

## The Effect of Midwife-Led Practices on Birth Expectancy and Experience Outcomes: Systematic Review and Meta-Analysis

Fatma Şule BİLGİÇ\*, Aysu YILDIZ KARAAHMET\*\*, Fatma AZİZOĞLU\*\*\*

### Abstract

**Aim:** The objective of this study was to conduct a systematic review of the birth expectations and experiences associated with midwife-led interventions, and to perform a meta-analysis of the existing evidence.

**Method:** The literature review was carried out between November and December 2024 across four electronic databases: PubMed, Cochrane Library, Web of Science, and ULAKBIM. Articles were identified using MeSH-based keywords. Only Randomized Controlled Trials (RCTs) were included in this unrestricted search. The data were analyzed using the Review Manager software.

**Results:** A total of seven studies, involving 936 women, were included in the analysis. According to the results of the random effects model, significant differences in birth expectations were observed between the groups in the post-test (MD: -15.58, 95% CI: -30.74 to -0.42, Z = 2.01, p = 0.04). Additionally, the results showed significant differences in childbirth self-efficacy values between the groups in the post-test (MD: 43.60, 95% CI: 24.53 to 62.67, Z = 4.48, p < 0.00001).

**Conclusions:** Consistent with the findings of the studies included in the review, midwife-led interventions were shown to reduce childbirth-related fear and stress in pregnant women and during the puerperium, while also enhancing their perception of self-efficacy for childbirth. These interventions contribute to low-quality evidence.

**Keywords:** Midwife-led, birth expectancy, experience, childbirth self-efficacy.

### Ebe Liderliğindeki Uygulamaların Doğum Beklentisi ve Deneyimi Üzerine Etkisi: Sistematik İnceleme ve Meta-Analiz

#### Öz

**Amaç:** Bu çalışmanın amacı, ebe liderliğindeki uygulamaların doğum beklentileri ve deneyimleri üzerindeki etkilerini sistematik bir şekilde incelemek ve mevcut kanıtları meta-analiz yöntemiyle değerlendirmektir.

**Yöntem:** Literatür taraması, Kasım ve Aralık 2024 tarihlerinde PubMed, Cochrane Library, Web of Science ve ULAKBIM gibi dört elektronik veri tabanında yapılmıştır. Yayımlanan makaleler, MeSH terimleri kullanılarak belirlenmiştir. Aramada yalnızca Randomize Kontrollü Çalışmalar (RCT) dahil edilmiştir. Veriler, Review Manager yazılımı ile analiz edilmiştir.

**Bulgular:** Meta-analize toplamda 936 kadını içeren yedi çalışma dahil edilmiştir. Random etkiler modeline göre, gruplar arasında doğum beklentileri açısından post-test sonuçlarında anlamlı farklar bulunmuştur (MD: -15,58, 95% CI: -30,74 ile -0,42, Z = 2,01, p = 0,04). Ayrıca, post-testte doğum öz-yeterlilik değerlerinde de gruplar arasında anlamlı farklar gözlemlenmiştir (MD: 43,60, 95% CI: 24,53 ile 62,67, Z = 4,48, p < 0,00001).

**Sonuç:** İncelenen çalışmaların bulgularına göre, ebe tarafından yönlendirilen müdahaleler, hamile kadınların doğum korkusu ve stresini azalttığı, lohusalık döneminde de bu etkinin devam ettiği ve kadınların

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\* Asst. Prof., Çanakkale Onsekiz Mart University, Faculty of Health Sciences, Department of Midwifery, Çanakkale, Türkiye. E-mail: [sulebilgic@outlook.com](mailto:sulebilgic@outlook.com) [ORCID https://orcid.org/0000-0002-5950-2553](https://orcid.org/0000-0002-5950-2553)

\*\* Asst. Prof., Biruni University, Faculty of Health Sciences, Department of Midwifery, Istanbul, Türkiye.

E-mail: [aysuyildiz@hotmail.com](mailto:aysuyildiz@hotmail.com) [ORCID https://orcid.org/0000-0003-1134-9016](https://orcid.org/0000-0003-1134-9016)

\*\*\* Asst. Prof., Haliç University, Faculty of Health Sciences, Department of Nursing, Istanbul, Türkiye.

