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Role of doulas across the pregnancy care continuum on maternal and child health: a scoping review

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Modern maternity care lacks sufficient labor support, with nurses dedicating only 6-10% of their time to labor assistance, far below the 53% mothers expect. Given the need for continuous support, doula-trained non-clinical birth workers have gained prevalence. This scoping review examines the impact of doulas across the pregnancy care continuum, including prenatal, pregnancy, and postpartum phases. A systematic search across PubMed, Scopus, EMBASE, CINAHL, Cochrane Review, and Cochrane Central identified peer-reviewed articles (2000-2023) using Boolean search terms. A total of 23 studies met the inclusion criteria. Findings suggest that doula support improves delivery outcomes by reducing cesarean rates, preterm births, labor duration, and pain, while enhancing breastfeeding initiation. One study reported longer hospital stays, but overall, doulas appeared to lower mothers' stress and anxiety. Expanding doula access may improve maternal and child health outcomes. Future research should explore policy integration and behavior change impacts to support evidence-based maternal healthcare.

Doulas may be an important part of assisting pregnant people throughout the pregnancy care continuum, particularly during childbirth. Doulas are non-clinical support professionals trained to provide physical, emotional, and informational support before, during, and after labor and birth. The role of the doula was revolutionized in the twentieth century as births were relocated from home to hospital settings[1,2]. There are various types of doulas such as prenatal doula (who assist during pregnancy), labor and birth doula (who provide support during childbirth), postpartum doula (who support individuals after delivery), antepartum doula (who help with high-risk pregnancies requiring bed rest), community-based doula (who often serve marginalized communities), abortion doula (who support individuals undergoing abortion), and a full-spectrum doulas (who provide support across a range of reproductive health experiences, including miscarriage, abortion, birth, and postpartum care).

Doulas provide more than just handholding and a soothing presence during labor; they often engage with their clients' multiple times throughout the pregnancy care continuum (from pregnancy to postpartum)[3,4]. This may include emotional comfort, non-clinical physical assistance, and educational information, which may help mothers navigate through pregnancy and childbirth with greater confidence and less anxiety[5–7]. Doulas can provide constant support, advocating for individual desires, helping with non-medical pain management methods, and enhancing the overall satisfaction of the birthing process[8,9]. During the postpartum phase, doulas may assist with breastfeeding, facilitate physical and mental recuperation, and link families with essential resources, such as healthcare experts and support groups[10,11].

Previous research has determined individuals value and benefit from having a support person with them throughout labor and delivery[12–14]. Nevertheless, many report unsatisfactory birth experience due to lack of continuous support, often described in terms of emotional distress, unmet expectations, or feelings of abandonment during childbirth. In the United States, an overwhelming 98.4% of births occur in hospitals[15], leading to challenges in providing continuous labor support due to the strain on the healthcare system[12]. Additionally, overburdened clinical staff and limited availability of healthcare professionals such as midwives and registered nurses can hinder the provision of one-on-one care during labor. These challenges may contribute to poorer maternal and infant outcomes[16]. In recent years, doula care has remained an underutilized resource, suggesting a significant opportunity for further integration into standard prenatal, childbirth, and postpartum care practices[17–19].

Research has suggested mixed results regarding the impact of doula support on pregnancy and birth outcomes, highlighting the complexity of assessing their role in maternal care. Some studies suggest that receiving support from a doula during pregnancy and after childbirth can enhance

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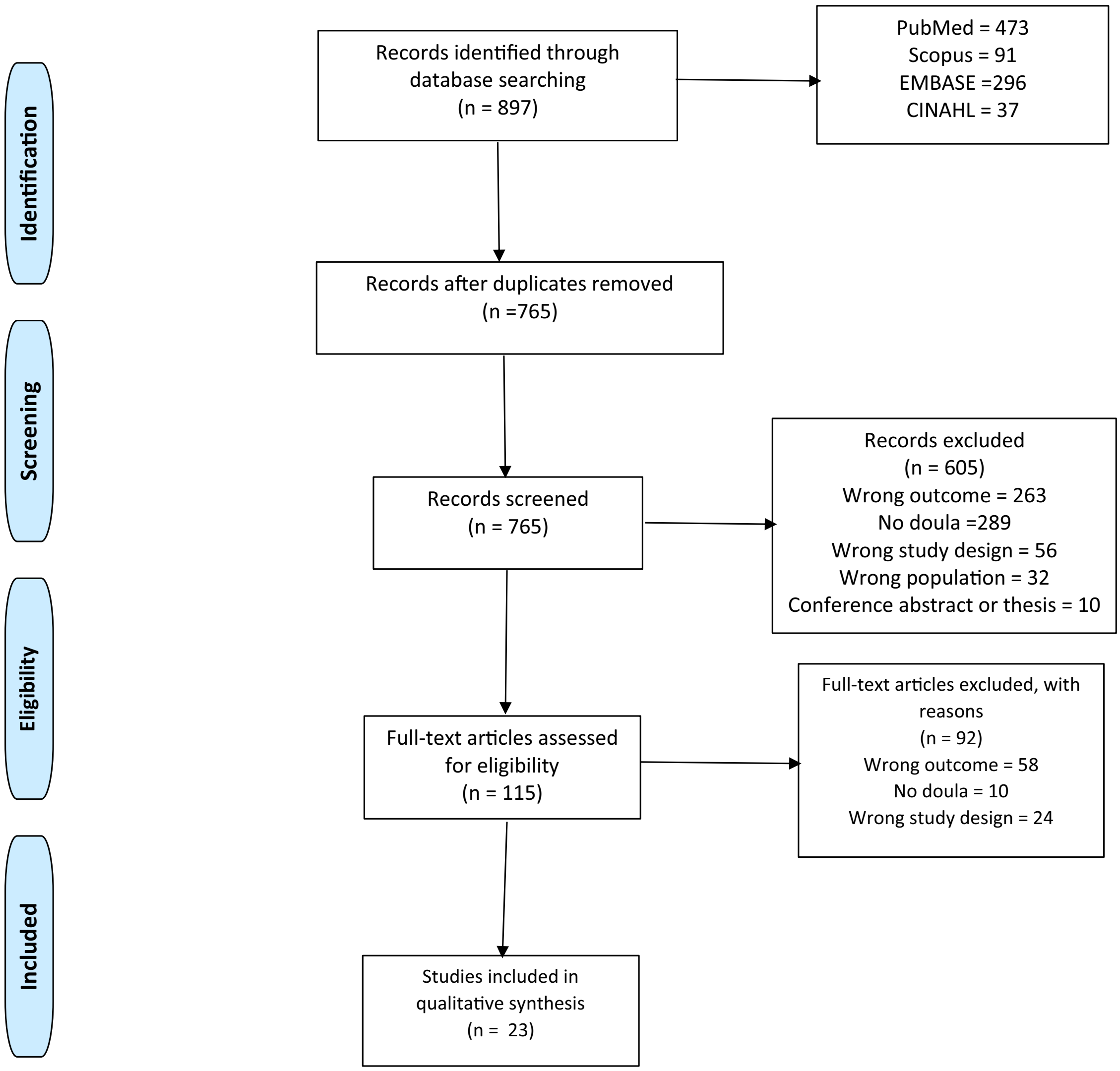

