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Evidence-based intrapartum supportive care in Türkiye: a randomized controlled trial

Esra Cevik^{1*} and Emre Yanikkerem²

Abstract

Background The integration of evidence-based supportive care practices into intrapartum care is increasingly emphasized in international guidelines, as such practices are considered fundamental to ensuring safe, respectful, and woman-centered maternity services. Despite growing awareness, supportive practices remain under-implemented in clinical settings. Therefore, this study aimed at investigating the effect of supportive care provided in line with evidence-based practices during the intrapartum period.

Methods The study has a randomized controlled intervention design, in which participants were randomly allocated to the intervention or control group. This study was conducted in a public hospital, a province in Balıkesir, Türkiye. The study sample comprised ($n = 104$) pregnant women assigned to the intervention ($n = 52$) and control ($n = 52$) groups. Participants were matched for age, education level, body mass index, the number of births and pregnancies, and participation in prenatal preparation classes. During the intrapartum period, the participants in the intervention and control groups were given supportive care and routine care, respectively. The Descriptive Characteristics of Women Questionnaire, State Anxiety Inventory (SAI), Visual Analogue Scale (VAS), pain diagram, and labor and postpartum evaluation form were used to collect the data. Data were analyzed using SPSS version 26.0. Group comparisons were performed using chi-square and Fisher's exact test for categorical variables and Student's t-test for continuous variables showing a normal distribution. Intra-group comparisons were performed using paired t-tests, and repeated measures were analyzed using analysis of variance with Bonferroni post hoc correction. Effect sizes were calculated using Cohen's d. In the analysis of the data, Student's t-test, paired t-test, repeated measures of ANOVA (post hoc: Bonferroni) and Cohen's d were used.

Results The participants in the intervention group tended to have lower mean VAS and SAI in the latent, active and transition phases after they received supportive care. The duration of labor was shorter with the intervention compared to the control group (9.2 ± 5.4 h vs. 12.6 ± 6.8 h, $p = .005$). The perceived difficulty of labor was also lower with the intervention (7.8 ± 2.0 vs. 9.4 ± 1.2 , $p < .001$). Maternal satisfaction scores were higher with the intervention compared to the control group (9.9 ± 0.2 vs. 7.2 ± 1.6 , $p < .001$).

Conclusion The research found that pregnant women who received supportive care during labor, tended to have lower perceived labor pain and state anxiety levels, shorter labor duration, and lower perceived difficulty during labor compared to those who received standard care. Additionally, the postpartum maternal satisfaction scores tended to be higher in the intervention group. Future research should focus on longitudinal studies evaluating the

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effects of supportive care provided during the intrapartum period on the postpartum well-being of mothers and the breastfeeding process.

Trial and protocol registration This randomized controlled trial was retrospectively registered at ClinicalTrials.gov (NCT06024811) on July 25, 2023.

Reporting method Study methods and results reported in adherence to the CONSORT Statement.

Keywords Supportive care, State anxiety, Labor pain

Background

The intrapartum period is crucial for the health of both mother and newborn [1, 2]. The World Health Organization (WHO) states that care during this time should be holistic, woman-centered, and respectful of human rights. Additionally, evidence-based interventions are vital for ensuring safe deliveries and positive birth experiences for families [1]. In recent years, many international and national associations and researchers have emphasized that the focus should be on intrapartum care services to improve maternal and infant health, and health level indicators [3], and that supportive care should be provided in this period [1, 4–8]. WHO, highlight that supportive care contributes to a positive birth experience and should be continuous, avoiding unnecessary interventions during childbirth [7].

In the literature, it has been stated that women have received support during the birth process throughout history [9–11], but that this supportive care has been mostly provided physically [8, 12, 13]. Intrapartum supportive care refers to the non-medical assistance provided to women during childbirth to alleviate anxiety, discomfort, loneliness, and burnout. This type of care aligns with their individual needs and preferences, empowering them to utilize their strengths. By offering personalized support, this approach ensures a safer birth process while considering each woman's unique characteristics, ultimately facilitating beneficial care in accordance with current circumstances and available options [10, 14]. Several studies have demonstrated that supportive care provided by health professionals increases women's active participation in childbirth, improves their satisfaction and their ability to cope with pain [14–17] and that it reduces perceived labor pain, analgesic use, fear and anxiety [14].

In the literature, supportive care and birth support provided during the intrapartum period have been defined with the following terms: advocacy [11, 17], education/provision of information, emotional, physical [11, 12, 17] and spousal/partner support [18]. Physical support provided in the intrapartum period includes controlling environmental factors such as heat, light, noise, and odor and enabling the woman to move [11, 18]. It also covers applying massage [11, 12, 18, 19, 20, 22] and therapeutic touch [16], performing cold and hot applications, and ensuring the woman's hygiene, elimination, and feeding

[10, 11, 15, 19, 20, 22]. Emotional support for a woman in the delivery room includes warm welcomes, empathy, respect, active listening, allowing questions, unconditional support, encouragement, appreciation, and fostering self-trust. Such support enhances the woman's comfort, sense of safety, and belonging to the healthcare institution [7, 11, 16, 18–22].

Providing information and educational support during the intrapartum period involves several key components. This includes training and informing the woman and her family about various topics, such as hospital procedures, physical examinations, and the birth process, and teaching her breathing and relaxation exercises, straining techniques [11, 22]. As for advocacy support, health professionals advocate for women to ensure they feel safe, especially when they are unable to defend themselves or have difficulty expressing their thoughts and feelings [10, 11, 20]. Advocacy involves protecting a woman's privacy and rights during childbirth, understanding her expectations, resolving conflicts, and conveying her spouse's expectations [9]. Providing guidance and emotional support for the women's spouses is included under the spousal support heading [23]. Health professionals should be attentive to the spouse's emotional state during the birthing process and encourage their involvement and support throughout this experience [21].

The study aimed to assess the impact of supportive care, based on evidence-based practices, during the intrapartum period on women's perceived pain, duration of labor, anxiety state levels, and maternal satisfaction.

