



## Effect of perineum massage with olive oil on perineum integrity and duration of second period of delivery

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### Abstract

**Background:** Perineal trauma that may occur during labor may pose a critical risk both for mother's health and her quality of life. Childbirth and puerperium are of the most important periods in women's lives and can affect different aspects of their lives.

**Aims and objectives:** To determine the effect of perineal massage in the second stage of labor with olive oil on perineal lacerations, episiotomy, and perineum tears in multiparous women.


**Design:** A randomized controlled trial.


**Method:** Among women who applied to Maternity Hospital in Turkey 350 pregnant women were assigned to massage group while other 350 were to control group. The participants were selected through convenience sampling, and randomly assigned to two groups: intervention and control groups. The intervention group received perineal massage with olive oil during second stage of labor. Subsequently, we analyzed perineal laceration, episiotomy, and perineal tear among the two groups. All of them were taught about postpartum perineal tear and its severity, and the researcher followed them up 4 hours, and 1 days after childbirth. The data were analyzed using SPSS version 18. We used descriptive statistics and analytical statistics, including t test, Chi-square test, One-Simple Kolmogorov Smirnov test.

**Findings:** Frequency of episiotomy was 34.3% in the intervention group and 48.6% in the control group, and the difference was statistically significant ( $p < 0.05$ ) Tear appeared in 17.7% of the massage group while in 38.0% of the controls. Percentage of tear formation in the massage group significantly decreased ( $p < 0.05$ ) No statistically significant difference was found between the second period of the delivery of massage and control group

**Conclusion:** Regarding the results of this study and those of other studies, perineal massage during the second stage of labor can reduce the need for episiotomy, and avoid perineal injuries, and perineal pain.

**Keywords:** Perineum massage, perineal trauma, episiotomy, perineal laceration, olive oil.

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## INTRODUCTION

The idea that birth process should be undergone minimal intervention has been spreading. Unlike the abovementioned idea, the fact that episiotomy practice –especially on the primiparous pregnant women- has almost been a routine in Turkey and it has been practiced - even if it is not necessary- despite the fact that it prolongs the post-partum healing and increases perineum trauma risks.

Special health needs of women are mostly related to their fertility. Fertility closely affects the health of the woman, the child, the family and thus the society. Therefore, woman's health should be examined specially (Taşkın L. 2018, WHO, Geneva 1994)

Today, the idea of leaving the birth action to the labour with minimum intervention is becoming widespread. Unlike this idea, the fact that the episiotomy application especially in primiparous pregnant women in Turkey has become almost a routine practice and its application without any requirements increases the risk of perineal trauma while prolonging the postpartum healing process (Labrecque, M., Eason E., Marcoux, S. 1999, Sayiner, FD., Demirci, N. 2007, Kapoor DS, Thakar R, Sultan AH2015, Leeman LM, Rogers RG 2012, Ellington JE, Rizk B, Criso S 2017).

Perineal damage during childbirth can have significant long-term consequences for women, including: decreased quality of birthing experience and early neonatal bonding; persistent postpartum perineal pain; increased rates of sexual dysfunction (e.g. poor desire; decreased arousal and lubrication; lower orgasm rate) and dyspareunia; pelvic floor weakness; and urinary or fecal incontinence and/or sphincter weakness (Labrecque, M., Eason E., Marcoux, S. 1999, Sayiner, FD., Demirci, N. 2007, Kapoor DS, Thakar R, Sultan AH2015, Leeman LM, Rogers RG 2012, Ellington JE, Rizk B, Criso S 2017, Abedzadeh-Kalahroudi, M, Talebian A., Sadat, Z, Mesdaghinia, E. 2019). Olive oil is a harmless lubricant that has been used in skin care for a long time. There are many benefits of using this harmless oil in perineum massage.

Perineal massage with a lubricant having a slippery feature refers to the massage applied to the muscles and tissues around the vagina. Massage, which has significant effects in providing elasticity to tissues and muscles and in rehabilitation, is believed to have a positive effect in vaginal deliveries due to its similar effects on tissues and muscles in the perineal region (Labrecque, M., Eason E., Marcoux, S. 1999, Sayiner, FD., Demirci, N. 2007, Kapoor DS, Thakar R, Sultan AH 2015, Leeman LM, Rogers RG 2012, Ellington JE, Rizk B, Criso S 2017, Vieira F., Guimarães, JV., Souza, MCS., Sousa, PML., Santo, RF, Cavalcante, AMRZ 2018.