Fig. 1 | The PRISMA flow diagram for the scoping review screening process. *From:* Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). *P*referred *R*eporting *I*tems for *S*ystematic Reviews and *M*eta-*A*nalyses: The PRISMA Statement. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000097. For more information, visit www.prisma-statement.org. The flow diagram of the review screening process shows the number (*n*) of studies that were originally identified, screened, and assessed for eligibility, as well as the reasons for exclusions.

client's confidence in managing their pregnancy and reduce stress levels, leading to improved birth outcomes[1,13,20,21]. However, other studies have found no significant impact of doulas on these outcomes[22–24].

The aim of this scoping review was to identify and synthesize existing evidence regarding the roles, practices, and impact of doulas across prenatal, labor and delivery, and postpartum stages of the pregnancy care continuum. While doulas may also support people undergoing abortion or miscarriage, this review focusses specifically on birth-related and postpartum outcomes. Findings from this review seek to provide valuable insights to healthcare providers, policymakers, and expectant parents by analyzing a range of research findings and examining the effects of doula on different populations and outcomes.

Results

A total of 897 articles were found across six databases. A total of 130 duplicates were eliminated, resulting in a remaining count of 765 articles. Following the application of inclusion and exclusion criteria, a total of 115 articles remained after the initial screening process. In addition, when examining the complete text, 23 articles were chosen for the scoping review (Fig. 1).

Characteristics of included studies

This scoping review incorporated studies from various countries. Among the included studies, 13 studies were from the United States, consisting of 6 with a retrospective cohort design, 3 used a qualitative study design, 2 employed a mixed methods study, 1 used a randomized controlled trial (RCT), and 1 with a non-experimental study design. There were 2 studies conducted in Brazil (1 mixed methods study; 1 cross-sectional study), 1 in the United Kingdom (a qualitative study), and 1 each in Canada (RCT), Mexico (retrospective cohort design), Iran (qualitative study), and Australia (mixed methods study). Further, several incorporated racially and ethnically diverse samples. For instance, multiple U.S.-based studies[1,5,23,25–27] focused on Medicaid recipients, Black and Latina women, or women from socio-economically disadvantaged backgrounds. Some studies also centered on incarcerated women[24,28] or adolescent births[29], representing vulnerable and diverse populations. The studies focused on doulas' roles in pregnancy care continuum before pregnancy, during, and post-partum. A total of 2 studies focused on before pregnancy, 10 studies focused on during pregnancy, 1 study on post-partum, and 10 studies were a mix of both during pregnancy and post-partum. The sample participants in the scoping review ranged from 13 to 279,008 (Table 1).

Table 1 | Characteristics of Included Studies

Author (year)	Objectives	Study Design	Population and setting	Pregnancy Continuum	Outcome Measures	Main Findings
Brskog et al. (2020)	To compare birth outcomes for migrant women who received community-based bilingual doula (CBD) support during labor with (1) migrant women without CBD support and (2) Swedish-born women.	Retrospective cohort study using national registers	*n* = 880 migrant women with CBD support; *n* = 16,789 migrant women without CBD; *n* = 129,706 Swedish-born women; Setting: Hospitals in Gothenburg, Sweden	Prenatal and during labor	Induction of labor, use of epidural analgesia, nitrous oxide, bath use, mode of birth, perineal injury, hospital stay >2 days, Apgar score <7 at 5 minutes	CBD support was associated with reduced use of pain relief among nulliparous women (e.g., epidural aOR 0.64; bath aOR 0.64). Parous women had higher odds of induction (aOR 1.38) and longer hospital stay (aOR 1.19). Compared to Swedish-born women, nulliparous CBD-supported migrants had higher odds of emergency cesarean (aOR 1.43) and extended stay (aOR 1.31). No associations were found for instrumental delivery, perineal injury, or Apgar scores.
da Matta Machado Fernandes 2021	The study aimed to describe the Brazilian women experience related to the use of intrapartum evidence-based practices (EBP) after participating in the health education intervention, the Senses of Birth (SoB) intervention.	Mixed-method research design	All pregnant women over 18 years old who visited the intervention between March 2015 and March 2016 were invited to answer the post-intervention survey, forming a convenience sample of 1,287 women. Setting: Brazil	During pregnancy	SoB health education intervention: post-intervention instrument to assess socioeconomic, demographic, and perceived knowledge information.	Research participants used the following EBP: birth plan (55.2%), companionship during childbirth (81.6%), midwife care (54.2%), freedom of mobility during labor (57.7%), choice of position during delivery (57.2%), and non-pharmacological pain relief methods (74.2%). Doula support was low (26.9%). Being a black woman was associated with not using a birth plan or having doula support. Women who gave birth in private hospitals were more likely not to use the EBP. Barriers to the use of EBP identified by women were an absence of individualized care, non-respect for their choices or provision of EBP by health care providers, inadequate structure and ambiance in hospitals to use EBP, and rigid protocols not centered on women's needs. The SoB intervention was identified as a potential facilitator. Women who used EBP described a sense of control over their bodies and perceived self-efficacy to advocate for their chosen practices
Diezel et al. (2013)	To describe and evaluate a doula program for adolescent mothers focusing on empowerment, self-efficacy, and parenting confidence.	Mixed-method study design	*n* = 160 adolescent mothers; Setting: Seattle-King County Healthy Start, USA	Prenatal and postpartum	Parenting knowledge, birth outcomes, social support, health behaviors	Participants showed increased parenting knowledge, confidence, and social support afterwards support. Reported improved birth outcomes and decreased anxiety. The program fostered trust, cultural sensitivity, and empowerment through mentorship and peer support.
Everson et al. (2018)	To examine the associations between doula support and women's attitudes toward labor and birth, and to explore predictors of doula support use.	Cross-sectional survey	*n* =1,892 adolescent and young adult women; Setting: United States, nationally representative sample	During pregnancy and postpartum	Attitudes toward labor pain, birth confidence, use of doula support	Women who received doula support reported more positive attitudes toward labor, including greater confidence in their ability to cope with labor pain and belief in the normalcy of birth. Doula support was more common among women who had higher education, private insurance, and access to prenatal education.