Methods

Study setting

This study was conducted as a randomized controlled trial at a public hospital in Balıkesir province, western Türkiye. Antenatal, intrapartum, and postpartum care services in Türkiye are offered in both public and private hospitals. Public hospitals primarily serve low- and middle-income groups, as well as women with health insurance. Public hospitals play a crucial role in providing intrapartum care and delivery services, offering access to care for women from all socioeconomic backgrounds. In Türkiye, obstetricians and gynecologists are responsible for the medical management of labor, while midwives and nurses handle care during labor, monitoring,

and delivery. In the public hospital where this study was conducted, routine intrapartum care and normal vaginal deliveries are provided by midwives, while obstetric interventions are performed by physicians when necessary. In this public hospital, a total of 3649 births occurred in 2020, of which 1641 were vaginal deliveries. The midwives working in the labor room continued to be responsible for routine care and the clinical management of childbirth in both groups. In the delivery room, four midwives are responsible for managing births during the day shift, and four midwives during the night shift. Additionally, the clinic has one clinic manager and one assistant clinic manager. The clinic manager and assistant clinic manager are responsible for coordinating the overall operation of the clinic and other service requirements, rather than directly managing births. Furthermore, a neonatal nurse was present in the delivery room to provide care for the newborn. Based on 2020 figures, a total of 1,641 normal vaginal deliveries were performed annually at the clinic and were managed by four midwives per shift. Accordingly, the annual number of normal deliveries per midwife was approximately 410 ($1,641 / 4$).

The supportive care intervention was delivered by the researcher (E.C., a licensed midwife with a Master's degree in Obstetrics and Gynecology Nursing, PhD in Nursing in the dissertation phase). The intervention was performed by a researcher. In the study, the intervention group received evidence-based intrapartum supportive care provided by the researcher in addition to routine care, whereas the control group received routine care only from the midwives in the labor room. For the purposes of this study, she acted solely as the provider of the additional supportive care protocol and was not part of the hospital's routine labour ward staff, who continued to provide all clinical care. The researcher implemented the supportive care measures specified in the supplementary material file. She did not perform invasive procedures such as episiotomy.

Research hypotheses

Hypothesis 1 Supportive care given in line with evidence-based practices during the intrapartum period affects women's state anxiety levels.

Hypothesis 2 Supportive care given in line with evidence-based practices during the intrapartum period affects women's perceived labor pain.

Hypothesis 3 Supportive care given in line with evidence-based practices during the intrapartum period affects the duration of delivery.

Hypothesis 4 Supportive care given in line with evidence-based practices during the intrapartum period affects maternal satisfaction.

Participants and sampling

The population of the study consisted of pregnant women who applied to the maternity unit of a hospital in Balıkesir for delivery. The primary outcome used for the sample size calculation was the pain intensity score measured with the Visual Analog Scale (VAS). Of the deliveries in 2019, 2315 were normal deliveries. The minimum sample size was calculated as 54 (27 in the intervention group and 27 in the control group) to compare the scores of the two dependent groups before and after the intervention with the G*power 3.1.9.2 program (Type I error: 5.0%, Cohen's effect size: 0.50, Power: 95.0%) [24]. Inclusion criteria were as follows: being over the age of 18 years, having a cervical dilation of 3 cm or more, being planned for spontaneous vaginal delivery at term, having singleton pregnancy, speaking Turkish, having no communication problems, and agreeing to participate in the study. Exclusion criteria were as follows: having maternal and fetal complications likely to affect delivery adversely (placenta previa, ablatio placenta, fetal anomaly, premature rupture of membranes, etc.), having had a caesarean delivery, having any systemic disease (diabetes mellitus, hypertension, etc.) and developing fetal distress or hypoxia during delivery. Planned cesarean births were excluded prior to randomization.

Randomization and blinding

During data collection, 313 women were assessed based on the inclusion and exclusion criteria. Those who did not meet the inclusion criteria ($n=198$) and those who declined to participate ($n=3$) were excluded from the study sample. Pregnant women were stratified during the prenatal period according to age group, education level, body mass index, number of births and pregnancies, and history of participation in childbirth preparation classes, based on the limited inequalities that could arise between groups. Equality between the strata was then ensured using the permutation method. Permutation block randomization was used to create 56 blocks, each containing 2 individuals. After the blocks were created for randomization in the final stage, random numbers were selected randomly on a computer (www.random.org). The lottery method was used to determine the letter that would represent the groups. Participants were divided into two groups. Pregnant women were randomly assigned to one of two equal-sized groups ($n=56$ individuals) at a 1:1 distribution ratio. Following randomisation, experimental and control groups were formed, each comprising 56 individuals. However, four individuals subsequently withdrew from the intervention group: one due to transfer to

a private hospital ($n=1$), one due to refusal of massage ($n=1$), and two due to undergoing caesarean section ($n=2$). In the control group, a total of four participants withdrew from the study due to withdrawal from the

study ($n=1$) and undergoing caesarean section ($n=3$). Consequently, the study comprised a total of 104 participants, with 52 participants in each of the experimental and control groups (Fig. 1). Blinding of the researcher

