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Araştırma Makalesi/ Research Article

The Effect of Acupressure Applied to LI4 on Labor Pain and Duration: Randomized Placebo-Controlled Clinical Trial

LI4 Akupresör Uygulamasının Doğum Ağrısı ve Süresine Etkisi: Randomize Plasebo Kontrollü Klinik Çalışma

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ABSTRACT
Amaç: Çalışmanın amacı LI4 akupresör uygulamasının doğum ağrısı ve doğum süresi üzerine etkisini değerlendirmektir.
Yöntem: Randomize, plasebo kontrollü klinik çalışma 135 gebe kadınla (akupresür grubu n=45, kontrol grubu n=45 ve plasebo grubu n=45) gerçekleştirildi. Akupresür grubundaki kadınların sağ elindeki LI4 akupresür noktasına, her kasılmanın başlangıcından sonuna kadar toplam 20 kez akupresör uygulaması yapıldı. İlk 10 uygulama, servikal dilatasyon 4 cm olduktan sonra, diğer 10 uygulama servikal dilatasyon 7 cm olduktan sonra yapıldı. Plasebo grubunda yer alan katılımcıların sağ elinde bulunan LI4 noktasına basınç uygulamaksızın sadece dokunuldu. Kontrol grubuna herhangi bir müdahale uygulanmadı. Veriler, Kişisel Bilgi Formu, Doğum ve Travay İzlem Formu ve Görsel Kıyaslama Ölçeği kullanılarak elde edildi.
Bulgular: LI4 akupresör uygulaması sonrası, akupresör, kontrol ve plasebo gruplarının ağrı puanları karşılaştırıldığında, akupresör grubunun hem birinci uygulama sonrası hem de ikinci uygulama sonrası ağrı puanının plasebo ve kontrol gruplarının ağrı puanlarına göre istatistiksel olarak anlamlı düzeyde daha düşük olduğu bulundu ($p<0.001$). Akupresör grubunun aktif faz süresi, plasebo ve kontrol gruplarına kıyasla istatistiksel olarak anlamlı düzeyde daha kısaydı ($p<0.001$).
Sonuç: Elde ettiğimiz bulgulara göre, LI4 akupresör uygulamasının doğum ağrısını azaltabileceği ve doğumun aktif fazını kısaltabileceği söylenebilir. Doğum ağrısını azaltmak ve aktif faz süresini kısaltmak için sağlık çalışanlarına LI4 akupresör uygulamasının kullanımı önerilebilir**.**
Keywords: Acupressure, LI4 point, labor duration, labor pain

ÖZ
Amaç: Çalışmanın amacı LI4 akupresör uygulamasının doğum ağrısı ve doğum süresi üzerine etkisini değerlendirmektir.
Yöntem: Randomize, plasebo kontrollü klinik çalışma 135 gebe kadınla (akupresür grubu n=45, kontrol grubu n=45 ve plasebo grubu n=45) gerçekleştirildi. Akupresür grubundaki kadınların sağ elindeki LI4 akupresür noktasına, her kasılmanın başlangıcından sonuna kadar toplam 20 kez akupresör uygulaması yapıldı. İlk 10 uygulama, servikal dilatasyon 4 cm olduktan sonra, diğer 10 uygulama servikal dilatasyon 7 cm olduktan sonra yapıldı. Plasebo grubunda yer alan katılımcıların sağ elinde bulunan LI4 noktasına basınç uygulamaksızın sadece dokunuldu. Kontrol grubuna herhangi bir müdahale uygulanmadı. Veriler, Kişisel Bilgi Formu, Doğum ve Travay İzlem Formu ve Görsel Kıyaslama Ölçeği kullanılarak elde edildi.
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Sonuç: Elde ettiğimiz bulgular sonucunda, LI4 akupresör uygulamasının doğum ağrısını azaltabileceği ve doğumun aktif fazını kısaltabileceği söylenebilir. Doğum ağrısını azaltmak ve aktif faz süresini kısaltmak için sağlık çalışanlarına LI4 akupresör uygulamasının kullanımı önerilebilir.
Anahtar Kelimeler: Akupresör, LI4 noktası, doğum süresi, doğum ağrısı