Table 1 (continued) | Characteristics of Included Studies

Author (year)	Objectives	Study Design	Population and setting	Pregnancy Continuum	Outcome Measures	Main Findings
Falconi 2022	Study objectives were to: 1) examine when over the maternity care continuum and with whom (i.e., clinical providers) doula care provides the greatest benefits to clinical health outcomes and health care utilization; and 2) evaluate whether women gain differential benefits from doulas depending upon race/ethnicity and health status.	Retrospective cohort study	Pregnant women with doulas = 298 Pregnant women without doulas = 298	During pregnancy and postpartum	Type of delivery Postpartum depression Postpartum anxiety.	Women who received doula care had 52.9% lower odds of cesarean delivery (OR: 0.471) and 57.5% lower odds of postpartum depression/postpartum anxiety (PPD/PPA) (OR: 0.425). Women who received doula care during labor and birth, but not necessarily during pregnancy, showed a 64.7% reduction in odds of PPA/PPD (OR: 0.353) of PPA/PPD.
Fernandes et al. (2022)	To assess whether doula support is associated with vaginal birth and use of evidence-based practices among Brazilian women who participated in the Senses of Birth (SoB) intervention.	Cross-sectional study	Brazilian pregnant women with doula support = 146 Brazilian pregnant women without doulas support = 396	During pregnancy	Mode of delivery (vaginal vs cesarean); use of non-pharmacological pain relief; public vs. private hospital delivery; midwife care; freedom of mobility; birth position; perceived knowledge about normal birth, cesarean, and EBPs	Doula support was significantly associated with higher odds of vaginal delivery (OR 2.47), use of non-pharmacological pain relief (OR 9.68), and delivery in public hospitals (OR 2.02). Only 27% reported having doula support. Findings suggest expanding doula access may reduce medically unnecessary cesareans and improve birth outcomes.
Gannon et al. (2022)	To assess acceptability and feasibility of doula engagement by women in opioid use disorder (OUD) treatment and to describe their experience working with a doula	Qualitative study	23 women were 32.5 years of age (4.1 SD), with the majority Caucasian (71.4%), non-Hispanic (71.4%) and Medicaid recipients (100%)	During pregnancy and postpartum	acceptability and feasibility of doula engagement by women in OUD treatment and to describe their experience working with a doula.	Major themes uncovered in the interview transcripts revealed emotional and OUD recovery support provided by the doula and increased maternal health literacy and self-advocacy. The presence of a doula during labor/delivery reduced maternal perceptions of stigma they perceived from their healthcare providers.
Gruber et al. (2013)	To present a comparative analysis of birth outcome results of two groups of mothers served by the same childbirth education program.	Non-experimental study	Pregnant women with doula = 97 Pregnant women without doula = 128 Setting = hospital	During pregnancy	Type of birth, Incidence of low-birth-weight baby, Incidence of complication at birth either for mother or child, and Incidence of initiation of breastfeeding.	Doula-assisted mothers were four times less likely to have a low-birth-weight baby. Two times less likely to experience a birth complication involving themselves or their baby, and significantly more likely to initiate breastfeeding.
Hans et al. (2018)	To examine whether young, low-income families receiving doula-home-visiting services, compared to families receiving lower-intensity case-management services, have improved maternal and child health outcomes during the period between birth and 3 months of age.	Randomized control trial	312 low-income, pregnant women (*M* = 18.4 years) in 4 high-poverty communities in Illinois; racially/ethnically diverse (45% Black, 38% Latina)	During pregnancy and postpartum	Maternal outcomes (e.g., childbirth class attendance, epidural use, postpartum depression), birth outcomes (e.g., C-section, preterm birth), newborn care practices (e.g., breastfeeding initiation, safe sleep, car seat use)	The intervention group had significantly higher rates of childbirth class attendance (50% vs. 10%), less epidural use (72% vs. 83%), higher breastfeeding initiation (81% vs. 74%), and better newborn care practices (e.g., safe sleep, car seat use). No differences in birthweight, C-section, preterm birth, or maternal depression.
Hodgson et al. (2017)	To evaluate outcomes in clients receiving interprofessional group perinatal care versus interprofessional individual care in a Canadian setting.	Randomized control trial	*N* = 303 clients at South Community Birth Program (Vancouver, Canada). 207 opted for group care ("Connecting Pregnancy"), 96 for individual care. All received care from midwives, family doctors, nurses, and had access to doulas. High-risk pregnancies were excluded. Participants unable to read English were excluded.	Antenatal to postpartum	Mode of birth, gestational age at birth, birth weight, preterm birth, NICU admission, EPDS score, exclusive breastfeeding at discharge, pregnancy knowledge, readiness for labor and baby care, and satisfaction with care. Instruments: EPDS, adapted Patient Participation and Satisfaction Questionnaire, and prenatal knowledge assessments developed by Ickovics et al.	There are no significant differences between group and individual care in perinatal outcomes, breastfeeding, pregnancy knowledge, readiness, or satisfaction. Group care clients were more likely to be nulliparous and younger. Both models had very low rates of adverse outcomes (5% preterm birth), high breastfeeding (>78%), and high satisfaction. Interprofessional group care was found to be as effective as individual care.