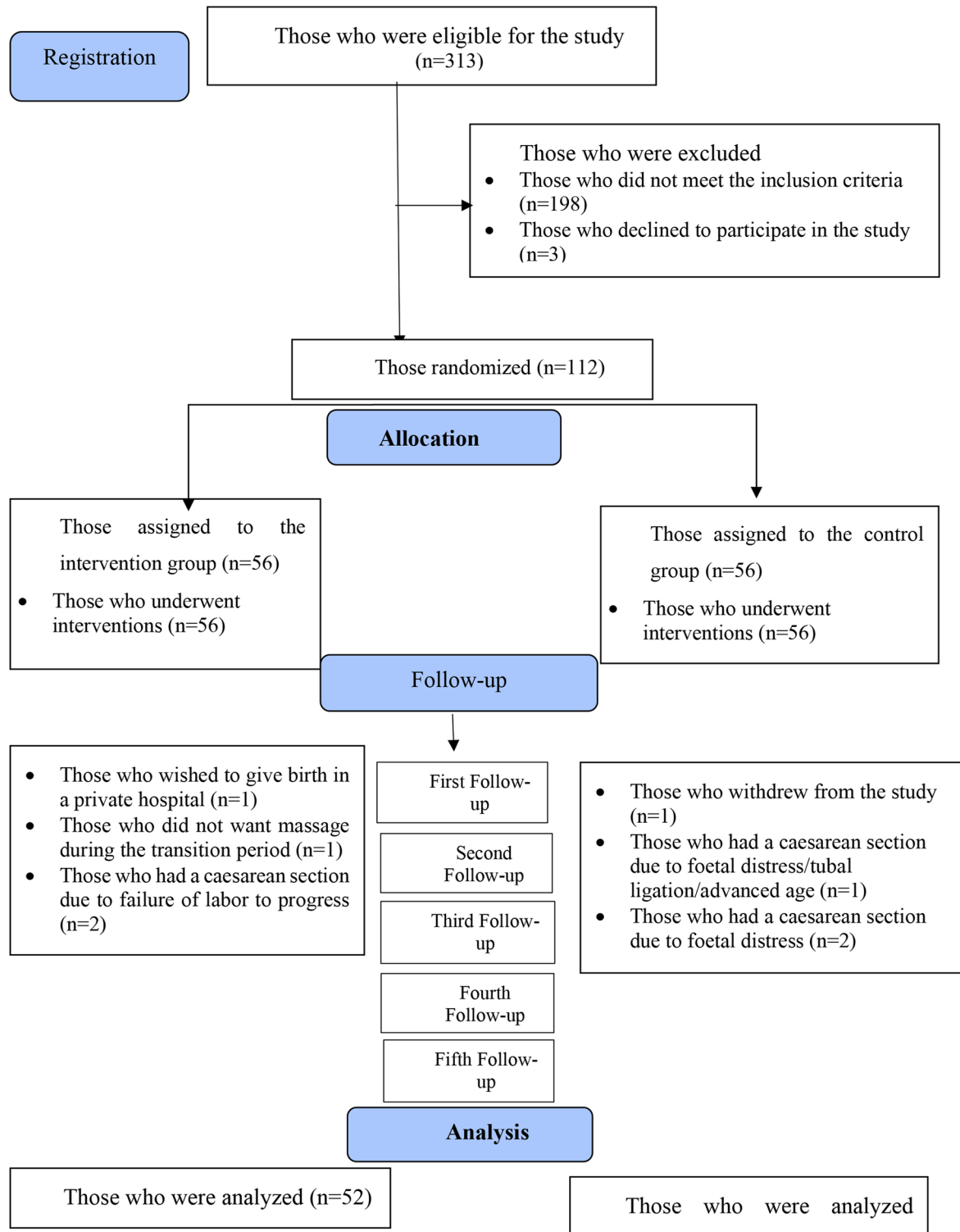


Fig. 1 CONSORT flowchart

who delivered the supportive care and collected the data was not feasible due to the nature of the study. To minimize performance and detection bias, participants were not informed about group allocation. In addition, pregnant women stayed in single rooms, and interaction between groups was not permitted due to hospital procedures during the pandemic. Outcome assessments were conducted using the same standardized procedures in both groups, and group allocation was masked during statistical analysis by using coded datasets.

Data collection

In the study, six data collection tools described below were used. Permission to use the scales utilized in the study was obtained from the respective scale owners.

Descriptive characteristics of women questionnaire The questionnaire includes items questioning women's sociodemographic characteristics such as age, education and employment status, perceived income status and their obstetric characteristics, etc.

State Anxiety Inventory (SAI) Spielberger et al. developed the SAI in 1970. Respondents are required to describe how they feel at a certain time and under certain conditions [25]. Öner and Le Compte performed the validity and reliability of the Turkish version of the SAI. The Cronbach's α value of the SAI was 0.94 in Öner and Le Compte's study (1983). There are 20 items in the SAI. Responses given to the items are rated on a four-point Likert type scale ranging from 1 to 4. The lowest possible score on the SAI is 20, while the highest is 80. A higher score on the SAI indicates a higher level of anxiety. In the Turkish adaptation of this scale, the Cronbach's alpha coefficient was reported as 0.94 [26]. In the present study, the Cronbach's alpha coefficient was found to be 0.83.

Visual Analogue Scale (VAS): The Visual Analogue Scale is a simple, effective, reproducible and reliable tool developed by Price et al. to measure pain intensity in clinical settings. It consists of a straight ten-centimetre horizontal line, with one end representing "no pain" and the other end representing "most severe pain." In this context, the pregnant woman marks the line to indicate her pain level during the strongest contraction. In the current study, VAS scores were recorded at each phase of labor: the latent phase (cervical dilation of 3–4 cm), the active phase (5–7 cm), and the transition phase (8–10 cm). Scores were also collected before and after supportive care was provided [27].

Pain diagram This diagram illustrates the distribution of pain across 41 predetermined areas. It was used to identify pain areas during pregnancy [28]. In the present study,

we asked pregnant women to indicate the areas of pain on the diagram at each stage of labor.

Birth evaluation form The form was created using the Birth Observation Form published by the Ministry of Health in Türkiye (2019). It includes questions about the woman's gestational age, cervical dilation, time of delivery, duration of delivery, episiotomy and induction status. Additionally, the form consisted of newborn data (weight, height, and sex) [29].

Postpartum period evaluation form We administered a questionnaire to assess perceptions of childbirth difficulty, pain, and duration, women's satisfaction with normal delivery, their desire for a normal birth in the future, recommendations for normal birth, and satisfaction with care received. Additionally, participants in the intervention group provided feedback on the supportive care and its impact on delivery [29].

Implementation of the initiative

The study was registered to the Clinical Trials platform (NCT06024811).

Content of the supportive care given to the intervention group

The supportive care provided to the intervention group during the latent, active, and transition phases, as well as at the moment of birth and in the postpartum period, was developed according to evidence-based guidelines [1, 7] and the relevant literature, and is presented in the supplementary file [2, 4, 9, 10, 30, 31, 32].

Content of the routine care given to the control group

The control group received standard routine care provided in the hospital setting. The routine practices for this group included monitoring cervical dilation, contractions, and fetal heart rate; allowing the woman to move freely; and restricting oral intake during delivery. Pregnant women in the control group did not receive any non-pharmacological interventions.

Data collection process

The data were collected by the researcher from September 2020 to February 2021. The data collection process was carried out in five follow-up stages. The first, second, and third follow-ups were performed in the latent, active, and transition phases, respectively. Participants in the intervention group received the supportive care, and those in the control group received the routine standard care delivered in the hospital setting. The fourth and fifth follow-ups were made during the birth and postpartum periods, respectively. All the participating pregnant women were monitored from the intrapartum period to

the postpartum period. Women stayed in single rooms in the delivery area. The mean duration of data collection for each pregnant woman was approximately 10 h, covering the period from the onset of the intervention until the postnatal period. The pregnant woman marked the line that indicated her level of pain during the strongest contraction. During the latent and active phases of labor, women independently completed the SAI using a self-marking method. In the final phase of labor, due to increased pain and strain, the researcher marked the forms based on the participants' verbal responses.

Statistical analysis

The data were analysed using the Statistical Package for the Social Sciences (SPSS) (26.0). Descriptive characteristics of women in the intervention and control groups were compared using Chi-square (χ^2) and Fisher's exact test. The normal distribution of the data was analysed with the Shapiro Wilk test. Since the data show a normal distribution, Student's t-test was used to analyse the mean scores of the SAI and VAS of the two groups according to birth stages, to compare women's blood pressure, pulse and delivery times, to evaluate the weight of babies and women's satisfaction of care. Paired t-test was used in the analysis of intragroup the mean of SAI and VAS score. Repeated measurements were evaluated by variance (post hoc: Bonferroni). "Cohen's d was calculated to quantify the effect size between the means of the intervention and control groups [24]."