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Introduction

Labor pain, the most inevitable and most prominent determinant of labor, can become severe and be accompanied by fear and anxiety (Lin et al., 2022; Mahbubeh and Hamed, 2020; Pietrzak et al., 2022). Therefore, labor pain has physiologically adverse maternal and fetal effects. Pain experienced during labor may cause adverse effects due to a physiological increase in maternal catecholamine levels and changes in respiratory patterns (Lowe, 2002). The increase in catecholamine levels causes vasoconstriction in the uterus and tension in the uterine muscles, which lead to an increase in blood pressure and a decrease in uterine blood flow (Asadi et al., 2015; El-Wahab and Robinson, 2014; Shah et al., 2018). Pain in the latent phases of labor causes hyperventilation, with a 75%–150% increase in maternal respiration and, hypercapnia and respiratory alkalosis, which can lead to adverse fetal effects (Reynolds, 2011). This situation poses a life-threatening risk for both the mother and the fetus (Altinayak and Özkan, 2024). Effective management of labor pain leads to increased comfort, decreased labor-related anxiety, and shorter labor duration (Turkmen et al., 2021; Zhang et al., 2025).

Currently, both pharmacological and non-pharmacological methods are used to reduce labor pain. However, owing to side effects that may be encountered during delivery, which may cause prolongation of the active phases of labor, pharmacological methods are not frequently preferred (Abdul-Sattar Khudhur Ali and Mirkhan Ahmed, 2018; Karahan and Serhatlioglu Goncu, 2019; Ostrovsky, 2018). High doses of opioids can cause many serious side effects, such as respiratory depression (Vagharseyyedin et al., 2022; Zohourparvaz et al., 2023). Therefore, there has been great interest in non-pharmacologic methods in recent years (Karimi et al., 2020; Vagharseyyedin et al., 2022). Complementary and alternative medicine consists of non-pharmacological methods, including body acupressure and ear acupressure (Vagharseyyedin et al., 2022; Zamora-Brito et al., 2024; Zohourparvaz et al., 2023).

Acupressure, which is a non-pharmacological intervention, is one of the effective methods that can be used in the management of labor pain (Mucuk, 2015). Acupressure is a non-invasive method that does not damage the skin, does not cause infection or bleeding, and is cost-effective and easy to use in many situations. In many cases, acupressure effectively manages pain symptoms without significant complications (Zohourparvaz et al., 2023). There is evidence that the basic mechanism of acupressure application sends signals to the brain to release endorphins and neurotransmitters, such as serotonin, γ-aminobutyric acid, glutamate, and neuropeptide Y. Stimulation of acupuncture points releases endogenous opioids and can alter the expression of opioid receptors in the brain (Bishop et al., 2019). Thus, acupressure is known to increase the binding of endorphin receptors in the emotion processing areas of the brain (Niruthisard et al., 2024).

Acupressure has been widely applied to specific pressure points such as LI4, SP6, BL32, and BL67 to reduce labor pain, stimulate uterine contractions, shorten the duration of labor, enhance the birth experience, and increase maternal satisfaction (Raana and Fan, 2020; Karimi et al.; Najafi et al., 2018). A recent systematic review with GRADE assessment, which included 37 randomized controlled trials, demonstrated that acupressure significantly reduces labor pain compared to touch, sham, or no intervention. Among the commonly used points, both SP6 and LI4 were found to be effective, although SP6 showed slightly greater analgesic effects (Larki et al., 2025). However, there is still a need for more rigorously designed studies to provide stronger meta-analytic evidence specifically on the effectiveness of LI4 acupressure in labor pain management (Alimoradi et al., 2020; Turkmen and Çeber Turfan, 2020).

Aim

The aim of this study was to evaluate the effect of acupressure on the LI4 pressure point on labor pain and the duration of labor.

H^0: There will be no significant difference in pain scores between the acupressure group and, the control and placebo groups after the LI4 acupressure application.

H^1: The pain scores of the acupressure group after LI4 acupressure application will be lower than those of the control and placebo groups.

H^0: There will be no significant difference in the duration of labor phases between the acupressure group and, the control and placebo groups after the LI4 acupressure application.

H^2: The duration of labor phases in the acupressure group will be shorter than in the control and placebo groups.