Table 1 (continued) | Characteristics of Included Studies

Author (year)	Objectives	Study Design	Population and setting	Pregnancy Continuum	Outcome Measures	Main Findings
Kozhimannil et al. (2013a)	To compare childbirth-related outcomes for Medicaid recipients who received prenatal education and doula support with outcomes from a national sample and estimate potential cost savings.	Retrospective observational study using administrative data and regression analysis	279,008 Medicaid-funded singleton births nationally (2009) and 1079 doula-supported Medicaid births via Everyday Miracles in Minneapolis, MN (2010–2012)	During pregnancy	Cesarean delivery and preterm birth	Doula-supported births had significantly lower cesarean rates (22.3% vs. 31.5%) and lower odds of cesarean (AOR = 0.59; 95% CI: 0.51–0.68). The pre-term birth rate was also lower (6.1% vs. 7.3%) but not statistically significant. Estimated Medicaid cost savings were substantial with doula care coverage.
Kozhimannil et al. (2013b)	To estimate the prevalence of non-medical methods for labor induction and pain management and examine their association with medical interventions.	Cross-sectional survey study	Nationally representative sample of 1382 U.S. women who gave birth in a hospital in 2005 (LTM II survey).	During pregnancy	Use of non-medical (e.g., walking, nipple stimulation, breathing techniques) and medical (e.g., Pitocin, epidural) methods for labor induction and pain management; odds of using medical methods based on non-medical method use.	28.6% used non-medical labor induction; 70.5% used non-medical pain relief; doula support was strongly associated with use of non-medical methods. Non-medical pain management was associated with reduced use of medical pain management (OR = 0.65), though this became non-significant after adjustment. Use of both methods was common. Emphasis placed on integrating non-medical strategies into maternity care and expanding access to doulas.
Kozhimannil et al. (2014)	To examine the relationship between doula support and likelihood of cesarean delivery (overall and non-indicated) and explore disparities in access and desire for doula care.	Retrospective study	*n* = 2400 U.S. women who delivered singleton infants in hospitals between July 2011 and June 2012	During pregnancy and postpartum	Cesarean delivery (overall and non-indicated), doula support (received or desired), maternal socio-demographic and pregnancy characteristics.	Only 6% had doula support. Doula-supported women had significantly lower odds of overall cesarean (AOR = 0.41) and non-indicated cesarean (AOR = 0.17). Black and publicly insured/uninsured women were more likely to want but not have access to doulas. Desire for doula care alone did not reduce cesarean risk.
Kozimannil et al. (2016)	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.	Qualitative study	Conducted 4 in-depth focus groups. Thirteen racially/ethnically diverse, low-income pregnant women participated in the study.	During pregnancy	By addressing health literacy and social support needs, pregnant women noted that doulas affect access to and the quality of health care services received during pregnancy and birth.	Doula support improves communication, advocacy, and empowerment, particularly for women of color and low-income populations. It may reduce stress and increase health system trust, helping to disrupt adverse social pathways. Integration into care models could advance health equity.
McGarry et al. (2016)	The aim of this study was to gain insight into the experiences of parents who received support from Doulas during pregnancy, birth and following the birth of their child. In addition, the experiences of the Doulas who provided the support were investigated	Qualitative study	4 women with intellectual disabilities in a rural county in England receiving services from local ID services; 3 trained Doulas	Pregnancy and Postnatal	Themes from semi-structured interviews (pre- and post-birth for mothers; postnatal for Doulas)	Mothers found Doula support empowering, informative, and crucial in coping with pregnancy and parenting challenges. Doula support enhanced mothers' sense of competence and helped them advocate for retaining custody of their children. Doulas adapted their practice to meet ID-specific needs. However, involvement in child protection procedures was emotionally taxing for Doulas, highlighting a need for enhanced supervision and training.
McLesih & Redshaw (2019)	To explore the experiences and perceived impact of community volunteer doula support on disadvantaged mothers before and after birth in England.	Qualitative study	13 disadvantaged mothers and 19 volunteer doulas across three community doula projects in England (Bradford, Hull, and Essex). Projects provided support during pregnancy, birth, and for 6–12 weeks postnatally.	Antenatal and postnatal	Thematic outcomes from inductive analysis: stress, self-efficacy, knowledge, service use, and social connection	Doula support enhanced emotional well-being, reduced stress and anxiety, improved self-esteem and parenting self-efficacy, increased knowledge and skills, facilitated better use of maternity services, and helped mothers build local social networks. Flexible, ongoing

Table 1 (continued) | Characteristics of Included Studies

Author (year)	Objectives	Study Design	Population and setting	Pregnancy Continuum	Outcome Measures	Main Findings
						support was suggested to ease transitions
Nommsen-Rivers 2009	To examine associations between doula care, early breastfeeding outcomes, and breastfeeding duration.	Prospective cohort.	Low-income, full gestation primiparae receiving doula care (*n* 5 44) or standard care (*n* 5 97). Regional hospital in northern California	During and Postnatal	Birth outcomes and newborn feeding data obtained from the hospital record. Follow-up interviews conducted at day 3 to record the timing of onset of lactogenesis and breastfeeding behavior and at 6 weeks to obtain current breastfeeding status	Adjusting for baseline differences, women receiving doula care were significantly more likely to have a short stage II labor, a non-instrumental vaginal delivery, and to experience onset of lactogenesis within 72 h postpartum (timely onset of lactogenesis). Overall, 68% of women receiving doula care and 54% of women receiving standard care were breastfeeding at 6 weeks. In the subset with a prenatal stressor (*n* 5 63), the doula care group was more than twice as likely to be breastfeeding at 6 weeks (89% vs. standard care, 40%). Breastfeeding at 6 weeks was also significantly associated with timely onset of lactogenesis and maternal report that the infant "sucked well" at day 3.
Safarzadeh et al. (2018)	To describe mothers' experiences and perceptions of lay doula services during labor and delivery in impoverished areas of Iran.	Qualitative study	13 nulliparous women in three hospitals affiliated with Zahedan University of Medical Sciences, Iran (August 2016–April 2017).	During pregnancy	Thematic outcomes based on women's narratives: self-esteem, mental health, spiritual support, preference for vaginal delivery, and doula's supportive role.	Five major themes: (1) Achieving self-esteem and empowerment, (2) More trust in God, (3) Promoting mental health of the mother, (4) Willingness toward normal childbirth, and (5) Lay doula as a listener and perceiver. Lay doulas provided emotional, physical, and spiritual support, reduced fear and anxiety, encouraged vaginal delivery, and acted as intermediaries with medical staff.
Shlafer 2015	The aim of the study is: 1. Was the intervention logistically feasible and were the doulas able to perform their roles in this unique context? 2. Were the doulas able to meet the fundamental goals of doula practice and provide substantive support to the women they were serving?	Qualitative study	18 pregnant women and 6 doulas participated in the study	During pregnancy	Emotional support, support during separation, empowerment	The key themes were their ability to empower clients, establish a trusting relationship, normalize the delivery, and support women as they were separated from their newborns.
Shlafer et al. (2018)	The study aims to do the following: (a) document rates of breastfeeding intention and initiation among mothers participating in a prison-based pregnancy and parenting support program; (b) examine associations among breastfeeding intention and initiation, demographic, and incarceration-related variables, and doula-provided breastfeeding education; and (c) identify key themes from doulas' reports about efforts to support breast-feeding during the postpartum hospital stay.	Mixed-method study design	39 pregnant women incarcerated in a Midwestern U.S. state prison, enrolled in a prison-based doula and parenting support program (2011–2014)	During pregnancy and postpartum period	Breastfeeding intention (self-report) and breastfeeding initiation (observed or reported to doula); qualitative themes from doula narratives	64.1% initiated breastfeeding; 45.5% intended to breastfeed. Women who discussed breastfeeding with doulas were 7x more likely to initiate. Three themes: Benefits of Breastfeeding, Barriers to Breastfeeding, Role of the Doula. Nurses' misunderstanding and lack of encouragement were barriers. Doula support was key in initiation.