## PURPOSE

The purpose in this study is to determine the effect of perineal massage made with olive oil in the second phase of labour in term pregnant women on dilatation and delivery time, episiotomy requirement and perineal tear.

**COLLOUT:** Perineal trauma that may occur during labor may pose a critical risk both for mother's health and her quality of life.

## METHOD

### The place of the study

The research was conducted at Delivery Room of Kayseri Maternity and Children's Hospital located in Kayseri city center.

**Population and sample selection power** analysis was conducted in order to determine the number of pregnant women who would constitute the massage group and control group. The sample size was calculated by Medical Faculty Biostatistics Department using Minitab Program. According to literature reports, the rate of intact perineum may be increased by 10 % using perineal massage<sup>2-6</sup> It was estimated that intact perineum rate would be around 30 % in the

massage group and 20 % in the control group so that it could represent the population. Sample size was determined as 313 for both groups on the basis of  $\alpha=0.05$ ,  $\beta=0.20$ . Considering the possible problems that may occur during labor and due to the unexpected drop-outs; the sampling was initiated in order to reach 626 pregnant women and ended up 350 pregnant women assigned to the massage group and another 350 pregnant women assigned to the control group. Inclusion of women in groups was determined through drawing of lots method. For drawing of lots; 700 small papers were prepared, the words 'massage', and 'control' were written on each 350 papers, they were folded and put into a bag. Inclusion of women into groups was determined according to the papers women drew from the bag.

### **Type of study**

A randomized controlled trial.

### **Data collection**

#### **Data collection method**

#### **Data Collection Form Regarding the Descriptive Characteristics of Pregnant Women**

Pregnant information form used to collect data is composed of questions containing information about the socio-demographic characteristics and medical and obstetric history of the pregnant woman and information about her current and previous births.

One part of the data collection form was filled by asking the pregnant women, some parts were filled with the help of the pregnant women's files and another part was filled by conducting evaluation through observation.

### **Data collection tools**

#### **REEDA Scale**

REEDA Scale was developed by Davidson in 1979 to obtain objective results in the evaluation of postpartum perineum (Davidson, K.2000) The validity and reliability study of the scale was conducted by Hill in 1989. Its validity and reliability study in Turkey was conducted by Üstünsöz in 1996 (Hill, P.D. 1990, Üstünsöz, A., İnanç, N. 1995)

The scale is composed of five parameters of wound healing stated below:

Redness, Edema, Ecchymosis, Discharge, Approximation

The scale is rated by giving 0, 1, 2 and 3 points to each parameter. The lowest score is 0 and the highest score is 15. The highest score indicates the most serious perineal trauma.

#### **Form for Midwives' Opinion About Massage Application**

The midwives, who accepted to do the massage, were asked to fill out the opinion form about the massage application to evaluate their satisfaction on applying perineal massage and if they continue to do the massage at the end of the study. This form is composed of a total of two questions. While the first question is about if they find the massage useful or not, the second question is about if they will continue to apply the massage.

### **Limitations of the study**

Pregnant women who completed the gestation age of 38-40 weeks according to Cephalic (head) presentation, vertex presentation, live single pregnancy, last menstrual period or early pregnancy ultrasonography for women who did not know the last menstrual date, did not have a caesarean or any uterine surgical operation, were aged between 17-40 years, had no risk factor (heart disease, placenta previa, oligohydramnios, preeclampsia, anhydroamnios, diabetes, epilepsy), had three or less deliveries, were at least literate, and had no contraindications for vaginal delivery were included in the study group.

The characteristics of the pregnant women who were excluded from the study are as follows:

Previous history of caesarean or uterine surgery, dead foetus, vaginal bleeding that cannot be explained, twin pregnancy, existence of foetal anomaly, estimated foetal weight over 4500 gram in ultrasonography, and the presence of presentation anomaly.

