positive correlation of labor support and safe births found in the Cochrane Review translate to young and adolescent mothers, mothers with low incomes, and mothers with intellectual disabilities.

While these studies show that any form of doula care is beneficial or at least not harmful to the mother and baby, it is important to evaluate what factors influence the effectiveness of doula care. In the hospital, the doulas used more interventions, such as guided breathing, when a nurse midwife delivered the baby compared with an obstetrician. More doula interventions are associated with a decreased odds of epidural use and C-section. However, there is some controversy between the use of nurse midwives and obstetricians in deliveries. Data from a retrospective cohort study comprised of 23100 births that compared midwifery and obstetric care revealed that in low-risk pregnancies, midwifery care in labor was associated with fewer C-sections and operative vaginal births, and, in multiparous women, an increased risk for shoulder dystocia. These conclusions suggest that doula care with a midwife may reduce cesarean delivery and additional interventions. Additional key factors that increase patient satisfaction include the number of patient interactions, such as visits and phone calls, and cultural similarities. The

patient is more satisfied when she has a meaningful and consistent relationship with her doula. One patient explained that “If I have choices then I will want someone with my culture to make me feel comfortable and understand what we do.” Doula care has more positive health outcomes and patient satisfaction when the provider is a nurse midwife and the doula has strong communication skills and a similar background as the mother.

The literature review presents a variety of benefits associated with doula care and virtually no drawbacks. In order to improve use of doula care, recommendations include better communication between the program staff of the doula program and mothers so that the mothers can receive their desired care. These changes are particularly valuable with the adolescent mother population. Doulas should also receive additional training in relationship building to connect with and advocate for the young mothers so they can provide the most effective care. In order to address communication barriers, the mother’s communication and transportation resources should be assessed; loaner cell phones and transportation assistance can be given when applicable. Another barrier is a lack of diversity in the doula workforce; programs should work to recruit and train a diverse population because patients feel more comfortable working with doulas from similar cultures and backgrounds. Also, many of the cost analyses results create a compelling argument for State Medicaid programs to offer coverage for birth doulas due to the cost savings from reduced C-section rates. By removing the financial barrier of the doula service, women with low-income or adolescents may be more likely to utilize doula care and reap the health benefits while saving tax-payer money. Finally, one study suggests that support groups that educate, inform, empower and connect women socially, culturally and financially should be utilized to affect systemic change and create more long-term solutions to persistent disparities. The social determinants of health are grouped into five different categories: economic stability,

education access and quality, health care access and quality, neighborhood and built environment, and social and community context. By addressing determinants of health beyond health care access and quality, doulas would likely be able to achieve greater success in health outcomes and satisfaction.

There are limitations in the studies themselves and in their comparison that prevent a definitive conclusion of the effectiveness of doula care on patient satisfaction and health outcomes for specific populations. The studies are not all randomized controlled trials, and therefore cannot conclude a causation between doula care and health outcomes. Most programs want to give mothers the option of doula care, and do not randomly assign them to a control or intervention group. The other studies, such as retrospective analyses, cost analyses, focus groups, and interviews, included in the literature review are only able to conclude a correlation between doula care and evaluated outcome. Other confounding variables may interfere, such as pregnant women who choose to incorporate doula care may already have more healthy lifestyles that result in more positive birth outcomes. Additionally, the studies with small sample sizes relative to the region do not provide strong evidence in the validity of the conclusion. A larger sample size should be used to re-conduct the studies. While “Breastfeeding and Complementary Food: Randomized Trail of Community Doula Home Visiting” and “Randomized Controlled Trial of Doula-Home Visiting Services: Impact on Maternal and Infant Health” are both RCTs, the studies are concentrated in specific communities/hospitals and are not representative of the United States. Other studies conducted that are representative of regional areas in the U.S. include the retrospective analysis “Doula Services Within a Healthy Start Program: Increasing Access for an Underserved Population” in a project area of New York City; the multivariable regression “Doula care, birth outcomes, and costs among Medicaid beneficiaries” in

Minneapolis, MN; the Cost analysis “An economic model of the benefits of professional doula labor support in Wisconsin births” in Wisconsin hospitals; the multivariable analysis “Evaluation of a student nurse doula program: an analysis of doula interventions and their impact on labor analgesia and cesarean birth” in Johns Hopkins birth companions program; and the focus groups “Disrupting the Pathways of Social Determinants of Health: Doula Support during Pregnancy and Childbirth in Minneapolis, MN. Therefore, the results can only be applied to those specific cities and regions and cannot necessarily be relied on to guide recommendation or policy in other areas.

Another limitation that influences comparison between previous studies on the effectiveness of doula care is the difference in variables measured. While the independent or measured variable for the studies was the presence of doula care during or after pregnancy, the studies evaluated the effectiveness of doula care through different dependent variables, such as low birthweight, use of epidural, and patient statements. As a result, there cannot be a direct comparison between the effectiveness of doula care on the three different focus populations: adolescents and young mothers, mothers in poverty, and mothers with intellectual disabilities. In order to determine if doula care is more valuable for one subpopulation over another and better distribute resources, a randomized controlled trial with the same number of doula visits and interventions should be completed with all three subpopulations. Additionally, standardized surveys evaluating patient satisfaction of doula care using a numerical scale would also provide a more direct comparison between the subpopulations and help guide the doulas in providing better care.

Finally, there are limitations in the search process of the literature review. Quality studies may have been accidentally omitted by narrow search terms or inadequate use of databases.

Also, the five articles that were omitted from the literature study due to missing information or unavailability could have provided important information regarding the impact of doula care. However, due to financial limitations of articles available through the University of Arkansas, it was not possible to include them in this review. For a more comprehensive review, additional databases should be reviewed, and more studies should be incorporated as they become available.

Despite limitations, this evaluation presents compelling evidence that doula care correlates with improved birth outcomes, evidence-based infant care, lower birth costs, and increased patient satisfaction. Doula care could be a cost-conscious and patient-centered method to address the United States' high infant mortality rate in comparison to European countries. The benefits of doula care should be communicated to the healthcare administrations as facilities determine visitor policies in the labor and delivery and post-partum units. Additionally, the results should be communicated to the providers and nurses that work with mothers and babies, so they can better advocate for their patients and work alongside the interdisciplinary team. Results about the cost-effectiveness of doula care for mothers receiving Medicaid should be communicated to policymakers and lobbyists in to improve patient outcomes and satisfaction while better distributing financial resources.

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