Table 1 (continued) | Characteristics of Included Studies

Author (year)	Objectives	Study Design	Population and setting	Pregnancy Continuum	Outcome Measures	Main Findings
Shlafer et al. (2021)	To describe maternal and neonatal outcomes among incarcerated women who gave birth in custody and compare outcomes between those who received enhanced pregnancy support (doula and prenatal education) vs. standard care.	Retrospective cohort study	117 incarcerated pregnant women (41 received standard care; 76 received enhanced support) in a Midwestern state prison, 2007–2016 *n*	During pregnancy and postpartum period	Mode of birth (vaginal/cesarean), low birthweight (< 2500 g), preterm birth (< 37 weeks), NICU admission, 5 min APGAR score	No statistically significant differences were found between the intervention and control groups. Overall rates of adverse outcomes were low across both groups. Enhanced support (including doula services) did not show measurable benefits on birth outcomes, potentially due to sample size limitations.
Thomas et al. (2017)	To evaluate the implementation and outcomes of the By My Side Birth Support Program, a doula service initiative aimed at improving perinatal outcomes for women in underserved, high-poverty neighborhoods of Brooklyn, NY.	Mixed method	489 women (84% non-Latina Black) from high-poverty neighborhoods (Brownsville, East New York, Bedford-Stuyvesant, Bushwick) in NYC; enrolled in WIC and receiving public insurance.	During Pregnancy	Birth outcomes, including cesarean section, preterm birth, low birthweight, and infant mortality	Lower preterm birth (6.3% vs. 12.4%, $p < 0.001$)- Lower low birthweight (6.5% vs. 11.1%, $p = 0.001$)- Cesarean rates were not significantly different (33.5% vs. 36.9%, $p = 0.122$)- 95.9% would recommend/use program again- 94.3% felt well-matched with their doula- High satisfaction and perception of empowerment during childbirth
Trueba et al. (2000)	To evaluate the efficacy of doula support during labor in reducing cesarean section rates	Retrospective cohort study	100 nulliparous women at term, in active labor (> 3 cm dilated), no prior uterine incision, with adequate pelvis; conducted at Hospital General Manuel Gea González, Mexico City	During pregnancy	Touch relaxation Slow and modified pace breathing Focal point Walking and moving for normal evolution of labor and birth	Doula support significantly reduced cesarean births (2% vs. 24%, $p = 0.003$) and pitocin use (42% vs. 96%, $p = 0.001$); trend toward shorter labor and fewer epidurals in doula group.

The studies in this review that examined doula support strategies in various contexts. Authors, years, objectives, study design, population/setting, pregnancy stage, outcome measures, and main findings are listed.
NICU Neonatal Intensive Care Unit, *CBD* Community-based bilingual doula, *SoB* Senses of Birth intervention, *EBP* Evidence-based practice, *OUD* Opioid use disorder, *EPDS* Edinburgh Postnatal Depression Scale.

Doulas-impact on mode of delivery

A total of 13 studies investigated the effect of doulas on the mode of delivery and they yielded mixed results, ranging from nine positive[16,25,26,29–34] to one neutral[8] to three with negative impacts[22,24,35]. Most studies indicated a decreased occurrence of cesarean births, thereby increasing the chances of vaginal delivery and having positive labor outcomes for both the mother and the baby[16,25,26,29–32,34]. This body of research highlights not only a decrease in the rate of cesarean deliveries but also an increased prevalence of non-instrumental vaginal births[25,26,29,31–34]. Further, a mixed-method study suggested that doulas may also empower clients and normalize the delivery process, potentially contributing to positive outcomes in promoting vaginal deliveries[30]. However, one study showed no significant differences in cesarean delivery rates[8].

Three studies indicated a negative impact of doulas on the mode of delivery, suggesting a higher level of cesarean deliveries in their care. For example, in a study by Hodgon et al. (2017), the care group was associated with a lower rate of spontaneous vaginal delivery (61% vs 72%) and higher rates of a caesarian section (25% vs 20%) when compared to the comparison group[22]. Similarly, another study indicated that the doula-supported group had a higher rate of cesarean delivery compared to the standard-of-care group (27.6% vs 14.6%)[24]. Furthermore, Byskog et al. (2020) suggested an increased adjusted odds ratio (aOR 1.43) of cesarean delivery for specific groups of immigrants women[35].

Doula-based delivery support

Several studies shed light on the role of doula support in maternal care, focusing on labor induction, pain management, and hospital stays.

Labor induction. Five studies focused on labor induction, where four studies had a positive impact[23,33–35], and one study had a mixed impact[29]. The study by Kozimannil (2013b) revealed that women with doula support were more inclined to use nonmedical techniques for labor induction, with a significantly higher odds ratio (aOR 3.03)[23]. Additionally, Nommsen-Rivers et al. (2009) found that women under doula care often experienced shorter second stages of labor, indicating a possible efficiency in labor progression with doula support[33]. Moreover, research by Byrskog et al. (2020) in Sweden suggested a positive relationship between doula support and natural labor induction. In this study, community-based doula (CBD) support was defined as culturally and linguistically concordant care provided by trained lay birth workers from the same community, with a specific focus on supporting migrant women during labor and birth. For migrant nulliparous women, community-based doula support was associated with an increased odds ratio (aOR 1.38) of natural labor induction, potentially indicating doulas' support in managing the challenges of induced labor[35]. A study by Trueba et al. (2000) observed a markedly lower usage of Pitocin (oxytocin) in the doula-supported group (42%) compared to the standard care group (96%). The study also suggests that the doula-supported group had a lower mean labor length than its counterpart (14 h 51 min vs 19 h 38 min)[34]. Also, Everson et al. (2018) reported ~43% of women gave birth without pharmacological induction or augmentation assistance, indicating a possible role for doulas in reducing reliance on medical induction procedures. On the other hand, the same study reported that a significant proportion of women (30%) relied on pharmacological methods (e.g., prostaglandins, synthetic oxytocin, misoprostol) to initiate labor, with 35% requiring augmentation via synthetic oxytocin[29].

Pain management. Six studies focused on doula support of pain management using natural and pharmacological interventions during labor. Four studies had a positive impact[23,31,32,34] one mixed impact[35] and one negative impact[29]. Research by Fernandes et al. (2019) found that doula support was associated with increased use of non-pharmacological pain relief methods (OR 9.68)[31]. Furthermore, Hans et al. (2018) suggested that those in the doula-led intervention group groups were less likely to utilize pain medication during labor (OR 0.47)[32]. Also, Kozhimannil et al.