Results

Characteristics of the pregnant women in the intervention and control groups

In the present study, the mean age of the participating pregnant women was 25.99 ± 4.77 (min = 18, max = 39) years. Overall, 42.30% in the intervention and 53.84% in the control group were primary school graduates, 73.07% in the intervention and 86.53% in the control group did not work, 96.15% in both groups were married, and the vast majority in the intervention (82.69%) and control (75.00%) groups had health insurance. There were no statistically significant differences between the pregnant women in the intervention and control groups in terms of their descriptive characteristics ($p > .05$). Other data were shown in Table 1.

Comparison of visual analogue scale and state anxiety inventory scores of the women in the intervention and control groups in terms of birth stages

In the latent phase, pre-intervention VAS scores were similar between the intervention (4.78 ± 1.47) and control (5.03 ± 1.59) groups in VAS scores before supportive care ($p > .05$; $d = 0.20$). After supportive care, VAS scores tended to be lower in the intervention group (3.84 ± 1.34)

than in the control group (5.21 ± 1.82 ; $p < .001$; $d = 0.89$). SAI scores followed a similar pattern, with lower scores observed in the intervention group (42.94 ± 4.95) compared to the control group (52.15 ± 5.19 ; $p < .001$; $d = 1.83$).

In the active phase, post-intervention VAS scores were reduced on average in the intervention group (6.30 ± 1.40) compared to the control group (8.03 ± 1.08 ; $p < .001$; $d = 1.39$), with SAI scores also significantly lower (45.92 ± 4.14 vs. 53.40 ± 3.63 ; $p < .001$; $d = 1.94$).

In the transition phase, intervention group VAS scores were slightly lower than those in the control group the control group both before (9.46 ± 0.75 vs. 9.82 ± 0.43 ; $p = .003$; $d = 0.70$) and after supportive care (8.30 ± 0.78 vs. 9.53 ± 1.34 ; $p < .001$; $d = 1.14$). SAI scores followed a similar pattern, with a large effect after intervention (46.53 ± 2.87 vs. 55.42 ± 4.59 ; $p < .001$; $d = 2.31$) (Table 2).

Intragroup comparison of visual analogue scale and state anxiety inventory scores of women in the intervention and the control group

Within the intervention group, VAS and SAI scores decreased from pre- to post-intervention in all birth stages (latent phase VAS $d = 0.66$, active phase $d = 1.03$, transition phase $d = 1.57$; SAI latent $d = 1.95$, active $d = 0.78$, transition $d = 1.14$; all $p < .05$). In contrast, the control group showed no significant intragroup differences (all $p > .05$; Cohen's $d \leq 0.31$) (Table 3).

Birth-related characteristics of the pregnant women in the intervention and control groups

Of them, 75.01% in the intervention and 80.82% in the control group underwent episiotomy, the majority in the intervention (76.90%) and control (75.03%) groups applied induction (data not shown in the table).

Participants were asked to indicate where they experienced pain on a pain diagram. During the latent phase, 53.85% of pregnant women in the intervention group reported pain in the sacral region, compared to 38.46% in the control group. After care, pubic pain was 38.46% in the intervention group versus 59.62% in the control group. During the active phase, pubic pain was reported by 38.46% of the intervention and 30.77% of the control group before supportive care. These rates were determined to be 61.54% in the intervention and 65.38% in the control group after supportive care. In the transition phase, pubic pain was the most commonly reported type of pain before supportive care, with rates of 80.81% in the intervention and 92.31% in the control group (Table 4).

The mean of some postpartum parameters according to intervention and control groups

Gestational age, birth weight, and birth length did not differ significantly between groups ($p > .05$; $d = 0.04$ – 0.25). The mean duration of labor tended to be shorter

Table 1 Characteristic of the pregnant women in the intervention and control groups

Characteristics of the women	Groups			χ^2	<i>p</i>
	Intervention * <i>n</i> (%)	Control * <i>n</i> (%)	Total * <i>n</i> (%)		
Age groups (years)					
18-24	17(32.69)	17(32.69)	34(32.69)	0.078	0.962
25-31	26(50.00)	27(51.92)	53(50.96)		
32-39	9(17.30)	8(15.38)	15(16.34)		
Educational status					
Elementary	22(42.30)	28(53.84)	50(48.07)	1.683	0.431
High school	16(30.76)	11(21.15)	27(25.96)		
University and above	14(26.92)	13(25.00)	27(25.9)		
Employment status					
Employed	14(26.92)	7(13.46)	21(20.19)	2.924	0.087
Unemployed	38(73.07)	45(86.53)	83(79.80)		
Marital status					
Married	50(96.15)	50(96.15)	100(96.15)	0.000	1.000
Not married	2(3.84)	2(3.84)	4(3.84)		
Having health insurance					
Yes	43(82.69)	39(75.00)	82(78.84)	0.922	0.337
No	9(17.30)	13(25.00)	22(21.15)		
Perceived income status					
Income less than expenses	2(3.84)	0(0.00)	2(1.92)	2.061	0.357
Income equal to expenses	32(61.53)	34(65.38)	66(63.46)		
Income more than expenses	18(34.61)	18(34.61)	36(34.61)		
Pre-pregnancy BMI					
Underweight	4(7.69)	6(11.53)	10(9.61)	2.836	0.418
Normal	26(50.00)	29(55.76)	55(52.88)		
Overweight	14(26.92)	14(26.92)	28(26.92)		
Obese	8(15.38)	3(5.76)	11(10.57)		
Smoking status					
Yes	11(21.15)	10(19.23)	21(20.19)	0.06	0.807
No	41(78.84)	42(80.76)	83(79.80)		
Number of pregnancies					
1	18(34.61)	18(34.61)	36(34.61)	3.209	0.361
2	14(26.92)	11(21.15)	25(24.03)		
3	9(17.30)	16(30.76)	25(24.03)		
≥4	11(21.15)	7(13.46)	18(17.30)		
Parity					
Primiparous	11(40.74)	15(50.00)	26(45.61)	0.491	0.483
Multiparous	16(59.25)	15(50.00)	31(54.38)		
Number of births					
1	11(40.74)	15(50.00)	0(45.61)	2.619	0.454
2	14(51.85)	12(40.00)	26(45.61)		
3	1(3.70)	0(0.00)	1(1.75)		
4	1(3.70)	3(10.00)	4(7.01)		
Current pregnancy					
Planned	37(71.15)	38(73.07)	75(72.11)	0.048	0.827
Unplanned	15(28.84)	14(26.92)	29(27.88)		
Miscarriage status					
Yes	12(23.07)	10(19.23)	22(21.15)	0.231	0.631
No	40(76.92)	42(80.76)	82(78.84)		
Status of women attending antenatal preparation class					