E-mail: [fatmaazizoglu@halic.edu.tr](mailto:fatmaazizoglu@halic.edu.tr) [ORCID https://orcid.org/0000-0002-7102-9797](https://orcid.org/0000-0002-7102-9797)

doğumla ilgili öz-yeterlilik algılarını artırdığı görülmüştür. Ancak, bu müdahaleler düşük kaliteli kanıtlara dayanmaktadır.

**Anahtar Sözcükler:** Ebe liderliğinde doğum, doğum beklentisi, deneyim, doğum öz yeterliliği.

## Introduction

Pregnancy and childbirth represent major physiological milestones in a woman's life. Throughout this process, a woman's emotional well-being may vary, which can increase her vulnerability to psychological stress and lead to various mental health concerns. Although pregnancy is commonly associated with excitement and positive emotions, research indicates that around 14% of expectant women experience significant fear regarding childbirth<sup>1,2</sup>.

The fear of childbirth, which can lead to a range of psychological and physiological challenges, may develop either before or during pregnancy, or it can be triggered following a traumatic or distressing birth experience. Pregnancy-related stress poses considerable health risks during the perinatal period and can have a negative effect on the childbirth process, its outcomes, and the overall satisfaction with the experience<sup>3-5</sup>. Complications during pregnancy caused by stress can lead to issues such as hypertension, preterm birth, and intrauterine growth restriction, all of which are significant contributors to perinatal morbidity and mortality. Furthermore, when a pregnant woman experiences stress, it increases the likelihood of the baby facing long-term emotional, behavioral, and cognitive challenges<sup>3,4</sup>.

In perinatal care, midwives play a vital role through continuous interaction with the woman. From pregnancy through the postpartum period, personalized midwifery care tailored to the specific needs and cultural context of each woman aims to enhance both maternal and infant health. In midwife-led care models, a familiar and trusted midwife provides support throughout the prenatal, labor, and postpartum stages, promoting a healthy pregnancy, safe delivery, and effective parenting practices<sup>6,7</sup>. In the studies conducted, it is reported that midwife-led care will reduce negative emotions such as fear, and anxiety while increasing birth outcomes and women's experiences<sup>8,9</sup>, and meta-analysis studies that will constitute evidence are very limited. The aim of this study was to systematically review the birth expectancy and experience outcomes of midwife-led interventions and to meta-analysis.

## Material and Methods

In this study, a systematic review and meta-analysis were conducted following the guidelines outlined in the PRISMA 2020 statement<sup>10</sup>.

### *Eligibility criteria*

The PICOS (Population, Intervention, Comparator, Outcome, Study design) criteria outlined below were applied to select studies for inclusion in this systematic review and meta-analysis.

**Population (P):** Pregnant women, with the following inclusion criteria: (1) Healthy pregnancy and fetus.

**Intervention (I):** Midwife-led practices added to routine care, (1): Mindfulness, (2): Psychoeducation and education (4): Model of continuing midwifery care (5) Cognitive Behavioral therapy (6) Yoga.

**Comparison (C):** (1) Routine care.

**Outcome (O):** (1): Birth anticipation and experience, (2) Childbirth self-efficacy 3) Stress.

**Study design (S):** Only RCTs were included in the review. Studies addressing risks or health issues in mothers and infants, as well as those focusing on pregnant women with psychological disorders, were excluded. Furthermore, articles that used invalid measurement tools, along with traditional and systematic reviews, were not included.

### **Search strategy**

The systematic review and meta-analysis literature search was conducted between November and December 2024 across four electronic platforms: PubMed, CINAHL, Scopus, and ULAKBİM. Midwife-led practices were identified through the use of specific medical terms and keywords. These included "midwife-led" AND "education" OR "mindfulness" OR "consulting" AND "pregnant" AND "delivery" OR "birth" AND "pain" OR "labor" AND "fear of birth" AND "psychological parameters" OR "stress." To minimize bias, the articles identified during the screening process were independently evaluated by the same researchers to ensure they met the inclusion and exclusion criteria. Full texts of studies not defined by the summaries were also assessed.