(2013b) found over 70% of women used nonmedical pain management[23]. Additionally, another study indicated that a doula-supported group received fewer epidurals compared to the control group (8% vs 32%) (Trueba et al., 2000)[34]. Similarly, Byrskog et al. (2020) study found that community-based doula support was linked to reduced use of pain relief methods for nulliparous women, especially in cases of epidural and bath usage (aOR 0.64, respectively). However, parous women with doula support had increased odds of labor induction (aOR 1.38)[35]. Further, according to the study by Everson et al. (2018), in the doula support program, approximately 50% of pregnant women received intravenous pain medications (epidural anesthesia) compared to the national average[29].

Hospital stays. Only one study reported on the impact of doulas on hospital stays after childbirth. Byrskog et al. (2020) associated community-based doula support with longer hospital stays (> 48 h) for parous women and longer post-birth hospital stays (OR 1.19) for nulliparous women[35].

Doulas' support on child outcomes

The data from various studies provide insights into several key child outcomes which include gestational period, birth weight, child mortality and morbidity, and breastfeeding initiation.

Gestational period. Five studies have shown a reduced rate of preterm birth with doula support. For several studies, approximately 5% of women gave birth before completing 37 weeks of gestation[8,22,24,29]. The study conducted by Kozhimannil et al. (2013a) emphasized a reduced incidence of preterm delivery, approximately 6.1%, among births who received doula support in comparison to national Medicaid participants[25]. Additionally, the Everson et al. (2018) study reported that 92% of neonates were full-term at birth and 3.1% were post-term in the doula support program (> 42 weeks of gestation) compared to the national average[29].

Birth weight. Four studies focused on birth weight, including three studies that had a positive effect[1,8,29] and one study had a mixed impact[24]. According to Everson's (2018) research, the utilization of doulas was found to be associated with a low birth weight (LBW) (< 2500 g/ <5.5pounds) rate of merely 10% among newborns, whereas approximately 7% of neonates were classified as macrocosmic (> 4000 g;>8.8 pounds)[29]. Another study conducted by Gruber et al. (2013) indicated that moms who did not receive assistance from a doula were four times more prone to give birth to LBW infants, accompanied by fewer difficulties, compared to mothers who were aided by a doula[1]. Further, a study by Thomas et al. (2017) suggested being enrolled in the doulas-based intervention led to a lower percentage of LBW (6.5%) vs the comparison group (11.1%)[8]. However, one study found no significant differences in LBW between the infants born to women in prison having doula support (3.9%) when compared with the control group (5.7%)[24].

Child morbidity and mortality. Out of two studies that focused on child morbidity, one also discussed the issue of mortality. Everson et al. (2018) suggested that in a national sample of doula-supported adolescent births, ~9% of the infants experienced adverse health concerns immediately after birth, and 5.6% were admitted to the neonatal intensive care unit (NICU). This study also reported a total of 10 stillbirths, resulting in a fetal fatality rate of 5.27 per 1000 births[29]. Another study by Shlafer et al. (2021), examined the health outcomes of infants born to incarcerated women and suggested that women who received doula services found that infants had a median APGAR (Appearance, Pulse, Grimace, Activity, and Respiration) score of 9, with approximately 6% of instances resulting in NICU hospitalization compared to a comparison group and suggested no significance differences[24].

Breastfeeding initiation. Eight studies discussed breastfeeding initiation with five studies highlighting the positive impact[1,28,32,33,36] and three studies with a negative impact[22,30,32] of doula support on breastfeeding initiation. The Gruber et al. (2013) study, which included a sample of 248 women, suggested that approximately 90% of adult participants who received doulas support initiated breastfeeding[1], compared to a lower rate in the control group. Another study by Hans et al. (2018) indicated that mothers in the doula's intervention group were more likely to initiate breastfeeding while in the hospital (OR 1.67), but breastfeeding was not sustained over time[32]. Similarly, another study suggested that doula care was associated with an earlier onset of lactogenesis within 72 h of postpartum and the infant sucked well on day 3. Doula care was also associated with a high prevalence of breastfeeding at six weeks when compared with its counterpart (89% vs 40%)[33]. However, in a study by Hodgson et al. 2017, no significant differences were observed between the doula's group (84%) and the control group (78%)[22].

A mixed-method study conducted by Diezel et al. (2013) indicated pregnant women valued the care provided by student doulas about breastfeeding in five domains, namely physical, emotional, support person, and usefulness[30]. Furthermore, another mixed-method study by Shlafer et al. (2018) identified that 69% of study participants discussed breastfeeding at least one time with their doula. Women who discussed breastfeeding with their doulas were seven times more likely to initiate breastfeeding than women who did not. The qualitative inquiry identified three overarching themes from the doulas' narratives about breastfeeding initiation among incarcerated women: breastfeeding benefits for the mother-child relationship, real or perceived barriers to breastfeeding, and the role of the doula in supporting mothers' breastfeeding initiation[28]. Moreover, a qualitative study (Ganon et al., 2022) suggested that the involvement of doulas in the perinatal period would help breastfeeding initiation[36].

Doulas as maternal mental and well-being support

The assistance provided by doulas and the benefits they offer women during pregnancy and childbirth has been associated with a favorable impact on women's mental health and maternal and child support.

Mental health. Only one study Falconi et al. (2022), found women who received doula care during pregnancy had 57.5% lower odds of postpartum depression/anxiety (OR 0.42)[16].

Maternal and child support. Nine studies discussed maternal and child support which included nine with a positive impact[8,27,30,32,37–39] and two with a mixed impact[30,36].

An RCT study by Hans et al. (2018) suggested that doula-supported mothers were observed to be more likely to attend childbirth preparation classes (50% vs 10%) and more likely to utilize car seats at three weeks postpartum (97% vs 93%). Qualitative studies highlighted the critical function of doulas in caring for pregnant mothers[32]. Studies by Diezel et al. (2013), McGarry (2016), McLeish (2019), and Safarzadeh (2018), collectively highlighted the beneficial role of doulas in providing valuable information, fostering trust, empowerment, and enhancing self-esteem among pregnant women. These findings indicated that doula support positively influenced maternal confidence, decision-making abilities, and mental well-being[30,37–39]. Further, Kozhimannil et al. (2016) found that doulas positively influenced pregnant women's access to healthcare services and improved the quality of care received during pregnancy and childbirth, highlighting the importance of doula support in addressing health literacy and social support needs[27]. Similarly, Thomas et al. (2017) demonstrated the positive impact of the By My Side Birth Support Program on women from low socioeconomic communities, with high rates of infant mortality. The program, which provided doula support, received high satisfaction rates from participants, with nearly all women expressing willingness to recommend the program or use it again in future pregnancies[8].