Table 1 (continued)

Characteristics of the women	Groups			χ^2	<i>p</i>
	Intervention * <i>n</i> (%)	Control * <i>n</i> (%)	Total * <i>n</i> (%)		
Yes	3(5.76)	6(11.53)	9(8.65)	1.095	0.295
No	49(94.23)	46(88.46)	95(91.34)		
Total	52(100.00)	52(100.00)	104(100.00)		

BMI: Body Mass Index, χ^2 : Chi-Square *: Small effect size. *No covariates were controlled for in the univariate analyses

in the intervention group (9.25 ± 5.41 vs. 12.69 ± 6.85 h; $p=.005$; $d=0.55$). Perceived labor difficulty lower on average (7.82 ± 2.01 vs. 9.42 ± 1.23 ; $p<.001$; $d=0.97$), and satisfaction with care tended to be higher in the intervention group (9.93 ± 0.21 vs. 7.26 ± 1.63 ; $p<.001$; $d=2.36$) (Table 5).

Discussions

This study examined how evidence-based supportive care during intrapartum care affects women's perceived pain levels, labor duration, state anxiety, and satisfaction with care. The mean scores that the participants in the intervention group obtained from the VAS in each phase of labor after they received supportive care were lower than those obtained by the participants in the control group. Although labor pain generally increases as labor progresses, women who received supportive care in this study reported relatively lower pain levels, suggesting that supportive care may contribute to pain relief. In a study conducted in Izmir, a province in western Türkiye, the mean VAS scores were statistically significantly lower in the intervention group after supportive care in all phases of labor (latent = 3.5 ± 1.6 , active = 6.0 ± 1.5 , transition = 8.3 ± 1.2) than those in the control group who did not receive supportive care (latent = 5.7 ± 1.8 , active = 8.2 ± 1.6 , transition = 9.5 ± 0.9) [5]. In a study from Istanbul, Türkiye, women in the intervention group reported lower mean VAS scores during all labor phases compared to controls: 3.5 ± 1.4 vs. 4.6 ± 1.3 in the latent phase, 7.0 ± 1.5 vs. 8.4 ± 1.1 in the active phase, and 8.8 ± 1.7 vs. 9.7 ± 0.5 in the transition phase [13]. In the active and transition phases, massage consistently lowered pain scores compared to routine care.

Similarly, randomized controlled trials conducted in different countries evaluating nonpharmacological interventions such as acupressure and massage have also reported a reduction in labor pain as measured by the VAS [33–35]. These findings support the use of supportive interventions, such as sacral massage, to enhance pain management and improve the childbirth experience.

In the present study, the SAI mean score was assessed in all phases of labor before and after supportive care was provided. There was no statistically significant difference between the two groups regarding their mean SAI scores during the latent phase before supportive care was

provided. However, after the supportive care was administered, the mean SAI score in the intervention group (42.9) was statistically significantly lower than that in the control group (52.1). Similarly, in a study conducted in Ankara, Türkiye, the mean SAI score was statistically significantly lower in the massage-only group (42.5), in the acupressure-only group (43.3), and in the massage and acupressure group (41.8) than it was in the control group (55.6) in the latent phase [36].

In the study, the mean SAI score in the intervention group was 48.5 ± 2.3 , compared to 53.5 ± 4.0 in the control group during the active phase before supportive care was provided. After supportive care, the mean SAI scores were 45.9 ± 4.1 in the intervention group and 53.4 ± 3.6 in the control group. In a study conducted in Istanbul, Türkiye, the mean SAI score during the active phase was 28.0 ± 2.9 in the intervention group that received sacral massage. In contrast, the control group, which did not receive sacral massage, had a mean SAI score of 39.5 ± 4.1 [13].

In the study, the intervention group had lower SAI scores than the control group during the active phase, before receiving supportive care. Following the supportive care, the intervention group's SAI scores decreased further, whereas the control group's scores remained almost unchanged. Similarly, a study conducted in Istanbul, Türkiye, reported that women who received sacral massage during the active phase had lower SAI scores compared to the control group [13].

In addition, while the control group showed only a minimal increase in their SAI score after routine care, the intervention group demonstrated a decrease following supportive care. Intragroup analysis indicated that the intervention group's mean SAI scores were significantly lower across all three phases of labor than their pre-care scores. The control group exhibited no differences in their scores before and after routine care. These findings align with a systematic review ($n=1055$) that included ten studies assessing the effectiveness of massage, reflexology, and other manual techniques for pain management during labor. The review indicated that massage during the first stage of labor effectively reduced women's anxiety [2].

In the present study, the duration of delivery was shorter in the intervention group compared to the

Table 2 Comparison of the visual analogue scale and state anxiety scale scores by birth stage of the women in the intervention and control groups

Stage of birth	VAS Score			SAI Score			t ¹	p	Cohen's d	%95 C.I.
	Intervention X±SD	Control X±SD		Intervention X±SD	Control X±SD					
Latent phase										
Before the provision of supportive care	4.78±1.47	5.03±1.59	-0.830	0.408	0.16*	-0.54; 0.22	0.326	0.745	0.06*	-0.32; 0.44
After the provision of supportive care	3.84±1.34	5.21±1.82	-4.332	0.000	0.85***	-1.25; -0.44	-9.258	0.000	-1.81***	-2.27; -1.35
Active phase										
Before the provision of supportive care	7.51±1.07	7.94±1.21	-1.883	0.062	0.36*	-0.75; 0.01	-7.646	0.062	1.50***	-1.93; -1.06
After the provision of supportive care	6.30±1.40	8.03±1.08	-7.024	0.000	1.37***	-1.80; -0.94	-9.778	0.000	1.91***	-2.38; -0.145
Transition phase										
Before the provision of supportive care	9.46±0.75	9.82±0.43	-3.038	0.003	-0.59**	-0.98; -0.20	-7.880	0.003	1.54***	-1.98; -1.10
After the provision of supportive care	8.30±0.78	9.53±1.34	-5.692	0.000	1.1***	-1.53; -0.70	-11.823	0.000	2.31***	-2.81; -1.82

¹ Independent sample t-test. *: Small effect size, **: Medium effect size, ***: Large effect size. *No covariates were controlled for in the univariate analyses

¹Independent sample t-test; *, Small effect size; **, Medium effect size; ***, Large effect size. *No covariates were controlled for in the univariate analyses

control group. Similar findings have been reported in previous studies conducted in Iran and Türkiye, indicating that massage or similar interventions may contribute to shortening the duration of labor [5, 11, 37].