In the planning phase of the study, considering the assumption that perineal massage with olive oil will decrease episiotomy, only primiparous women were thought to be included in the study. However, it was seen that episiotomy was applied routinely to the primiparous pregnant women in the hospital after the study began. Therefore, after 35 primiparous women were assigned to massage group and 35 primiparous women were assigned to control group, multiparous pregnant women giving the second and third birth along with primiparous women were decided to be included in the study.

### **Ethical aspect of the study**

Attention was paid to comply with ethical principles in every stage of the study. Primarily, permission was received from University Medical Faculty Ethics Committee to conduct the study. Written consent was received from the hospital where the study was conducted. Participant women were informed about the purpose of the study and their written consents were received with Informed Consent Form. Participants were firstly informed about the study, their consents were received and it was assured that their identities would never be disclosed.

### **Collection of data**

The researcher provided a training on application of perineal massage with olive oil to midwives who worked in the delivery room and agreed to participate in the study. The researcher gave the massage to five pregnant women who were about to give birth and it was ensured that the midwives were watching and learning the massage. It was told to midwives that the massage should be done after taking pregnant woman to obstetric table and when the the second stage of labor. The pregnant women meeting the criteria for the study were determined by the researcher and were informed about the purpose of the study, and verbal and written consents were obtained from the pregnant women who agreed to participate in the study. Within this process, 350 people out of 382 pregnant women meeting the criteria were voluntary to participate in the study.

In order for the study to be objective, application of perineal massage and delivery were left to the midwives and data collection form was filled by the interviewer.

Since no change was made in the functioning of the delivery room during data collection, pregnant women received their routine care and treatment.

REEDA scale was filled by midwives who were working in the postpartum service where the women were taken after delivery and did not know if the mothers were in the control or massage group. Since pregnant women who had normal delivery were discharged quickly from the hospital, only the first three parameters of REEDA scale could be evaluated. Discharge parameters and approaching of the wound edges which are possible consequences in the later days could not be evaluated.

### **Intervention Description**

Performing the perineal massage and delivery were up to the midwives, so that the research could be objective and the questionnaires were filled out by pollsters.

There was not any change in the birth process of the delivery room during data collection and the pregnant women received routine care and treatments.

REEDA scale was administered by other midwives who worked at the puerperal room where pregnant women stayed after birth and did not know their groups because those who gave vaginal birth were early discharged from the hospital as they could answer only the first three parameters of REEDA scale. Parameters of Approximation and Discharge which were likely to occur later were not assessed.

## Data Evaluation

After the interviewer obtained personal and labour related data of the pregnant women, they were evaluated in the computer by using SPSS 16.0 (Statistical Program for Social Sciences) packaged program. One-Simple Kolmogorov Smirnov test was used to check if data showed normal distribution. Since the data did not show normal distribution, nonparametric tests were used in the analysis. Descriptive information of pregnant women was given in the tables as the distribution of number and percentage. In addition to medians, the mean values were given with standard deviation.

In the evaluation of the data, chi-square test to show the difference between the groups and Mann-Whitney U tests to compare the median of the two groups were used.

In all comparisons,  $\alpha$  significance level was taken as 0.05.

## RESULTS

The results of the study conducted to determine the effect of perineal massage made with olive oil in the second stage of labour in term pregnant women on dilatation and delivery time, episiotomy requirement and perineal tear are given below.

**Table 1.** Distribution of the Pregnant Women in Terms of Some Socio-Demographic and Obstetric Characteristics

Characteristics	Massage (n= 350)		Control (n= 350)		X <sup>2</sup>	p
	n	%	n	%		
<b>Age group</b>						
17-20	40	11.4	28	8.0	7.734	0.171
21-24	97	27.7	93	26.6		
25-28	88	25.2	110	31.4		
29-32	63	18.0	67	19.1		
33-36	36	10.3	37	10.6		
37-40	26	7.4	15	4.3		
<b>Education Status</b>						
Literate	1	0.3	6	1.7	9.292	0.54
Primary school	233	66.6	205	58.6		
Secondary school	94	26.9	108	30.9		
High school	22	6.3	29	8.3		
College	-	-	2	0.3		
<b>Working status</b>						
Employed	35	10.0	42	12.0	0.715	0.469
Unemployed	315	90.0	308	88.0		
<b>Social Security Status</b>						
Yes	339	96.9	335	95.7	0.639	0.434
No	11	3.1	15	4.3		