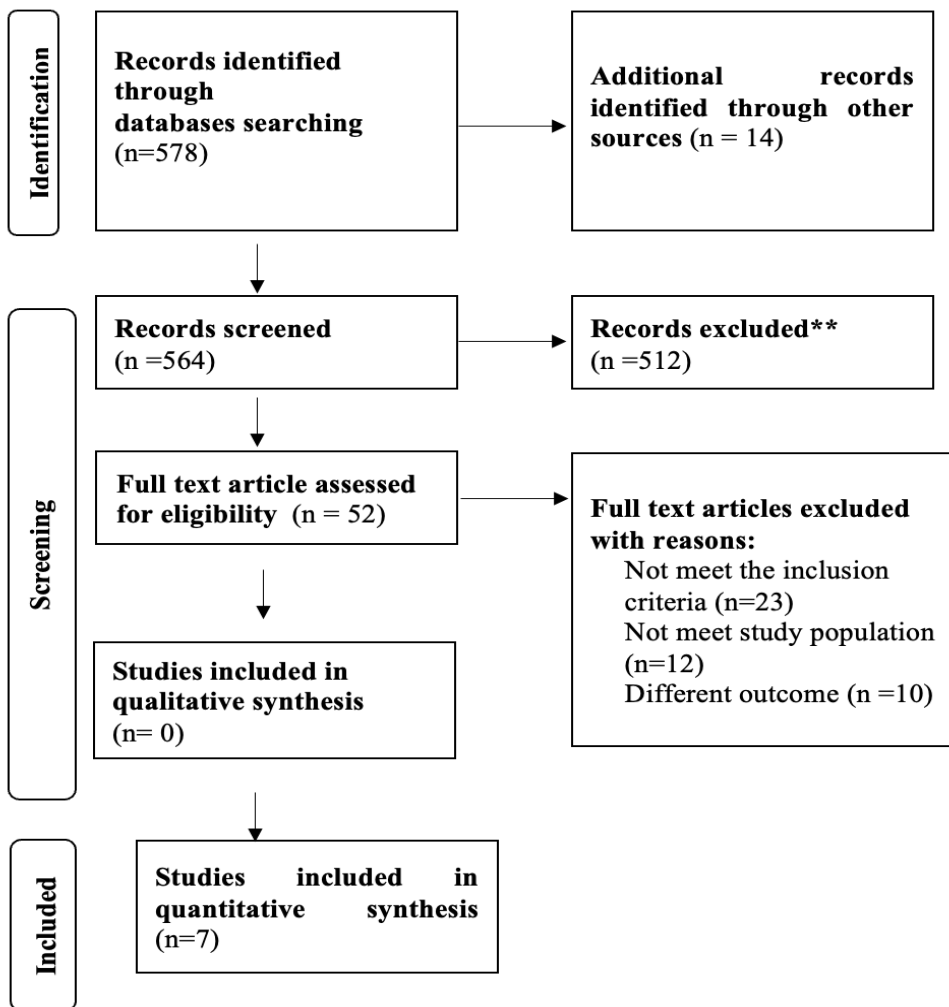
### **The data analysis**

The data for the meta-analysis were processed with Review Manager 5.4. Statistical analyses employed two-tailed tests, with a p-value lower than 0.05 considered statistically significant. The quality of the randomized controlled trials included was assessed using the Cochrane Risk-of-Bias tool, Version 2 (RoB-2). An independent risk-of-bias assessment for the included studies was conducted by one of the authors (FŞB, AYK) using this tool.

## **Results**

### **Literature review**

Through electronic database searches and manual reviews, a total of 578 studies were initially identified. Among these, 512 articles with full-text access were evaluated. After screening the titles and abstracts for relevance, 512 articles were excluded for failing to meet the inclusion criteria. These excluded studies included review articles, protocols, duplicates, studies involving different populations, and those not adhering to the inclusion standards. The remaining 52 full-text articles underwent further eligibility assessment. Ultimately, seven RCTs were included in the quantitative synthesis, as they fulfilled the necessary criteria (Figure 1).