In the current study, the mean score for the perception of difficulty in childbirth was 7.8 and 9.4 in the intervention and control groups, respectively. A study conducted in Istanbul, Türkiye found that the women in the control group had a more difficult delivery than women in the intervention group. The rate of women who perceived delivery as more difficult was 80.0% in the control group and 26.7% in the intervention group [13].

In the current study, the majority of women in the intervention and control groups underwent episiotomy (75.0% and 80.8%, respectively) and induction (76.9% and 75.0%, respectively). The high rates of episiotomy and induction in our country may be attributed to several factors, including the heavy workload and low staffing levels in healthcare institutions, concerns about malpractice, and established practices in obstetrics. While evidence-based guidelines do not recommend routine episiotomy or induction [1, 7], these procedures are performed frequently [5, 11, 36, 39].

In the current study, the mean satisfaction score for care in the intervention group was higher (9.9) than in the control group (7.2). In the intervention group, most pregnant women reported that the supportive care helped them relax and feel confident, reduced their pain, and aided their adaptation to the environment. Partners accompanying the women during the intrapartum period were provided with information, emotional support, and advocacy support. Supporting partner involvement in this manner may positively influence women's perceived care experience. Previous meta-analyses indicated continuous support during childbirth leads to positive birth experiences and high levels of maternal satisfaction [10, 31]. A study conducted in Sweden found that pregnant women who feared childbirth expressed high levels of satisfaction with the continuous support they received during labor [38]. A study in India found that education for companions of first-time mothers increased maternal satisfaction in the intervention group compared to the control group [17]. In previous studies conducted in Türkiye, women in the intervention groups who received sacral massage therapy [13], intermittent supportive nursing care [5], massage and acupressure therapy [39], and physical support [8] had a higher level of maternal satisfaction than did the women in the control group. Research indicates that offering supportive care to women during labor significantly enhances their overall satisfaction with the maternal experience. Therefore, implementing in-service training programs and courses for healthcare professionals, along with establishing clear guidelines, will help raise awareness and ensure that care

Table 3 Intragroup comparison of the visual analogue scale and state anxiety scale score of women in the intervention and the control group

Groups	Stage of birth	Intervention		Control		p	t ¹	Cohen's d	%95.C.I.
		Before supportive care X ± SD	After supportive care X ± SD	Before routine care X ± SD	After routine care X ± SD				
VAS Score	Latent phase	4.78 ± 1.47	3.84 ± 1.34	5.03 ± 1.59	5.21 ± 1.82	0.000	-0.822	0.415	-0.11* -0.40; 0.01
	Active phase	7.51 ± 1.07	6.28 ± 1.43	7.94 ± 1.21	8.03 ± 1.08	0.000	-0.574	0.569	-0.08* -0.36; 0.20
	Transition phase	9.46 ± 0.75	8.30 ± 0.78	9.82 ± 0.43	9.53 ± 1.34	0.013	1.481	0.145	0.20* -0.08; 0.49
SAI Score	Latent phase	53.00 ± 5.48	42.94 ± 4.95	52.69 ± 4.01	52.15 ± 5.19	0.000	0.714	0.479	0.09* -0.18; 0.35
	Active phase	48.51 ± 2.37	45.92 ± 4.14	53.51 ± 4.07	53.40 ± 3.63	0.000	0.196	0.845	0.02* -0.25; 0.31
	Transition phase	50.01 ± 3.39	46.53 ± 2.87	55.26 ± 3.40	55.42 ± 4.59	0.000	0.243	0.809	0.03* -0.25; 0.32

¹ Paired sample t-test, *: Small effect size, **: Medium effect size, ***: Large effect size. *No covariates were controlled for in the univariate analyses

Table 4 Pain diagram–based distribution of pain localization in the intervention and control groups

Localized pain region	Interven- tion n(%)*	Control n(%)*	Total n(%)*
Latent phase			
Before supportive care**			
Right lumbar region	1(1.92)	0(0.0)	1(0.96)
Umbilicus–pubis area	12(23.08)	14(26.92)	26(25.00)
Pubic region	9(17.31)	18(34.62)	27(25.96)
Sacral region	28(53.85)	20(38.46)	48(46.15)
Umbilicus–pubis and sacral region	3(5.77)	1(1.92)	4(3.85)
Pubic and sacral region	2(3.85)	1(1.92)	3(2.88)
After supportive care**			
Left hip	1(1.92)	1(1.92)	2(1.92)
Right hip	3(5.77)	2(3.85)	5(4.81)
Umbilicus–pubis area	17(32.69)	12(23.08)	29(27.88)
Pubic region	15(28.85)	6(11.54)	21(20.19)
Sacral region	20(38.46)	31(59.62)	51(49.04)
Active phase			
Before supportive care**			
Lumbar region	0(0.00)	1(1.92)	1(1.91)
Umbilicus–pubis area	18(34.62)	24(46.15)	42(80.81)
Pubic region	20(38.46)	16(30.77)	36(69.23)
Left upper leg	1(1.92)	0(0.00)	1(1.92)
Sacral region	11(21.15)	11(21.15)	22(42.32)
Sacral and pubic region	3(5.77)	4(7.69)	7(13.50)
After supportive care**			
Umbilicus–pubis area	14(26.92)	11(21.15)	25(24.04)
Pubic region	32(61.54)	34(65.38)	66(63.53)
Pubic and sacral region	3(5.77)	1(1.92)	4(3.82)
Sacral region	5(9.62)	6(11.54)	11(10.64)
Transition phase			
Before supportive care**			
Umbilicus–pubis area	6(11.54)	2(3.85)	6(5.84)
Pubic region	42(80.77)	48(92.31)	94(90.43)
Sacral region	6(11.54)	3(5.77)	7(6.71)
After supportive care**			
Umbilicus–pubis area	4(7.69)	2(3.85)	5(4.81)
Pubic region	51(98.08)	52(98.10)	102(98.13)
Sacral region	3(5.77)	1(1.92)	6(5.81)

¹ Chi square test, *Column percentages have been calculated. **Participants could select more than one option. *No covariates were controlled for in the univariate analyses

is provided within this framework. This approach could enhance women's experiences during childbirth.