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Methods

Study Design

A randomized placebo-controlled clinical trial was carried out at the Istanbul Health Sciences University Training and Research Hospital between 10 June and 30 December 2018. The hospital has 3 labor rooms in which approximately 20 vaginal deliveries occur per day. The hospitalization form is filled in routinely by the midwives/nurses, vital signs are taken, blood is drawn for hemoglobin and hematocrit, and vascular access is established for the pregnant women who are hospitalized. Physicians are in charge of the follow-up and treatment of pregnant women; both physicians and midwives / nurses take part in the follow-up, implementation, and maintenance of treatment. Physicians perform the vaginal deliveries. The first stage of labor is monitored in the delivery rooms. In the second stage of labor, pregnant women are taken to a different room where there is an obstetric table.

Participants

Of the 857 pregnant women admitted to the delivery room, 183 pregnant women who met the inclusion criteria constituted the study sample. The sample size was calculated using G*Power software. With a 95% confidence interval and 80% power, it was calculated that at least 45 people should be included in each group The sample calculation was made by predicting that the average post-intervention pain score of the acupressure group would be 6.00±.20; and the average post-intervention pain score of the control and placebo groups would be 6.81±1.50 (Yesilcicek Calik and Komurcu, 2014).

The randomization was conducted using a simple table of random numbers prepared on the Random.org website, which was created on a computer by the researchers. The simple random numbers table was used to equalize the probability of being selected for the acupressure, control, or placebo groups and to prevent bias. Each pregnant woman who was admitted to the delivery room and met the sampling criteria was numbered by researcher DD. One hundred eighty-three (n=183) pregnant women who met the sampling criteria were randomized to three study groups (acupressure group n=62, control group n=62, and placebo group n=59).

Inclusion criteria for the study were willing and able to consent to participation, aged between 18 and 40 years, at 37 to 42 weeks of pregnancy, carrying a singleton gestation, no pregnancy-related complications (e.g., threatened preterm labor, premature rupture of membranes, bleeding, and preeclampsia), an estimated fetal weight between 2500 g and 4000 g, fetal head presentation, intact membranes, and cervical dilatation of less than 4 cm.

The study excluded pregnant women who were referred to another institution, experienced prolonged labor (more than 20 hours in nulliparous women and more than 14 hours in multiparous women), received narcotic analgesia during the data collection period, underwent vacuum extraction or forceps-assisted delivery, underwent cesarean section, received regional anesthesia (e.g., epidural anesthesia), or developed obstetric complications such as placental abruption, placenta previa, uterine rupture, or amniotic fluid embolism.

A total of 48 women were excluded from the study: 17 from the acupressure group, 14 from the control group, and 17 from the placebo group. In addition, some participants withdrew from the study, as shown in Figure 1.

The study was completed in 135 pregnant women (acupressure group n=45, control group n=45, and placebo group n=45).

Data Collection

Data were obtained with Personal Information Form, Labor and Delivery Follow-up Form and Visual Analog Scale

Personal Information Form

This form contains nine questions aiming to evaluate the sociodemographic characteristics (age), medical/obstetric history (weight, height, body mass index [BMI], number of pregnancies and births), and pregnancy-related characteristics (e.g., gestation week) of the participants (Calik and Komurcu, 2014).

Labor and Delivery Follow-up Form

The researchers developed a form to record the participants' vital signs, drugs used, cervical dilatation and effacement, head level and condition of the membranes, vaginal bleeding status, frequency and severity of contractions, latent and active phases, placental separation, and total delivery time. The form also recorded fetal/newborn parameters (i.e., fetal heart rate [FKA], time of birth, height, weight, head circumference, and APGAR [activity, pulse, grimace, appearance, and respiration score] and applications during labor/delivery (oxytocin administration and perineal integrity) based on the literature (Calik and Komurcu, 2014). The final version of the 11-question Labor and Delivery Follow-up Form (LDFF) was prepared in the delivery room after

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consultation with two specialist doctors and two midwives/nurses.