**Figure 1.** PRISMA flow diagram. PRISMA

### ***Study characteristics***

This systematic review and meta-analysis include seven studies involving a total of 936 women. It aims to systematically evaluate the effect of midwife-led practices on birth expectations and experiences, as well as to assess the available evidence<sup>8,11-16</sup>. In the applications for pregnant women in the articles included in the analysis, mindfulness was applied in two studies<sup>14,15</sup>, psychoeducation or training in four studies<sup>8,11-13</sup>. Yilmaz Esencan and Rathfisch<sup>16</sup> applied a midwife-led yoga intervention. All the studies included in the study were healthy women. Birth experience/expectancy, birth self-efficacy and stress were evaluated in the studies (Table 1).

**Table 1.** General characteristics of the included studies

Reference\ Country	Study design	Population	The inclusion criteria	Intervention Duration	Comparisons	Drop out	Primary Outcome	Other Outcomes	Results
Van der Meulen, et al. <sup>14</sup> Holland	RCT*	141 Pregnant (EG:75; CG:66)	Women with 16-26 GW were included. -Participation in another hypno-birth in the last year,	<b>Intervention:</b> Mindfulness <b>Duration:</b> 9-week session of 3 hours	CG: Routine protocol	None	W-DEQ*	Perceived Stress Scale, EPDS*, Pregnancy Experience Scale	No significant differences were found between MBCP and ECAU overall, but MBCP participants who labored reported a more positive birth experience.
Yilmaz Esencan and Rathfisch, <sup>16</sup> Turkey	RCT*	103 Pregnant (EG:34 CG:69)	Primiparous pregnant women, aged 20-36 weeks of gestation, expecting a single fetus with no complications or systemic disease, who were expected to have a spontaneous, normal birth, and could speak Turkish.	<b>Intervention:</b> Yoga <b>Duration:</b> 60 minutes for 10 weeks, twice a week	CG: routine protocol	EG:4, CG:9	W-DEQ*	Childbirth Self-Efficacy Inventory	The intervention group demonstrated significantly higher rates of vaginal delivery, lower intervention and episiotomy rates, reduced pain levels, and WIJMA B scores, along with higher CBSEI scores when compared to the control group.
Veringa-Skiba et al. <sup>15</sup> Holland	Single Blind RCT*	141 Pregnant (EG:75 CG:66)	Pregnant women who had no prior restrictions on giving birth without medication and who had a W-DEQ-A $\geq$ of 66 and a W-DEQ-A $\geq$ of 66 were included.	<b>Intervention:</b> Mindful Birthing (MBCP) <b>Duration:</b> 9 sessions of interventions, each lasting three hours	CG: Routine protocol	EG:19, CG:11	W-DEQ*	Catastrophizing Labor Pain, Willingness to Accept Obstetric Interventions, The Perinatal Disaster Scenario Scale	MBCP was more effective than enhanced care as usual in reducing childbirth fear and pain catastrophizing, while also lowering the likelihood of epidural analgesia and cesarean section, and increasing the chances of unmedicated childbirth.
Çankaya and Şimşek, <sup>8</sup> Turkey	Single Blind RCT*	120 Pregnant (EG:60, CG:60)	Women over 18 years of age, primiparous, with a healthy single pregnancy between 20-32 weeks of gestation, expecting a term birth (38-42 weeks), and with healthy infants were included.	<b>Intervention:</b> Educational intervention based on the philosophy <b>Duration:</b> 2 weeks	CG: routine protocol	EG:5, CG:3	W-DEQ*	Childbirth Self-Efficacy Inventory	Women in the antenatal education group had lower birth fear, stress, and depression, higher childbirth self-efficacy, and fewer postnatal symptoms compared to the control group.
Isbir and Serçekuş, <sup>11</sup> Turkey	Single Blind RCT*	72 Pregnant (EG:36, CG:36)	$\geq$ 18 years old and literate, at least primary school graduate; Gestational age $\geq$ 37 days No contraindications to spontaneous vaginal delivery; $\leq$ 3 cm cervical dilatation; Being conscious and being able to communicate in Turkish were included.	<b>Intervention:</b> Intrapartum continuous midwifery care model <b>Duration:</b> During the period of labor	CG: routine protocol	EG:3, CG:6	W-DEQ*	N/A	The intervention group experienced less delivery fear, higher perceived support and control, lower pain scores during the transient phase of labor, and a shorter delivery duration compared to the control group ( $p < 0.05$ ).