<b>Gestational week</b>	39 (38-40)	39.2 ± 0.6	39 (38-40)	39.3 ± 0.6	60234.5	0.65
<b>Gravidity</b>	2 (1-3)	2.2 ± 0.6	2 (1-3)	2.3 ± 0.6	60147.5	0.64
<b>Parity</b>	2 (1-3)	2.2 ± 0.6	2 (1-3)	2.2 ± 0.6	60777.5	0.83
<b>BMI</b>						
18.5 - 24.9	142	40.6	147	42.0	15.197	<b>0.002</b>
25 - 29.9	142	40.6	166	47.4		
30 - 39.9	66	18.9	34	9.7		
40 - 60	-	-	3	0.9		
<b>Median age (Min-Max)</b>	26 (18-40)		26 (17-40)		60178.5	0.68
<b>Mean age (<math>\bar{X} \pm Sd</math>)*</b>	26.8 ± 5.5		26.7 ± 5.2			
<b>Median age (Min-Max)</b>	26 (17-40)					
<b>Mean age (<math>\bar{X} \pm Sd</math>)</b>	26.8 ± 5.3					

\*Mann Whitney U test was applied.

Table 1 shows the distribution of the pregnant women in the massage and control groups included in the study according to some socio-demographic characteristics. While mean age of the pregnant women in the massage group was  $26.8 \pm 5.5$ , the mean age of the pregnant women in the control group was  $26.7 \pm 5.2$ . While the rate of women who had primary school degree was 66.6% in the massage group, it was 58.6% in the experimental group. It was determined that the pregnant women in the massage and control groups within the scope of the study were similar in terms of age, education, working status and social security status ( $p > 0.05$ ).

It was found that while the mean gestational week of the pregnant women in the massage group was  $39.2 \pm 0.6$  and the average gravidity was  $2.2 \pm 0.6$ , the mean gestational week of the pregnant women in the control group was  $39.2 \pm 0.6$  and the average gravidity was  $2.3 \pm 0.6$ .

**Table 2.** Distribution of the Pregnant Women Included in the Study According to Some Characteristics of Their Newborn Infants

Characteristics	Massage (n=350)		Control (n=350)		X <sup>2</sup>	p
	n	%	n	%		
<b>Body weight (gram)</b>					3.179	528
2070- 2500	8	1.1	6	0.9		
2501- 3000	103	14.7	99	14.1		
3001- 3500	152	21.7	170	24.3		
3501- 4000	82	11.7	73	10.4		
4001 and more	5	0.7	2	0.3		

<b>Body weight*</b> <b>Median (Min-Max)</b> <b>(<math>\bar{X} \pm Sd</math>)</b>	3250 (2180-4500) 3278.5 $\pm$ 412.9		3200 (2070-4300) 3224.1 $\pm$ 383.2		57720.5	0.18
<b>Head Circumference (cm)</b>	9	1.3	2	0.3	8.631	0.071
32	75	10.7	87	12.4		
33	198	28.3	208	29.7		
34	64	9.1	52	7.4		
35	4	0.6	1	0.1		
36						
<b>Head circumference (cm)*</b> <b>Median (Min-Max)</b> <b>(<math>\bar{X} \pm Sd</math>)</b>	34 (32-36) 33.9 $\pm$ 0.8		34 (32-36) 33.9 $\pm$ 0.6		587.9	0.30

\*Mann Whitney U test was applied.

It was found that the mean birth weight of newborn infants of the women in the massage group was 3278.5 $\pm$  4120.9 gr and their mean head circumference was 33.9  $\pm$  0.8 cm. The mean birth weight of the pregnant women in the control group was 3224.1  $\pm$  383.3 gr and the mean head circumference was 33.9 $\pm$  0.6 cm. The difference between both groups in terms of birth weights and head circumference of the newborn infants of all pregnant women in the massage and control groups included in the study was not statistically significant ( $p > 0.05$ ) (Table 4.2).