While Gannon's study (2022) emphasized the positive role of doulas in minimizing stigma and providing support for pregnant women with opioid use disorder, it did not explicitly address any potential challenges or limitations associated with doula support in this context[36]. Diezel et al. (2013) highlighted the varied abilities and positive aspects of doula support, including their contributions to interprofessional teamwork and support for vaginal deliveries. However, this study did not delve into any negative aspects or limitations of doula involvement in maternity care[30].

Discussion

This scoping review aimed to assess the effects of doulas on pregnancy care by synthesizing findings from various research conducted in diverse regions. In contrast to Sobczak et al. (2023)40, which synthesized 16 studies from high-income countries on perinatal outcomes (cesarean, preterm birth, low birth weight), this review includes 23 studies and examines doula roles across the pregnancy continuum including prenatal, intrapartum, postpartum, and marginalized populations. Using qualitative, mixed-method, and international evidence, it reveals gaps in community-based and policy-driven strategies in addressing structural imbalances and emphasizes behavioral change and maternal mental health. This broader perspective informs health equity and policy.

The study examined four primary end variables, including the impact of doulas on the mode of delivery, their provision of assistance during labor and delivery, their influence on newborn outcomes, and their contribution to maternal well-being. The results exhibited discrepancies, as several investigations indicated favorable outcomes, such as higher occurrences of non-instrumental vaginal deliveries and enhanced birth outcomes. Conversely, other studies demonstrated varied or less significant effects, particularly related to cesarean rates. Doulas have been shown to fulfill a multifaceted function in facilitating labor induction and pain management in the context of childbirth, potentially mitigating the need for medical interventions. Moreover, these investigations were found to be linked with enhanced neonatal outcomes, such as an increased likelihood of full-term births and a decrease in unfavorable prenatal outcomes (e.g., Everson et al., 2018; Gruber et al., 2013; Fernandes et al., 2019)[1,29,37]. Qualitative research has emphasized the significant importance of doulas in delivering emotional support, mitigating the social stigma mothers may experience with pregnancy, and improving the overall well-being of mothers, especially in difficult situations. In general, doulas have been recognized as useful resources in enhancing mother and newborn outcomes, encompassing the physical and emotional dimensions of pregnancy and labor.

Various studies have indicated a positive effect with increased non-instrumental vaginal deliveries and reduced cesarean rates, while others show mixed results, including no significant differences or increased cesareans for certain groups. The variation in studies on doula's impact on delivery mode could be due to differences in study design, diverse populations, regional practices, and client preferences. The increased cases of vaginal deliveries could be due to the involvement of enhanced prenatal education regarding childbirth expectations and a heightened sense of empowerment and autonomy throughout the birthing process[1,40].

Multiple studies have illuminated the positive aspects of doula support in maternal care, with a specific focus on labor induction and augmentation, as well as its impact on pain relief during childbirth, hospital stays, and breastfeeding[16,18,40–42]. These findings indicate that women who embraced the idea of a doula empowering them to actively shape their childbirth experience, effectively handle their labor, and attain their desired positive and healthy birth outcomes. This may have also acknowledged the potential for enhancing their prenatal health and increasing the chances of a healthy birth by actively engaging in the prenatal activities offered by these programs[16,18,40–42].

The research articles analyzed in this study generally exhibited favorable neonatal outcomes, with a predominant proportion of newborns being delivered at full term. Despite the fact that a minority of infants were born prematurely or post-term, they exhibited positive outcomes, such as elevated APGAR ratings and decreased admissions to the Neonatal Intensive Care Unit. It is worth noting that there was just one study that specifically examined neonatal mortality, a phenomenon that was shown to be exceptionally uncommon. Taken together, these findings highlight the potential advantages of doula assistance as they offer diverse forms of support to women throughout pregnancy, childbirth, the postpartum period, and other related reproductive health experiences[12].

The findings from this scoping review highlight the critical role of doulas in providing emotional support, reducing stigma, and improving maternal and birth outcomes. Doulas play a multifaceted role in maternal care, providing education and emotional support by offering essential information and reassurance to women during pregnancy and postpartum periods. They act as patient advocates, ensuring that individual choices are incorporated into the delivery care plan[12]. In addition, doulas provide affirmation and advocacy, particularly when women have distressing symptoms that necessitate attention, making a major difference, particularly for populations experiencing marginalization in maternity care. Doulas offer invaluable assistance, helping women navigate the complex systems of social services and healthcare. This is especially helpful for women who are unfamiliar with the system or have complex medical concerns. Throughout the crucial stages of pregnancy and the postpartum period, they guarantee access to essential community resources[41].

Also, the scoping review included studies on both privately hired doulas and subsidized or community-based doulas, such as those funded through Medicaid or public health initiatives. Community-based doulas, often working with marginalized populations (e.g., low-income, incarcerated, or immigrant women), provided not only culturally concordant care but also helped address structural barriers such as lack of insurance, transportation, and health literacy[27,35]. These doulas often serve as essential navigators of the healthcare system and social services, especially for individuals impacted by poverty, systemic racism, and limited access to prenatal education[8,32]. In contrast, private doulas typically serve clients with higher socioeconomic status who can afford out-of-pocket fees. This distinction underscores the class-based disparities in accessing supportive care and highlights the vital role that publicly funded community-rooted doula models play in mitigating structural inequities in maternal health[42,43].

While this review primarily concentrated on short-term birth outcomes, there is a rationale to anticipate that doula support may yield long-term advantages, such as enhancing the postnatal mental health of the mother. We found only one study that had investigated this, and thus, more research is warranted. Additionally, it would be advantageous to investigate the influence of the timing of doula support, whether it occurs before labor, during childbirth, or postpartum. This approach would allow the correlation of specific doula interventions with distinct labor outcomes, further promoting and refining the training of these interventions in doula training programs. Moreover, it would provide valuable insights into the optimal timing for commencing doula support to fully harness its benefits[1].

The current study demonstrates several strengths. The researchers utilized comprehensive and systematic search methods under a pre-established methodology. The process of conducting the literature search was carried out with great attention to detail and adherence to a methodical approach. Furthermore, the research underwent rigorous evaluation by two separate groups of two researchers each, ensuring that it remained within the predetermined boundaries and objectives. Furthermore, the study adhered to PRISMA guidelines and conducted a rigorous quality assessment of the studies that were included.

However, the scoping review included only studies that were published in the English language, which may have introduced a bias towards countries where English is spoken and excluded research undertaken in nations where English is not the primary language. This could limit the generalizability of the results, and the findings must be made with caution. Moreover, the inclusion of a restricted number of RCTs in this scoping review restricts the generalizability of the effectiveness of doulas on birth outcomes.