<b>Turkstra et al.<sup>13</sup> Australia</b>	<b>RCT*</b>	<b>339 Pregnant (EG:170, CG:169)</b>	The study included second-trimester women who were admitted to the hospital's prenatal clinics, could speak English profusely, and were 16 years of age or older.	<b>Intervention:</b> Psychoeducation by telephone <b>Duration:</b> At a time, convenient for them at weeks 24 and 34.	<b>CG: Routine protocol</b>	<b>EG:81, CG:74</b>	<b>W-DEQ*</b>	<b>N/A</b>	The intervention did not increase costs, but a post hoc analysis indicated it could be cost-effective for women with high levels of childbirth fear.
<b>Rouhe et al.<sup>12</sup> Finland</b>	<b>RCT*</b>	<b>371 Pregnant (EG:131, CG:240)</b>	WDEQ-A $\geq 100$ recipient and primiparous women were included.	<b>Intervention:</b> Psychoeducation <b>Duration:</b> 6 times for the pregnant	<b>CG: Orientation to first step</b>	<b>EG:54, CG:116</b>	<b>WDEQ*</b>	<b>N/A</b>	Social support, intervention participation, and a less fearful childbirth experience predicted better maternal adjustment and lower postnatal depressive symptoms.

RCT: Randomized Control Trials, EG: Experimental group, CG: Control Group, W-DEQ-A: Wijma Delivery Expectancy/ Experience Questionnaire

## Outcomes

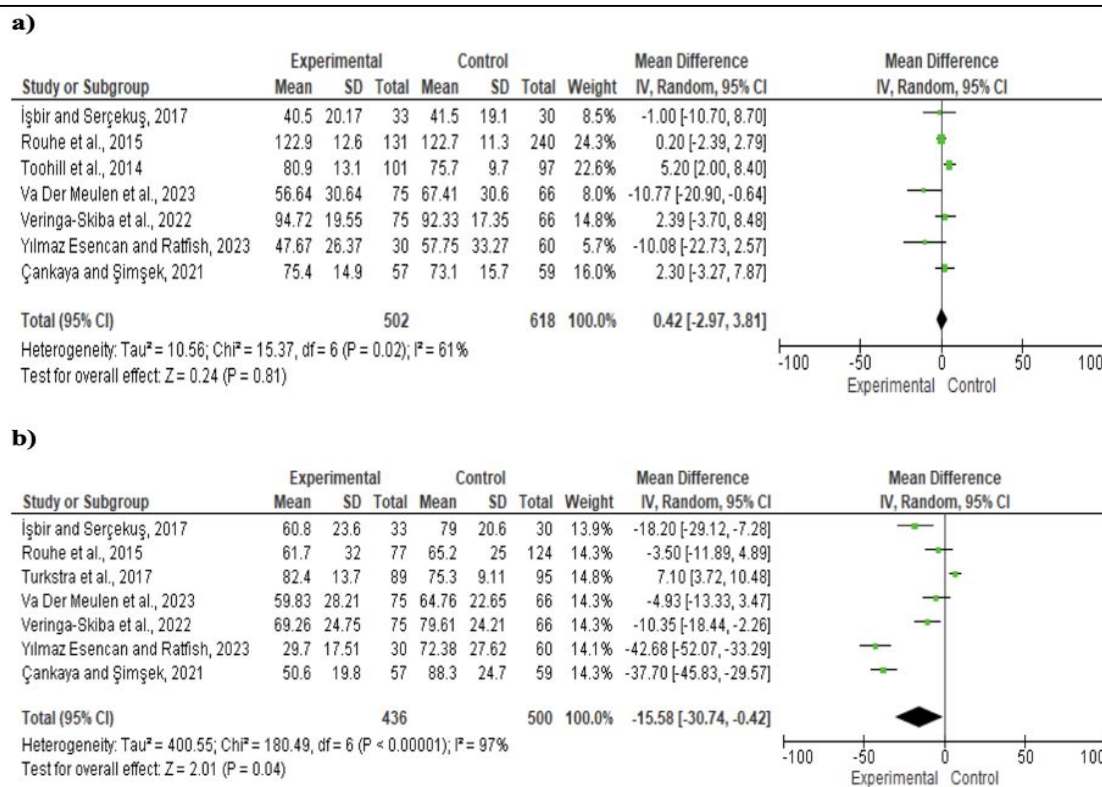
The meta-analysis results were visualized using a forest plot. Among the seven studies included in the analysis<sup>8,11-16</sup>, birth expectancy and experience were assessed, with these outcomes being prioritized as primary measures. In addition, two studies that focused on childbirth self-efficacy<sup>8,16</sup>, as well as two studies investigating the impact of practices on stress levels<sup>8,14</sup>, were considered secondary outcomes in the meta-analysis.