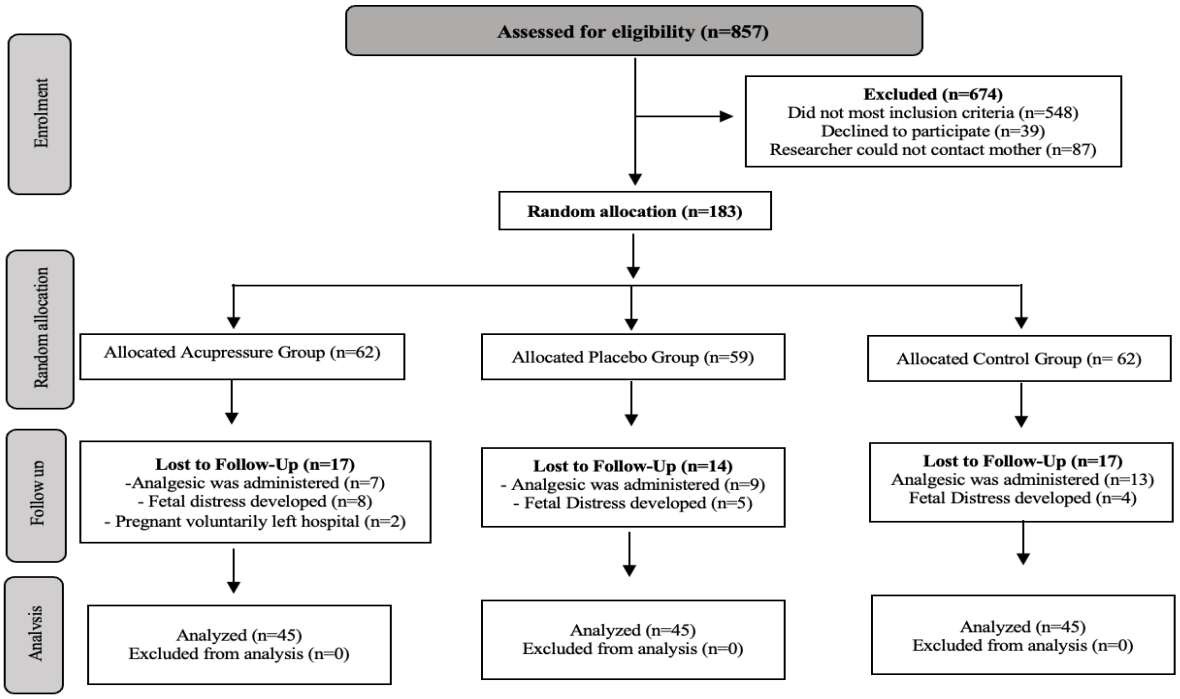


Figure 1. CONSORT Flow Diagram of the Study

Visual Analog Scale

The effect of the LI4 acupressure application on pain was evaluated using the Visual Analog Scale (VAS), which is a 10 cm horizonal line with "no pain" at one end and "unbearable pain" at the other end (Ferreira-Valente et al., 2011). It is a self-reported scale anchored by these two verbal descriptors referring to the pain state. The patient is asked to mark the line at the point that best represents their level of pain (Chiarotto et al., 2019). Before the implementation, a pilot study was conducted with nine people (including three in each study group).

Acupuncture Point Detector

In this study, an acupuncture point detector was used to detect the LI4 acupressure point. The acupuncture point detector was developed by the Leawell company, based on the idea that physiological acupuncture points have a stable and low electrical resistance (Supp 1-Acupuncture Point Detector). The appliance has a header and indicator light. The device, which looks like a small pen, emits light and sound when approaching acupuncture points. Thereby, the acupuncture point on the meridians is determined. Before the device was brought closer, the pregnant women's hands were checked to ensure that they were not affected by sensitivities such as body temperature and humidity.



Supplement- 1. Acupuncture point detector

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Intervention

Researcher DD introduced herself to the participants. Written informed consent was obtained by explaining the purpose and stages of the study. The participants' sociodemographic characteristics, medical/obstetric history, and pregnancy-related characteristics were recorded on the Personal Information Form using a face-to-face interview method.

The LI4 acupressure point (Figure 2) on the right hand of the participants in both the acupressure and placebo groups was identified anatomically with the help of the acupuncture point detector (Supp 1), and the LI4 point was marked with an indelible pen. No marking was applied to the control group.

When cervical dilatation was 3 cm, maternal findings (vital signs, vaginal examination findings, and contraction duration, frequency, and severity) and fetal findings (fetal heart rate) were recorded in the LDFF by researcher DD. The participants were asked to mark the intensity of the pain they felt during contractions on the VAS.