**Table 3.** Distribution of Current Birth Characteristics of the Pregnant Women Included in the study

Characteristics	Massage (n=350)		Control (n=350)		X <sup>2</sup>	p
	n	%	n	%		
<b>Episiotomy opening condition</b>					14.718	<b>0.00</b>
Opening	120	34.3	170	48.6		
Not opening	230	65.7	180	51.4		
<b>Episiotomy Incision</b>					5.911	<b>0.011</b>
Elongating	1	0.3	10	2.9		
Not Elongating	349	99.7	340	97.1		
<b>Status of tear formation</b>					35.833	<b>0.00</b>
Formed	62	17.7	133	38.0		
Not formed	288	82.3	217	62.0		
<b>Duration of the 2<sup>nd</sup> phase of birth (minute)</b> <b>Median (Min-Max) *</b> <b>(<math>\bar{X} \pm Sd</math>)</b>	13 (5-40) 13.3 $\pm$ 5.7		13 (5-38) 13.9 $\pm$ 6.4		589.60	0.38

\*Mann Whitney U test was applied.

Table 4.5 shows the characteristics of the pregnant women included in the study regarding their current delivery. While episiotomy was applied to 34.3% of 350 pregnant women included in the massage group, it was applied to 48.6% of the pregnant women in the control group. When episiotomy opening status was compared with the massage and control groups, the difference between them was found to be statistically significant ( $X^2 = 14.18$ ,  $p = 0.00$ ).

It was determined that tear occurred in 17.7% of the pregnant women in the massage group and in 38.0% of the women in the control group. When both groups were evaluated in terms of tear formation, the difference between them was statistically significant ( $X^2 = 33.833$ ,  $p = 0.00$ ).

When the pregnant women who participated in the study and underwent episiotomy were evaluated in term of incision elongation, episiotomy incision was determined to elongate in 0.3% of the pregnant women from the massage group and in 2.9% of the pregnant women in the control group. The difference between the groups was statistically significant ( $X^2 = 5.911$ ,  $p = 0.011$ ).

The duration of the second phase of birth of the pregnant women in the massage and control groups included in the study was evaluated and the time difference between the two groups was statistically insignificant ( $X^2 = 1.330$ ,  $p = 0.313$ ) (Table 4.5).

**Table 4.** Distribution of the Formation of Redness, Edema and Ecchymosis in Perineum Area According to Massage and Control Groups in terms of REEDA Scale in Pregnant Women Included in the Study

REEDA Criteria	Group				X <sup>2</sup>	p
	Massage (n= 350)		Control (n= 350)			
	n	%	n	%		
<b>Redness</b>						
Formed	67	19.1	79	22.6	2.551	0.279
Not formed	283	80.9	271	77.4		
<b>Edema</b>						
Formed	22	6.2	37	10.6	4.169	0.124
Not formed	328	93.8	313	89.4		
<b>Ecchymosis</b>						
Formed	4	1.1	5	1.4	0.113	0.752
Not formed	346	98.9	345	98.6		
<b>REEDA scale mean score (<math>\bar{X} \pm Sd</math>)*</b>	1.5152 $\pm$ 0.7		1.7342 $\pm$ 0.9		2305.0	0.178

\*Mann Whitney U test was applied.

Table 6 shows the distribution of redness, edema and ecchymosis formation in perineum region according to REEDA Scale in terms of pregnant women in massage and control groups. Redness in 19.1%, edema in 6.2% and ecchymosis in 1.1% of pregnant women in the group who received perineal massage were seen in the incision area. Redness in 22.6%, edema in 10.6% and ecchymosis in 1.4% of the pregnant women in the control group were seen. When the data obtained as a result of evaluation of REEDA Scale were compared, the difference between the massage group and control group was not statistically significant ( $p > 0.05$ ).