Limitations of the study

This study has several limitations. The first limitation of the study was that it was conducted at a single center in one province of Türkiye. This may lead to cultural differences, especially when comparing the eastern and western regions of the country. Secondly, excluding high-risk pregnancies from the study limits the generalizability of the findings. Third, the study was conducted during the COVID-19 pandemic, which affected healthcare delivery worldwide. Due to logistical and administrative

Table 5 Distribution of the mean of some postpartum parameters according to intervention and control groups

Characteristics	Groups		t^1	p	Cohen's d	%95.C.I.
	Intervention $X \pm SD$	Control $X \pm SD$				
Gestational week at birth	39.09 $\pm$ 1.24	39.36 $\pm$ 1.17	1.137	0.258	0.22*	− 0.05; 0.50
Baby's weight at birth (gr)	3263.28 $\pm$ 441.69	3245.15 $\pm$ 346.15	0.233	0.816	0.04*	− 0.23; 0.32
Baby's height at birth (cm)	50.21 $\pm$ 1.17	49.94 $\pm$ 1.69	0.940	0.349	0.18*	− 0.09; 0.46
Duration of birth (hours)	9.25 $\pm$ 5.41	12.69 $\pm$ 6.85	2.839	0.005	0.55**	0.22; 0.88
Perceived labor difficulty score	7.82 $\pm$ 2.01	9.42 $\pm$ 1.23	5.016	0.000	0.98***	0.65; 1.31
Satisfaction score with the care received	9.93 $\pm$ 0.21	7.26 $\pm$ 1.63	11.388	0.000	2.2***	1.81; 2.64

¹ Independent sample t-test, *: Small effect size. **: Medium effect size. ***: Large effect size. *No covariates were controlled for in the univariate analyses

difficulties, trial registration was completed retrospectively. This retrospective registration may increase the risk of reporting bias and limits transparency. Fourth, blinding of the researcher who delivered the supportive care and collected the data was not feasible due to the nature of the intervention, which may have introduced performance and detection bias. To mitigate this risk, participants were not informed about group allocation, stayed in single rooms, and interaction between groups was prevented due to hospital procedures during the pandemic. Outcome assessments were conducted using the same standardized procedures in both groups, and group allocation was masked during statistical analysis by using coded datasets. Finally, “supportive care” intervention encompasses various aspects of intrapartum care, including physical, emotional, informational, advocacy, and partner support. However, it is not feasible to assess the effectiveness of each component separately; therefore, the study can only comment on the overall impact of the combined intervention.

Conclusions

The research found that pregnant women who received intrapartum supportive care during labor, tended to have lower mean scores in perceived labor pain, state anxiety levels, labor duration, and perceived difficulty during labor compared to those who received standard care. Additionally, the postpartum maternal satisfaction mean scores tended to be higher. This suggests that integrating evidence-based supportive care into intrapartum care may improve maternal outcomes and the birth experience.

Abbreviations

WHO	World Health Organization
SAI	State Anxiety Inventory
VAS	Visual Analogue Scale
SPSS	Statistical Package for the Social Sciences
N	Frequency
χ^2	Chi-Square
X	Mean
SD	Standard Deviation

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12912-026-04543-w>.

Supplementary Material 1

Acknowledgements

We thank all the pregnant women who participated in the study.

Author contributions

EC was responsible for data collection, data curation, data analysis and writing—review and editing. EY contributed to the study design, data analysis and interpretation, and writing—review and editing. Both authors reviewed and approved the final version of the manuscript.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Data availability

The data sets supporting this study are available from the corresponding author upon reasonable.

Declarations

Ethics approval and consent to participate

Ethical approval of the study was obtained from Manisa Celal Bayar University Faculty of Medicine Health Sciences Ethics Committee (Date: 22 July 2020, number: 20.478.486/449). Permission was obtained from Balıkesir Health Directorate to collect data (Date: 02 September 2020). Prior to participation, all individuals were informed about the purpose and procedures of the study and both verbal and written informed consent was obtained. The study was conducted in accordance with the ethical principles of the Declaration of Helsinki.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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Received: 30 June 2025 / Accepted: 10 March 2026