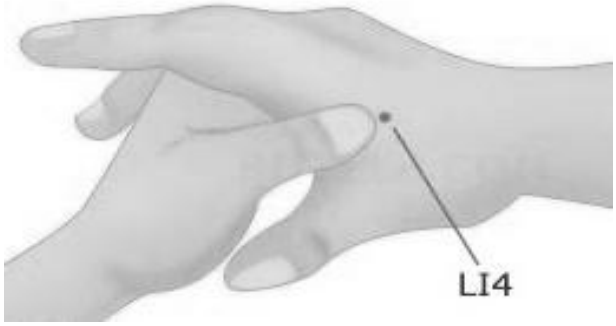


Figure 2. LI4 Acupressure Point (Program for Integrative Medicine and Health Care Disparities, n.d., p. 77)

LI4 Acupressure Application

Acupressure was applied to the participants in the acupressure group a total of 20 times during the contractions by researcher DD, a specialist obstetrics and gynecology nurse who has received acupressure training. Ten acupressure applications were performed after cervical dilatation reached 4 cm, and 10 acupressure applications were performed after cervical dilatation reached 7 cm. During the acupressure application, the researcher placed the thumb of her right hand on the pre-marked LI4 acupressure point on the patient's hand and applied pressure (3–5 kg) to this point with a force that the patient could feel but without her feeling pain. The acupressure application began at the onset of the contractions and finished when they ended. The acupressure was stopped during the resting phase. Before starting the acupressure applications and after completing 10 applications, the participants were asked to mark the intensity of the pain they felt on the VAS. The participants were followed up with fetal monitoring during the acupressure applications. After the application, vital signs and vaginal examination findings were evaluated and recorded in the LDFF.

Placebo Application

During the contractions, placebo acupressure was applied to the participants in the placebo group a total of 20 times by researcher DD. Ten placebo acupressure applications were performed after cervical dilatation reached 4 cm, and 10 placebo acupressure applications were performed after cervical dilatation reached 7 cm. During the placebo acupressure administration, the researcher DD placed the thumb of her right hand on the pre-marked LI4 acupressure point on the patient's hand and gently touched it without applying pressure. The control group received routine care.

A CONSORT flow diagram, including the research's application steps, is shown in Figure 1.

Statistical Analysis

The data were analyzed using the SPSS 22 program (SPSS Inc., Chicago, IL, USA) and are presented as means, standard deviations, medians, and percentages (%). The comparison of the categorical data, such as educational status, was made with the chi-square test. The suitability of the data for normal distribution was evaluated with the Kolmogorov–Smirnov and Shapiro–Wilk tests. The normally distributed data were compared between the groups using a one-way Analysis of Variance (ANOVA) test, and the non-normally distributed data were analyzed using the Kruskal–Wallis H test. A paired samples t-test was used to compare the parametric data within the groups before and after the intervention. An Analysis of Covariance (ANCOVA) test was used to compare the dependent variable by fixing the independent variables. Before the ANCOVA test, the suitability of the data for the test was decided by performing a normality test, reliability analysis, Pearson correlation analysis, linearity test, and regression slope homogeneity analyses. As a result of these analyses, it was decided that the data were suitable for the ANCOVA test. A $p < 0.05$ was accepted as the significance level.

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Ethical Considerations

Ethical approval of the study was obtained from themarmara University Faculty of Medicine Clinical Research Ethics Committee (No:09.2018.305). In addition, institutional permission was obtained from the Istanbul Provincial Health Directorate (16867222/ 604.01.01). All participants were asked to read and sign an informed consent form. All procedures performed were in accordance with the Ethical standards of the institutional and/or national research committee and the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Results

In the study, the participants age, obstetric characteristics (parity, number of pregnancies, and gestational week), newborn characteristics (1st and 5th min APGAR scores, birth weight, and head circumference) and BMI were similar in the groups ($p>0.05$), (Table 1).