**Table 5.** Distribution of Behaviours and Opinions of Midwives Working in Delivery Room on the Application of Perineal massage (Kayseri, 2009-2010)

Massage Application Status (n=22)	n (%)
Applying	17 (77.3)
Not applying	5 (22.7)
<b>Wanting to continue the application (n=17)</b>	17 (100)
<b>Finding the application useful</b>	17 (100)

Table 7. shows the distribution of behaviours and opinions of midwives working in delivery room regarding perineal massage with olive oil. All 17 midwives who agreed to participate in the study found the perineal massage done with olive oil during delivery useful and stated that they would continue to do the perineal massage in the future.

## DISCUSSION

Massage, having an important effect on elasticity of tissues and muscles and rehabilitation, is thought to provide similar benefits on perineal tissues and muscles and thus have a positive effect on preventing perineal trauma in vaginal births (Labrecque, M., Eason E., Marcoux, S. 1999, Sayiner, FD., Demirci, N. 2007, Goh, R., Goh, D., Ellepola, H. 2018, Kapoor DS, Thakar R, Sultan AH2015, Leeman LM, Rogers RG 2012, Ellington JE, Rizk B, Criso S 2017, Üstünsöz, A., İnanç, N. 1995).

With the help of the present research, it was found out that perineal massage decreased episiotomy need and tear formation ( $p < 0.001$ ) but did not change travail duration. Nearly one third of the massage group (34.3 %) received episiotomy while nearly half of the control group (48.6 %) received episiotomy.

Perineal tears may occur spontaneously as well as following episiotomy. It was emphasized that episiotomy may lead to posterior tears among the women who received (Graham, JD., Carroli, G., Davies, C., Medves, JM. 2005, Karaçam, Z., Eroğlu, K. 2003). It was observed that the rate of tear in the massage group (17.7 %) was two times fewer than the control group (38 %) ( $p = 0.00$ ) (Table 2). Also, incision extension was longer in control group among the women who received episiotomy ( $p = 0.011$ ) (Table 2). The study of Shipman conducted in England reported that perineal massage increased the rate intact perineum by 6 % (Fleming, N., Newton, ER., Roberts, J. 2003, Hillan M.E.1999, Shipman, M.K., Boniface, D.R., Tefft M.E., McCloghry, F. 1997). The study of Labreque et al conducted in Canada revealed that the rate of intact perineum was increased to 24.3 % using massage Unlike these, Stamp et al reported in their research which evaluated perineal massage performed in travail that massage did not make any difference in terms of intact perineum during the second stage of the labor (Labrecque, M., Eason, E., Marcoux, S. 2001, Stamp, G., Kruzins, G., Crowther, C. 2001). As for our research, it was noted in the group in which massage with olive oil was performed that episiotomy opened less and tears were shorter and thus the rate of intact perineum was higher compared to that of the control group (Table 2). It was concluded with the help of our research findings that perineal massage performed with olive oil both increased tissue elasticity and decreased perineal damage that may occur due to friction and rupture.

Among the pregnant women who received perineal massage, perineal trauma during labor and healing of episiotomy wound during postpartum period may be earlier. Because perineal massage has the capacity that may help perineal muscles recover their function earlier. In a study, Attarha et al. observed that perineal massage with lavender essence at the second stage of labor increased blood flow, softened perineal tissues and made it more flexible in the involved group rather than the control group. Frequency of peri-neal tear for the massaged group with lavender essence was more than that of the control group. Although the severities of

perennial tear was the less in intervention group than control group (Attarha, M., Vacillian, C., Akbary Torkestany, N., Hey-dary, T. and Bayateyan, Y. 2009, Geranmayeh, M., Rezaei Habibabadi, Z. , Fallahkish, B., Farahani, M.A., Khakbazan, Z. and Mehran. 2012, Ommolbanin Zare1, Hajar Pasha, Mahbobeh Faramarzi 2014, Karaçam Z, Ekmen H, Çalişir H. 2012).

Episiotomy healing and the state of the perineum during postpartum period may be assessed with the observation of such criteria as redness, edema, ecchymosis, discharge and approximation<sup>6,7</sup>. When perineum of the women to whom episiotomy was performed was assessed according to REEDA Scale; redness, edema and ecchymosis developed less among the massage group but the difference between the groups was statistically not significant ( $p > 0.05$ ) (Table 3). Similar to the findings of the present research, the study of Sayiner reported that mean score of REEDA Scale that assessed episiotomy healing in the massage group was smaller—that is, wound healing was better. However, it was seen that there was not statistically significant difference between the two groups (Sayiner, F. D., Demirci, N. 2007).