## Primary outcomes

### Birth expectancy/ experience

In the studies reviewed, seven studies reported birth expectancy/ experience outcomes at pretest, while eight studies reported these outcomes at posttest. When the data from the studies were pooled, a high level of heterogeneity was observed ( $I^2=61\%$ ,  $p=0.02$ ). As a result, the random effects model revealed no significant difference in birth expectancy between the groups at pretest (MD: 0.42, 95% CI: -2.97 to 3.81,  $Z=0.24$ ,  $p=0.81$ ). However, upon analyzing the post-intervention data, very high heterogeneity was found ( $I^2=97\%$ ,  $p<0.00001$ ). In this instance, the random effects model indicated a significant difference in birth expectancy between the groups at posttest (MD: -15.58, 95% CI: -30.74 to -0.42,  $Z=2.01$ ,  $p=0.04$ ) (Figure 2 a-b).

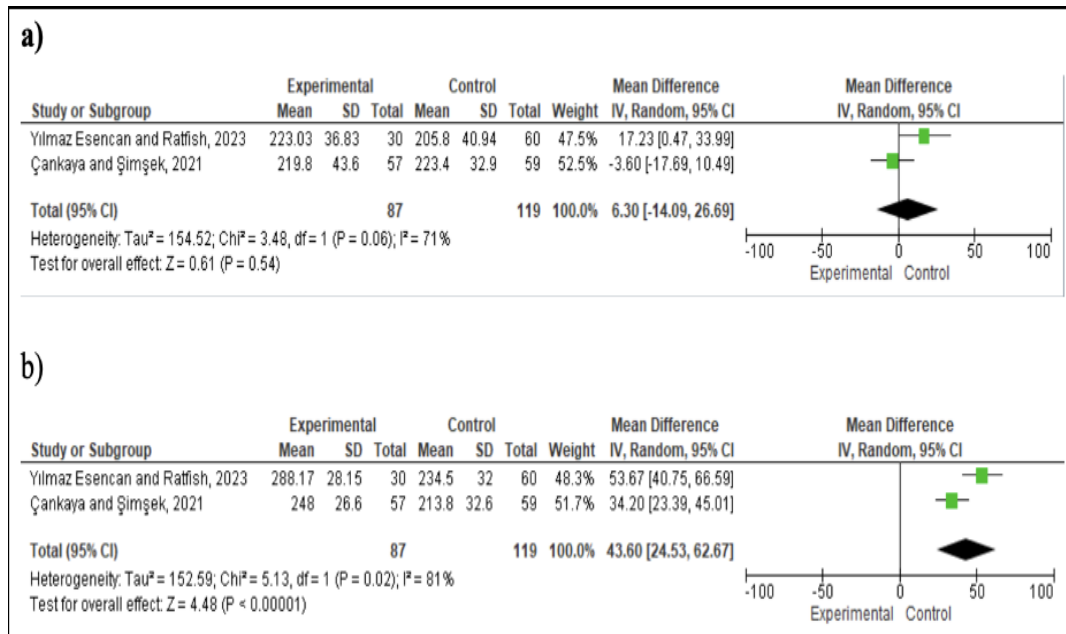


**Figure 2 (a, b).** Forest plot of comparison: Meta-analysis results on the effect of midwife-led on the (a) Delivery Expectancy (b) Delivery Experience