Table 1. Comparison of pregnant and newborn characteristics of the groups

Characteristic	Acupressure Group (n=45)		Control Group (n=45)		Placebo Group (n=45)			
	X± SD	Median	X± SD	Median	X± SD	Median	KW^H / F ;	p
Age (Year)	26.73 ± 4.88	27.00	27.84 ± 5.59	28.00	26.98 ± 4.92	27.00	1.26*	; 0.53
Body Mass Index (Kg/m^2)	27.96 ±3.72	27.00	28.29±3.71	27.00	27.80 ± 2.99	27.00	0.56**	; 0.62
Number of Pregnancies	2.31 ± 1.20	2.00	2.87 ± 2.09	2.00	2.31 ± 1.20	2.00	1.17*	; 0.55
Number of Births	1.16 ± 1.12	1.00	1.31 ± 1.36	1.00	0.98 ± 1.05	1.00	1.98**	; 0.14
Gestational Week	39.80 ± 1.10	40.00	39.60 ± 1.10	39.80	39.80 ± 1.10	40.00	0.34**	; 0.71
Pain Severity Scores at the Time of Hospitalization	44.98 ± 3.05	4.00	3.87 ± 2.84	4.00	4.29 ± 2.73	4.00	1.70**	; 0.18
1st min APGAR Scores	7.29 ± 1.01	7.00	7.40 ± 0.72	7.00	7.11 ± 0.88	7.00	1.23**	; 0.29
5th min APGAR Scores	8.96 ± 0.20	9.00	8.93 ± 0.33	9.00	8.87 ± 0.40	9.00	0.91**	; 0.40
Birth Weight of Baby (gr.)	3378.00±358.40	3410.00	3426.60±424.20	3320.00	3381.30±465.80	3345.00	0.19*	; 0.82
Head Circumference of Baby (cm)	35.87 ± 2.71	35.00	35.00 ± 1.47	35.00	35.42 ± 1.40	35.00	2.19**	; 0.11

*SD, Standard Deviation; * Kruskal Wallis-H Test. ** One-Way Anova*

Only the acupressure group's pain score decreased significantly after both the first and second acupressure applications ($p<0.05$). However, although the pain scores increased in both the placebo and control groups after the applications, the control group was not subjected to any intervention. (Table 2).

When the pain scores of the acupressure, control, and placebo groups before the first acupressure or placebo applications were accepted as covariates and compared using an ANCOVA analysis, the pain score of the acupressure group after the first application decreased statistically significantly compared to the control and placebo groups ($F_{(2,131)} = 27.13$, $p < 0.001$). Similarly, when the pain scores of the acupressure, control, and placebo groups before the second acupressure and placebo applications were accepted as covariates and compared by an ANCOVA analysis, the pain intensity score of the acupressure group after the second application decreased statistically significantly compared to the control and placebo groups ($F_{(2,131)} = 82.71$, $p< 0.001$) (Table 2).

The active phase duration of the pregnant women who applied acupressure was shorter (225.20 ± 180.40 min) and statistically significant compared to the participants in the control (409.50 ± 211.30) and placebo (415.50 ± 204.80) groups ($p<0.05$). The duration of other stages of labor were similar between groups ($p>0.05$) (Table 3). When the postpartum perineal integrity of the participants in the groups was evaluated, it was determined that most participants whose perineal integrity was not

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impaired were in the acupressure group, and there was a statistically significant difference between the groups (p<0.05). Other interventions (amniotomy, oxytocin therapy, and oxygen inhalation) were similar in the groups (Table 3).

Table 2. Comparison of the pain severity scores of the participants in the groups before and after acupressure application

Pain Severity Scores												
		Before the 1st Application			After the 1st Application							
Groups	**n**	**X±SS**	**F**	**p[1]**	**X±SS**	**F**	**p[2]**	**t**	**p[5]**	**F**	**ηp2**	**P[7]**
Acupressure Group	45	6.80 ± 2.34	1.06	0.34	5.27 ± 2.16	17.00	*0,001**	4.85	*0.001**	27.13	0.29	*0.001**
Control Group	45	6.51 ± 2.08			7.89 ± 1.87			-4,35	*0.001**			
Placebo Group	45	6.09± 2.53			6.71 ± 2.34			-1,89	0.065			
Pain Severity Scores												
		Before the 2nd Application			**After the 2nd Application**							
Groups	**n**	**X±SS**	**F**	**P[3]**	**X±SS**	**F**	**P[4]**	**t**	**p[6]**	**F**	**ηp 2**	**P[8]**
Acupressure Group	45	8.18 ± 2.22	2.38	0.09	6.42 ± 1.97	80.45	*0.001**	5.20	*0.001**	82.71	0.55	*0.001**
Control Group	45	9.02 ± 1.58			9.67 ± 1.16			-2.80	*0.007***			
Placebo Group	45	8.64 ± 1.62			9.62 ± 0.74			-4.51	*0.001**			