The study of where the effects of episiotomy were evaluated pointed out that wound healing was later and pain level was higher among the episiotomy group compared to the group of non-episiotomy and spontaneous tear repair (Karaçam, Z., Eroğlu, K. 2003).

The study conducted by Stamp et al. in Australia demonstrated that there was not statistically significant difference between massage group and control group in terms of intact perineum. However, **3o** and **4o** tears decreased among the massage group and the rate decreased from 3.6 % to 1.7 (Labrecque, M., Eason E., Marcoux, S. 1999, Labrecque, M., Eason, E., Marcoux, S. 2001, Stamp, G., Kruzins, G., Crowther, C. 2001).

The study of Davidson that was conducted in the USA and in which the effects of perineal massage were evaluated reported that pregnant women to whom massage was performed underwent fewer severe tears compared to the non-massaged pregnant women. It was found out that 203 of the 269 massaged pregnant women had intact perineum, 55 had **1o** tear and 11 had  $\geq$  **2o** tears whereas 50 of the 93 non-massaged pregnant women had intact perineum, 32 had **1o** tear and 11 **2o** tears ( $p = 0.0002$ ) (Davidson, K. 2000, Geranmayeh, M., Rezaei Habibabadi, Z., Fallahkish, B., Farahani, M. A., Khakbazan, Z. and Mehran. 2012, Ommolbanin Zare1, Hajar Pasha, Mahbobeh Faramarzi 2014). It was concluded in the present research that perineal massage decreased tear formation ( $p = 0.00$ ) (Table 2).

In a study, Granmayh et al. observed that perineum massage with Vaseline in the second stage of labor had more intact perineum, less epi-siotomy as well as more 1st and 2nd grade tear in inter-vention group than control group (Geranmayeh, M., Rezaei Habibabadi, Z. , Fallahkish, B., Farahani, M.A., Khakbazan, Z. and Mehran. 2012, Ommolbanin Zare1, Hajar Pasha, Mahbobeh Faramarzi 2014).

Another factor that affects perineal trauma is whether labor duration is shorter or longer. It is said that the duration of the second stage of the labor on average is 1 or 2 hours in vaginal births among the primiparous women and 5 and 30 minutes for multiparous women (Zarea, AM., Pasha, H., Sadeghi, Nia., Kiapour, A. (2012). The most important stage of labor is the second stage in which mothers actively take part and affect birth process positively or negatively. Therefore, mothers should be made to experience a healthy and happy labor by being supported physically and psychologically during the second stage of labor.

It was found out in our research that mean second stage duration of the pregnant women was  $13.3 \pm 5.7$  minutes for massage group and  $13.9 \pm 6.4$  minutes for control group. Duration of the second stage of labor was similar to the literature and there was not a statistically significant difference between massage group and control group ( $p > 0.05$ ) (Table 2).

The study of Karaçam) investigated the correlation in the case group and control group in terms of perineal massage, oil massage and spontaneous pushing and reported that mean second stage duration in the case group was  $15.27 \pm 8.79$  minutes whereas it was  $13.29 \pm 9.23$  minutes in the control group. Yet, it was found out in the analysis made in terms of mothers' second stage

duration that the difference between the case group and control group was statistically not significant (Karaçam, Z., Eroğlu, K. 2003).

Meanwhile, midwives who assisted at childbirth were asked about their opinions about the massage and all of the midwives found the massage useful and said that they would continue the massage in the future (Table 4).

## CONCLUSION

Regarding the results of this study and those of other studies, perineal massage during the second stage of labor can reduce the need for episiotomy, and avoid perineal injuries.

### Trial registration:

The trial was registered at the NCT04157777

### Funding:

There is no financial support

### Conflict of Interest:

There is no conflict of interest to be declared.

### Authors' contributions:

All authors contributed to this project and article equally. All authors read and approved the final manuscript.

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