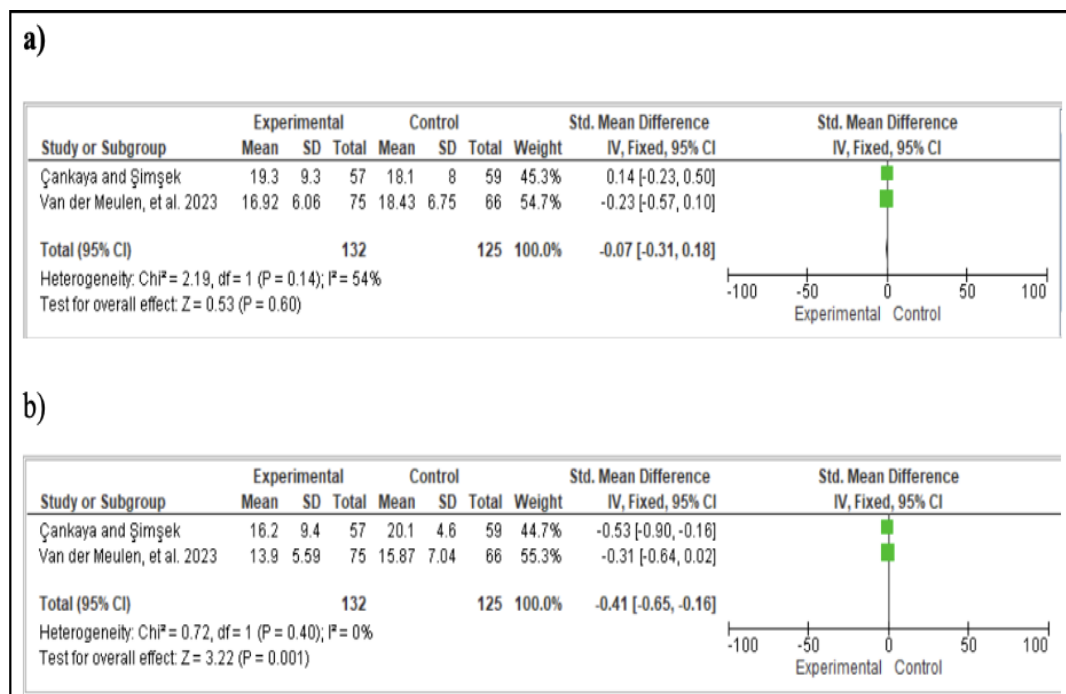
## Secondary outcomes

### Childbirth self-efficacy

Two studies evaluated childbirth self-efficacy outcomes. When the data from these studies were combined, a high degree of heterogeneity was observed ( $I^2=71\%$ ,  $p=0.06$ ). As a result, the random effects model indicated no significant difference in childbirth self-efficacy between the groups at pretest (MD: 6.30, 95% CI: -14.09 to 26.69,  $Z=0.61$ ,  $p=0.54$ ). However, when analyzing the post-intervention data, heterogeneity remained high ( $I^2=81\%$ ,  $p=0.02$ ). The random effects model revealed significant differences in childbirth self-efficacy between the groups at the posttest (MD: 43.60, 95% CI: 24.53 to 62.67,  $Z = 4.48$ ,  $p < 0.00001$ ) (Figure 3 a-b).

**Figure 3 (a, b).** Forest plot of comparison: Meta-analysis results on the effect of midwife-led on the Childbirth self-efficacy: (a) Pre-intervention (b) post-intervention**Stress**

Two studies evaluated stress levels in the participants. The pooled data indicated no significant difference in stress levels between the groups at the pretest (SMD: -0.07, 95% CI: -0.31 to 0.18,  $Z = 0.53$ ,  $p = 0.60$ ). However, a significant difference was observed at the posttest (SMD: -0.41, 95% CI: -0.65 to -0.16,  $Z = 3.22$ ,  $p = 0.001$ ) (Figure 4a-b).

**Figure 4 (a, b).** Forest plot of comparison: Meta-analysis results on the effect of midwife-led on the Stress: (a) Pre-intervention (b) post-intervention



## Risk of bias

All studies utilized appropriate methods for the random allocation of pregnant women into groups<sup>8,11-16</sup>, resulting in a low risk of bias assessment. One study ensured allocation concealment by using sequentially numbered, sealed opaque envelopes, which contributed to its low risk of bias<sup>16</sup>. In contrast, the remaining studies were deemed to have a low risk of attrition bias, as the dropouts were either equally distributed between the intervention and control groups or were minimal enough to have no significant effect on the study outcomes<sup>8,11,14-16</sup>.