SD, Standard deviation; ηp^2, Effect size
p^1, p^2, p^3, p^4 = Comparison of Pain Severity Scores between Groups (Data were analyzed with One-Way Anova)
p^5, p^6 = Comparison of pain severity scores before and after the application within the group (Data were analyzed with Paired Sample t Test)
p^7, p^8 = ANCOVA
**p<0.001; **p<0.05*

Table 3. Comparison of the characteristics of the participants in the groups related to the birth process

Duration	**Acupressure Group (n=45)**		**Control Group (n=45)**		**Placebo Group (n=45)**		**KW[H]**	**p**
	X± SD	**Median**	**X± SD**	**Median**	**X± SD**	**Median**		
Latent Phase (Min.)	510.40 ± 329.60	540.00	493.70 ± 458.90	375.00	485.80± 338.90	450.00	0.91	c
Active Phase (Min.)	225.20 ± 180.40	180.00	409.50 ± 211.30	380.00	415.50± 204.80	375.00	30.40	*0.00**
Placental Separation Stage (Min.)	7.30 ± 2.80	7.00	9.10 ± 50	7.00	9.07 ± 4.90	8.00	5.21	0.07
Total Duration of Labor (Min.)	743.00 ± 379.80	735.00	920.50 ± 472.10	901.50	906.90±375.10	843.50	2.74	0.25
Practices in the First Stage of Labor	**n**	**%**	**n**	**%**	**n**	**%**	**X^2**	**p**
Amniotomy	13	31.00	16	38.00	13	31.00	0.62	0.73
Oxytocin Therapy	28	32.50	30	35.00	28	32.50	0.25	0.88
Oxygen Inhalation	11	28.00	17	44.00	11	28.00	2.59	0.27
Perineal Evaluation	**n**	**%**	**n**	**%**	**n**	**%**	**X^2**	**p**
Episiotomy	18	40.00	22	49.00	24	53.00	1.66	0.40
Perineal Laceration	10	22.00	16	35.50	13	29.00	1.94	0.32
Perineum Integrity	17	38.00	7	15.50	8	18.00	7.45	0.02**

*SD, Standard Deviation; KW^H, Kruskal Wallis-H Test; X^2, Chi-square test; *p< 0.001 ** p<0.05*

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Discussion

In this study, it was determined that the LI4 acupressure application reduced labor pain. Thus, H1 hypothesis of the study was accepted. In our study, the active phase duration was significantly shortened in the acupressure group. But the total duration of labor was similar in the groups. The H2 hypothesis of the study was partially confirmed. The demographic and obstetric characteristics of the pregnant women were similar across groups, which is important for ensuring the reliability of comparisons and the interpretability of findings. These outcomes are consistent with previous studies and are supported by both recent randomized controlled trials and meta-analytic evidence from the past decade.

The analgesic effects of LI4 acupressure are primarily explained by the gate control theory and endorphin release mechanisms. Stimulation of the LI4 point during labor has been shown to increase plasma β-endorphin levels, endogenous opioids that modulate pain and contribute to analgesia in parturient women (Smith et al., 2020; Altinayak and Özkan, 2022; Zhang et al., 2025). In our study, LI4 acupressure significantly reduced labor pain. Although pretreatment pain scores were comparable across groups, a clear reduction was observed post-intervention in the acupressure group, whereas pain scores increased in both control and placebo groups. Our findings support the growing body of scientific literature over recent years that confirms LI4 acupressure as an effective method for labor pain relief. In a randomized controlled trial involving 129 participants, Altinayak and Özkan (2024) reported that both warm and cold LI4 acupressure significantly reduced labor pain and enhanced childbirth comfort, with the warm application demonstrating more pronounced effects (Altınayak and Özkan, 2024).In a randomized controlled trial involving three groups (LI4, BL32, and control; n=105), both LI4 and BL32 acupressure significantly reduced pain scores at cervical dilations of 4–5 cm, 6–7 cm, and 8–10 cm. Notably, BL32 showed slightly greater analgesic effects than LI4 during the early stages of labor (Ozgoli et al., 2016). According to Yildirim et al., the application of compression and ice massage at the LI4 acupressure point reduced the labor pain of women and shortened the delivery period by positively affecting the ongoing labor process (Yildirim et al., 2018). In a randomized controlled study by Mirzaee et al., acupressure applied with or without ice at the LI4 acupressure point during delivery reduced labor pain (Mirzaee et al., 2021). A recent GRADE-assessed systematic review of 37 randomized controlled trials reported that acupressure significantly reduced labor pain, with mean differences ranging from –1.19 (vs. touch) to –2.32 (vs. no intervention). Among the commonly used acupoints, both LI4 and SP6 acupressure were effective, though SP6 exhibited slightly greater analgesic efficacy (Larki et al., 2025). This difference may be explained by the greater number of studies on SP6 acupressure included in the meta-analysis.