In conclusion, this scoping review has provided valuable insights into the multifaceted roles and potential impacts of doulas in the realm of pregnancy care and maternal well-being. Findings from this review suggest that public investment in community-based doula programs, including expanded Medicaid reimbursement and institutional support, may be an important strategy for addressing health disparities and improving maternal and infant health outcomes in diverse populations. Future research should prioritize rigorous studies, long-term outcome assessments, and cost-effectiveness analyses to better understand the nuanced effects and optimal integration of doulas into pregnancy care. Furthermore, there is a need to also explore the impact of doulas on health behavior change during pregnancy. This will provide a more evidence-based foundation for decision-making in maternal care.

Methods

Study design

A comprehensive scoping review was conducted according to the guide by the Arksey and O'Malley five-stage methodological framework[44] (identifying the research questions; identifying relevant studies; study selection; charting the data; collating, summarizing, and reporting the results). In contrast to a systematic review and meta-analysis, the scoping review methodology allows for the collection of a "variety of relevant literature and research employing various methodologies"[45]. Using examples from empirical investigations, the framework of Arksey and O'Malley allowed flexibility to clarify ideas related to highlighting the scope of evidence on the role of doulas across the pregnancy care continuum on maternal and child health[44]. The aims of the current project aligned with those established for conducting scoping reviews, include a need to examine the size, span, and nature of research activity involving the impact of doulas on maternal and child health outcomes as well as the purpose of identifying gaps in the existing literature[43]. The review protocol was registered in the Open Science Framework registry (https://osf.io/hp6fs).

Stage 1: identifying the research question

The primary research question focuses on identifying and evaluating the evidence of doula's impact on the pregnancy care continuum (before, during, and postpartum).

Stage 2: identify relevant studies

Article searches across the following databases were conducted including PubMed, SCOPUS, EMBASE, CINAHL, Cochrane Review, and Cochrane Central beginning on October 7th, 2022, and ending on March 15th, 2023. The search was limited to articles published in English and published literature between 2000 and 2023.

The search keywords used were a combination of "Doulas" OR "Birth Doula" OR "Postpartum Doula" OR "Antepartum Doula" OR "Abortion Doula" OR "Community-based Doula" OR "Postpartum doula" AND "Pregnancy" OR "Maternity" OR "Postpartum" OR "Prenatal" OR "Antenatal" AND "Outcome" OR "maternal health" OR ("maternal" AND "health") OR "women's health" AND "Child" OR "Infant." To better narrow search results for the current review focus, database choices were limited to those from peer-reviewed sources only (grey literature was not included) and those involving human subjects' participation[46]. After the initial search using these parameters, a total of 897 articles were found.

The results were reviewed by the research team to ensure the validity of the search strategy, and any disagreements were resolved by consensus with all research team members. The research team consisted of two PhD-level faculty (DD & KS) and three graduate students (PC, JP & GK) who had previous experience conducting systematic and scoping reviews as well as those specializing in maternal and child health research. Results from each database search were exported to a single library using Rayyan software(https://www.rayyan.ai/), a collaborative online research tool designed to assist with the management of systematic and scoping reviews. Duplicate articles were removed before moving toward the next steps.

Stage 3: study selection

The Preferred Reporting Item for Systematic Review and Meta-Analysis (PRISMA) framework was used to guide title and abstract screening[47]. Further eligibility criteria were used to ensure that the content of the included articles was relevant to the study's goal. Abstracts were screened using the following inclusion criteria: (1) articles focusing on the role of doulas, (2) articles focusing on before, during pregnancy, and postpartum, (3) articles that include pregnancy outcomes (low birth weight, reduced cesarean births, and shortened durations of labor) and behavior change (healthy eating, physical activity, early initiation of breastfeeding, cessation of alcohol and smoking), and (4) articles published between 2000 and 2023 to access the current state of knowledge. The exclusion criteria included: (1) textbook chapters, systematic reviews, and grey literature (2) a non-English article; and (3) research articles not focused on doulas and birth outcomes. Two pairs of reviewers, the first four authors, reviewed the titles and abstracts for evidence of inclusion/exclusion criteria as well as duplications. These titles and abstract reviews were split evenly between the two pairs of reviewers (382 and 383 unique records) using the Rayyan intelligent systematic review software. If a review pair did not have consensus based on the title and abstract alone, the study was automatically included in the corpus for a full-text review.

Title and abstract screening were conducted between March 20 and April 10, 2023, followed by full-text screening from April 11 to May 5, 2023. Both pairs of reviewers assessed the full-text articles based on the criteria noted above for title and abstract reviewing. All disagreements between review pairs as well as the final decision about inclusion and exclusion of articles were discussed among all four reviewers when necessary to reach a consensus decision. The PRISMA flow chart was generated to indicate how many full-text articles were excluded and why.

Stage 4: charting the data

To capture relevant information from each study, data tables were created in an Excel spreadsheet. The final list of included studies from the full-text review was uploaded to the Excel spreadsheet by two authors (PC and GK). The extracted data included the following: (1) author, (2) title of the study, (3) publication year, (4) publication type, (5) type of study, (6) abstract screening, (7) study setting, (8) study population, (9) results or main findings and, (10) reported strength and limitations. Data extraction was conducted from May 6 to May 20, 2023.

Stage 5: collating and summarizing and reporting the results

The extracted data were summarized in a narrative report focused on the following outcomes: data capture and database system efficiency, data system utility, and influence on research, statistics, and training. These findings were discussed about the research question and the study's overall goal. Gap detections were used to identify regions with a lack of research on good data collection procedures and a scarcity of data-on-data captures, such as countries with a scarcity of data-on-data captures.

Outcome measures:

In our scoping review, the following maternal and neonatal outcomes were used for measuring the impact of doulas in the pregnancy care continuum: (1) Doulas-impact on mode of delivery; (2) Doulas-based delivery support; (3) Doulas' support on the child outcome; and (4) Doulas as maternal mental and well-being support.

Data availability

The dataset generated and analyzed during the current study is available from the corresponding author on reasonable request.

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Author contributions
This study was conceptualized and designed by P.C. The literature search and study selection were conducted by P.C., J.P. and G.K., with oversight from D.D. and K.S. Data extraction and charting were performed by P.C. and G.K. The synthesis and interpretation of findings were led by P.C., J.P. and G.K., with input from D.D. and K.S. The manuscript was drafted by P.C. and G.K., while D.D., K.S., P.C., J.P. and G.K. reviewed, revised, and approved the final version.

Competing interests
The authors declare no competing interests.

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