Published online: 19 March 2026

References

- World Health Organization [Internet]. WHO recommendations on intrapartum care for a positive childbirth experience. World Health Organization. 2018. [cited 2022 April 12] Available from: <https://www.who.int/reproductive-health/publications/intrapartum-care-guidelines/en/>
- Smith CA, Collins CT, Cyna AM, Crowther CA. Complementary and alternative therapies for pain management in labour. *Cochrane Db Syst Rev*. 2006;4:3–26. <https://doi.org/10.1002/14651858.CD009290.pub3>.
- Senoglu A, Karacam Z. Fundamental quality indicators of intrapartum midwifery care. *Life Sci*. 2021;16(1):19–29. Turkish.
- Kobayashi S, Hanada N, Matsuzaki M, Takehara K, Ota E, Sasaki H, et al. Assessment and support during early labour for improving birth outcomes. *Cochrane Db Syst Rev*. 2017;4(1):40–58. <https://doi.org/10.1002/14651858.CD011516.pub2>.
- Cicek Ö, Mete S. The effects of intermittent supportive nursing care on labor outcome: a quasi-experimental study. *Int J Caring Sci*. 2021;14(1):337–45.
- American College of Obstetricians and Gynecologists. Approaches to limit intervention during labor and birth. *Obstet Gynecol Res*. 2019;133(2):164–73.
- World Health Organization. [Internet]. WHO Labour Care Guide, user's manual. World Health Organization. 2020. WHO recommendations: intrapartum care for a positive childbirth experience. [cited 2023 May 12] Available from: <https://www.who.int/publications/i/item/9789240017566>
- Bayrı Bingöl F, Demirgöz Bal M, Esencan Yılmaz T. Evaluation of the effect of the physical support to the pregnancy on birth outcome. *JAREN*. 2020;6(3):506–13. <https://doi.org/10.5222/jaren.2020.52724>. Turkish.
- Hodnett ED, Gates S, Hofmeyr GJ, Sakala C. Continuous support for women during childbirth. *Cochrane Db Syst Rev*. 2012;10(1):8–11. <https://doi.org/10.1002/14651858.CD003766.pub4>.
- Bohren MA, Hofmeyr GJ, Sakala C, Fukuzawa RK, Cuthbert A. Continuous support for women during childbirth. *Cochrane Db Syst Rev*. 2017;7(1):77–127. <https://doi.org/10.1002/14651858.CD003766.pub6>.
- İsbir G, Serçekus P. The Effects of intrapartum supportive care on fear of delivery and labor outcomes: a single-blind randomized controlled trial. *J Nurs Res*. 2017;25(2):112–9. <https://doi.org/10.1097/JNR.0000000000000129>.
- Akbarzadeh M, Masoudi Z, Zare N, Kasraeian M. Comparison of the effects of maternal supportive care and acupressure on labor length and infant's apgar score. *Glob J Health Sci*. 2016;8(3):236–40. <https://doi.org/10.5539/gjhs.v8n3p236>.
- Karaduman S, Akköz Cevik S. The effect of sacral massage on labor pain and anxiety: a randomized controlled trial. *Jpn J Nurs Sci*. 2020;17(1):1–9. <https://doi.org/10.1111/jjns.12272>.
- Nikula P, Laukkala H, Pölkki T. Mothers' perceptions of labor support. *MCN Am J Matern Child Nurs*. 2015;40(6):373–80. <https://doi.org/10.1097/NMC.0000000000000190>.
- Bahri N, Vafae-Najar A, Ebrahimipour H, Askari F, Bashiri K. Quality of labor support during labor. *Patient Saf Qual Improve*. 2014;2(1):59–63. <https://doi.org/10.22038/PSJ.2014.2096>.
- Pinar SE, Demirel G. The effect of therapeutic touch on labour pain, anxiety and childbirth attitude: A randomized controlled trial. *Eur J Integr Med*. 2021;41(1):1–24. <https://doi.org/10.1016/j.eujim.2020.101255>.
- Jisha C, Sreeja GP. Effect of empowerment of empowered female labour companion on anxiety emale labour companion on anxiety, birth outcome, and maternal satisfaction among primiparturients. *Manipal J Nurs Health Sci*. 2021;7(1):47–53.
- Fathi Najafi T, Latifnejad Roudsari R, Ebrahimipour H. The best encouraging persons in labor: a content analysis of Iranian mothers' experiences of labor support. *PLOS Clin*. 2017;12(7):2–13. <https://doi.org/10.1371/journal.pone.0179702>.
- Sleutel MR. Intrapartum nursing: integrating Rubin's framework with social support theory. *J Obstet Gynecol Neonatal Nurs*. 2003;32(1):76–82. <https://doi.org/10.1177/0884217502239803>.
- Wolf MF, Shnaider O, Sharabi L, Biderman SN, Elon R, Bornstein J. Optimal continuous support accompanying labor-the midwives' and laboring women's point of view. *Isr J Health Policy Res*. 2019;8(1):27. <https://doi.org/10.1186/s13584-019-0299-3>.
- Nielsen JH, Overgaard C. Healing architecture and snoezelen in delivery room design: a qualitative study of women's birth experiences and patient-centeredness of care. *BMC Pregnancy Childbirth*. 2020;20(1):1–11. <https://doi.org/10.1186/s12884-020-02983-z>.
- Kacar N, Yazici S. The effect on the professional and obstetrics outcomes of the continuous labor support that is given by the midwife. *J Midwifery Health Sci*. 2020;3(3):214–Turkish224.
- Oveysi M, Apay SE. Determining the relationship between perceived supportive care at birth and satisfaction level. *J Gen Med*. 2021;31(3):232–8. <https://doi.org/10.54005/genelip.996756>.
- Cohen J. Statistical power analysis for the behavioral sciences. Second publishing. Lawrence Erlbaum Associates: Newyork; 1988;s:8–52.
- Spielberger CD. Manual for the State-Trait Anxiety Inventory (self-evaluation questionnaire). Consulting Psychologists: California; 1970.
- Öner N, Le Compte A. Trait-Trait Anxiety Inventory Manual, 1st Edition, Istanbul, Boğaziçi University Publications. 1983;1–26.
- Price DD, McGrath PA, Rafi A, Buckingham B. The validation of visual analogue scales as ratio scale measures for chronic and experimental pain. *Pain*. 1983;17(1):45–56. [https://doi.org/10.1016/0304-3959\(83\)90126-4](https://doi.org/10.1016/0304-3959(83)90126-4).
- Drevin J, Stern J, Annerbäck EM, Peterson M, Butler S, Tydén T, et al. Adverse childhood experiences influence development of pain during pregnancy. *Acta Obstet Gynecol Scand Suppl*. 2015;94(8):840–6. <https://doi.org/10.1111/aogs.12674>.
- Republic of Turkey Ministry of Health. Maternity Services. [Internet]. Ankara: Ministry of Health. 2019 [cited 2025 Jul 9]. Available from: <https://kizilcahama.mdh.saglik.gov.tr/TR-1179312/dogum-hizmetleri.html>
- Adams ED, Bianchi AL. A practical approach to labor support. *J Obstet Gynecol Neonatal Nurs*. 2008;37:106–15. <https://doi.org/10.1111/j.1552-6909.2007.00213.x>.
- Hodnett ED, Gates S, Hofmeyr GJ, Sakala C. Continuous support for women during childbirth. *Cochrane Db Syst Rev*. 2013;1(7):1–87. <https://doi.org/10.1002/14651858.CD003766.pub5>.
- Bohren MA, Berger BO, Munthe-Kaas H, Tunçalp Ö. Perceptions and experiences of labour companionship: a qualitative evidence synthesis. *Cochrane Db Syst Rev*. 2019;3(3):16–27. <https://doi.org/10.1002/14651858.CD012449.pub2>.
- Jha S, Vyas H, Nebhinani M, Singh P. The effect of birthing ball exercises on labor pain and labor outcome among primigravidae parturient mothers at a tertiary care hospital. *Cureus*. 2023;15(3):2–7. <https://doi.org/10.7759/cureus.36088>.
- Lawot I, Sharma PK. (2023). Effects of non-pharmacological methods on reduction labor pain among primiparous women: a review. *International Journal of Innovative Science and Research Technology*. 2023; 8(7): 2456–2165.
- Iqbal S, Azhar MK, Asmatullah Z, Nayat R, Mehboob S, Shah A. Evaluating the effectiveness of non-pharmacological interventions in reducing labor pain among women during vaginal delivery. *Link Med J*. 2025;3(1):1–9.
- Gönenç İM, Terzioğlu F. Effects of massage and acupressure on relieving labor pain, reducing labor time, and increasing delivery satisfaction. *J Nurs Res*. 2020;28(1):68–70. <https://doi.org/10.1097/jnr.0000000000000344>.
- Bolbol-Haghighi N, Masoumi SZ, Kazemi F. Effect of massage therapy on duration of labour: A randomized controlled trial. *J Clin Diagn Res*. 2016;10(4):12–5. <https://doi.org/10.7860/JCDR/2016/17447.7688>.
- Hildingsson I, Johansson M, Karlström A, Fenwick J. Factors associated with a positive birth experience: an exploration of Swedish women's experiences. *Int J Childbirth*. 2013;3(3):153–64. <https://doi.org/10.1891/2156-5287.3.3.153>.
- Akman AK, Gölbaşı Z. Determination of the levels of satisfaction with labor and affecting factors of women who had. *Vaginal Birth Value Health Sci*. 2025;15(2):211–21. <https://doi.org/10.33631/sabd.1492846>.

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