In the present study, although the active phase duration was significantly shortened in the acupressure group, the total duration of labor did not differ significantly between groups. Several randomized controlled trials have consistently demonstrated that acupressure facilitates labor progression and shortens the duration of the active and second stages (Najafi et al., 2018; Samadi et al., 2018; Turkmen et al., 2024). In the study by Mafetoni and Shimo on the effect of ear acupuncture on labor pain, the labor duration of the groups before the application was similar, while the duration of labor of the participants in the acupressure group was shorter in the period from the application until the birth (Mafetoni and Shimo, 2016). Alimoradi et al. reported that the active phase duration of labor was shorter in the acupressure group with pressure applied to the GB21, GB30, BL32, LI4, and SP6 acupressure points (Alimoradi et al., 2020). The fact that total labor times were similar in the groups in our study may be related to the fact that acupressure was applied only during the active phase. In contrast to our findings, the study by Mehri et al. (2019) found that acupressure had no statistically significant effect on the mean duration of the first and second stages of labour compared to the control group (Mehri et al., 2019). This inconsistency may be due to variations in the acupressure protocol, including the pressure points chosen, duration and frequency of application, or timing according to the stages of labour.

In addition, in our study, 38.00 % of the pregnant women in the group who received acupressure during labor had perineal integrity, and there was a statistically significant difference between the groups in terms of perineal integrity. Although there is limited data on the relationship between acupressure and perineal outcomes, this result suggests a potential benefit of acupressure in facilitating more physiological labor progression

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and controlled delivery of the fetal head. More studies are needed to confirm this finding.

Conclusion and Recommendations

Our findings indicated that acupressure applied to the LI4 pressure point reduced labor pain and shortened the active phase of labor. The fact that the perineal integrity ratio was significantly higher in the participants in the acupressure group compared to the other groups can be considered an indirect positive result of the acupressure application. In line with our findings, the use of LI4 acupressure can be recommended in clinics to reduce labor pain and shorten the active phase period. It is recommended to conduct more randomized placebo-controlled clinical studies on the subject in order to employ certified midwives/nurses who can apply acupressure in delivery rooms and to standardize the application method, duration, and frequency of acupressure. While current meta-analyses predominantly focus on SP6 and combined acupoint applications, increasing the number of high-quality studies specifically targeting LI4 would help generate more robust meta-analytic evidence on the effectiveness of LI4 acupressure alone, thereby strengthening evidence-based clinical practice.

Research Limitations

The results obtained from our study are limited to the sample and cannot be generalized. One of the most important limitations of our study is that analgesia was administered to some patients in the study group by physicians, and therefore cases were lost. Unfortunately, in Turkey, physicians tend to use analgesia to reduce labor pain and accelerate labor, and nurses/midwives do not have the authority to prevent this.

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What did the study add to the literature?

- This study adds to the existing literature by assessing the impact of LI4 acupressure on labor pain and the labor process within a randomized, placebo-controlled trial framework.
- In the last decade, most studies and meta-analyses have focused on SP6 or combined acupressure points, while evidence on LI4 alone remains limited.
- Our findings showed that LI4 acupressure reduced labor pain and shortened the active phase, supporting some previous studies, but unlike multi-point interventions, it did not affect total labor duration.

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