Regarding reporting bias, all studies included in the meta-analysis were deemed to have a low risk, as they provided balanced discussions of both positive and negative outcomes and ensured consistent reporting throughout. Furthermore, each study was assessed for other potential sources of bias that had not been previously addressed. Specifically, we examined whether any conflicts of interest or funding sources were disclosed. None of the included studies reported any other significant sources of bias<sup>8,11-16</sup> (Figure 5 a, b).

**Figure 5 a,b.** Risk of Bias, RoBs

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Çankaya and Şimşek, 2021	+	+	+	-	+	+	+
İşbir and Serçekuş, 2017	+	+	+	-	+	+	+
Rouhe et al., 2015	+	+	-	-	-	+	+
Turkstra et al., 2017	+	+	-	-	-	+	+
Va Der Meulen et al., 2023	+	+	-	-	+	+	+
Veringa-Skiba et al., 2022	+	+	+	-	-	+	+
Yılmaz Esencan and Ratfish, 2023	+	-	-	-	+	+	+

## Discussion

This study aimed to reveal the evidence regarding the impact of midwife-led practices on birth experiences and psychological outcomes. In the study, it was found that midwife-led practices met the expectations of birth in pregnant and puerperal, reduced fear of childbirth, and stress, increased the perception of self-efficacy, and constituted moderate quality evidence.

Meeting expectations during childbirth is essential for women, as achieving these expectations is closely associated with higher birth satisfaction. The findings from the

meta-analysis revealed that midwife-led practices contributed to reducing the expectations of pregnant women, ultimately leading to those expectations being fulfilled. A recent meta-synthesis underscored that key factors for a positive birth experience include the alignment of birth expectations with personal values. The study further highlighted that having a healthy baby in a safe environment, emotional and practical support from a companion, and care from skilled and compassionate staff are crucial elements for a positive birth outcome<sup>17</sup>.

Although childbirth is a natural physiological process, it can elicit a wide range of both positive and negative emotions. In this meta-analysis, midwife-led practices were found to reduce fear of childbirth and stress. Similar studies in the literature have shown that midwife-led practices positively influence women's birth experiences by alleviating negative emotions such as fear, anxiety, and stress. The findings of this study align with the existing literature in this regard<sup>8,9,11</sup>. It is thought that midwife-led practices can be effective in reducing fear, stress, by strengthening coping mechanisms.

The process of childbirth is closely tied to the concept of self-efficacy, which refers to a woman's confidence and belief in her ability to give birth in a safe and healthy manner. The study found that midwife-led practices increased women's perception of self-efficacy. The fact that the woman sees and accepts the birth as a normal process and that she is confident in this regard can be explained by the concept of self-efficacy. In pregnant women with low self-efficacy perception, the birth process may be adversely affected. It is reported that increased self-efficacy in childbirth reduces the fear of childbirth in pregnant women<sup>18,19</sup>. The ability of pregnant women to act with maturity when they experience a stressful experience, such as childbirth, depends on the individual's ability to separate thoughts from the more reactive emotion process<sup>20</sup>. In the literature, it is shown that midwife-led practices enable pregnant women to have a more positive birth experience in which they reduce the level of stress, anxiety, and fear<sup>21-24</sup>. The study findings are similar to the studies in literature.

Overall, the findings of this study align with and contribute to the growing body of evidence supporting midwife-led practices as a beneficial model of care. These practices not only respond to women's emotional and psychological needs during childbirth but also promote a more personalized, respectful, and empowering birth environment. As childbirth experiences have long-term effects on maternal well-being, enhancing midwife-led care may offer a sustainable approach to improving both clinical outcomes and women's satisfaction. Continued emphasis on evidence-based, woman-centered care models will be essential in shaping future maternity services.

## Conclusion

In line with the analyzed studies, midwife-led practices reduce the fear of childbirth, and stress in pregnant women and puerperal, while increasing the perception of self-efficacy about birth. In addition, it has been revealed that midwife-led practices affect birth experiences and more examples of practices with midwives are needed in this regard. The results are valuable in that they provide an overview of the planned studies in this field.

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