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Doğumun İkinci Evresinde Ertelenmiş Ikınmanın Postpartum Yorgunluk ve Doğum Sonuçlarına Etkisi

The Effects of Delayed Pushing During the Second Stage of Labor on Postpartum Fatigue and Labor Results

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ÖZ

Amaç: Araştırma, doğumun ikinci evresinde ertelenmiş ıkınmanın postpartum yorgunluk ve doğum sonuçlarına etkisini incelemek amacıyla yapılmıştır.
Yöntem: Randomize kontrollü deneysel olarak gerçekleştirilen araştırmanın örneklemini 48 primipar gebe (ertelenmiş ıkınma grubu n:23, kontrol grubu n:25) oluşturmuştur. Kontrol grubunda ıkınma, güçlü uterus kontraksiyonları oluştuğunda, fetal baş rotasyonunu tamamladığında başlamıştır. Ertelenmiş ıkınma grubunda kontrol grubundan farklı olarak, fetal baş pelvis içinde "+1" düzeyinde olduğunda ve kadında ıkınma isteğinin olması dikkate alınarak, güçlü ve istemsiz fiziksel itme refleksi hissedene kadar ıkınmanın ertelenmesi istenmiştir. Veri toplamada, "Gebe Tanılama Formu", "İzlem Formu", "Partograf" ve "Yorgunluk İçin Görsel Benzerlik Skalası" kullanılmıştır.
Bulgular: İkinci evrenin süre ortalaması ertelenmiş ıkınma grubunda 38.34±17.84 dk, kontrol grubunda 13.52±5.29 dakikadır. Ertelenmiş ıkınma ve kontrol grubu kadınların; doğumun ikinci evresinin süre ortalamaları, ıkınma süre ortalamaları, doğum sonrası ilk bir saatteki yorgunluk ve enerji puan ortalamaları arasında istatistiksel olarak anlamlı fark saptanmıştır ($p<0.05$).
Sonuç: Ertelenmiş ıkınmanın doğumun ikinci evresinin süresini uzattığı, ıkınma süresini azalttığı ve doğum sonrası ilk bir saatteki yorgunluğu anlamlı olarak azalttığı bulunmuştur.

Anahtar Kelimeler: Hemşirelik, Ebelik, Ertelenmiş ıkınma, Doğumun ikinci evresi, Postpartum yorgunluk.

ABSTRACT

Objective: The study was made to examine the effects of delayed pushing during the second stage of labor and pushing on postpartum fatigue and labor results.
Method: This is a randomized controlled experimental study. The sampling of the research is comprised of 48 primiparous women (23 in the delayed pushing group and 25 in the control group). The pushing of control group was initiated when strong uterine contraction appeared when the fetal head rotation was completed. Different from the control group, when the fetal head was "+1" inside the pelvis, considering the desire to push, pregnant were asked to delay the pushing until the feeling of powerful and involuntary pushing reflex in the delayed pushing group. As a data collection tool, "Pregnant Identification Form", "Follow-up Form", "Partograph" and, "Visual Analogue Scale for Fatigue" was used.
Results: The mean duration of the second stage of labor was 38.34 ± 17.84 minutes in the delayed pushing group and 13.52 ± 5.29 minutes in the control group. It was observed that a statistically significant difference was found between the delayed

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Yazar Katkıları: A) Fikir/Kavram, B) Tasarım, C) Veri Toplama ve/veya İşleme, D) Analiz ve/veya Yorum, E) Literatür Taraması, F) Makale Yazımı, G) Eleştirel İnceleme

pushing and control group women in terms of the mean duration of the second stage of labor, the mean pushing time, the average fatigue, and energy scores in the first hour after labor ($p < 0.05$).
Conclusion: It was found out that delayed pushing prolonged the time of the second stage of labor but reduced the pushing time and significantly affected the fatigue at the first one hour of postpartum.

Key words: Nursing, Midwifery, Delayed pushing, The second stage of labor, Postpartum fatigue.

1. INTRODUCTION

The second stage of labor is regarded as the peak of the birth by the delivering woman, and her partner (1). The valid and traditional definition of the second stage of labor begins with the full dilation of the cervix and ends with the birth of the baby. The spontaneous pushing reflex of the pregnant woman comes after the full dilation of the cervix (2-5). In literature, it is stated that starting to push before the urge to push and encouraging the woman to push can lead to constant exhausting pushings, which may result in maternal fatigue and exhaustion, and therefore the risk of cesarean delivery may increase (3,6). Cesarean delivery may decrease maternal and infant mortality, and complications such as obstetric fistula. However, cesarean deliveries without a medical need can cause both short and long-term health problems, by putting women at risk (7). Delayed pushing is recommended to reduce fatigue and prevent cesarean section and perineal lacerations (8).

The relationship between the duration of the second stage of labor, pushing time and the risk of neonatal result haven't been fully established (9). The golden standard of the pushing strategy in second stage of labor is still controversial. Two most common approaches are immediate pushing or delayed pushing (10,11). Despite their widespread use, none is considered as golden standard (10,12). World Health Organization (WHO) defined the duration of second stage as three hours for the first labors and two hours for the subsequent ones. It was emphasized that the duration longer than 2 to 3 hours increased the risk of fetal mortality and morbidity (4). In this context, this study was made to provide supporting evidence for the definition of the golden standard.

Purpose

The purpose of this study was to find out effects of delayed pushing during the second stage of labor and pushing on postpartum fatigue and labor results.

2. METHOD

Type of the Study

This experimental study was a randomized controlled study carried out between December 2010 and September 2011.

The Scope of the Study and Sampling

Research was carried out in the delivery room and postpartum service of a government hospital of the Ministry of Health in Izmir. The scope of the study included all primiparous women (N=628) having normal labor at the mentioned hospital between 15/12/2010 and 01/09/2011. The sampling of the research, on the other hand, was comprised of 48 primiparous women (23 in delayed pushing group and 25 in control group) with normal labor at the hospital, who met the inclusion criteria and who agreed to take part in study. Sample size was determined

by indipendent samples t-test power analysis according to fatigue and energy mean scores of mothers in the intervention group (n=23) and in the control group (n=25). The results were found reliable by 98% for fatigue and 96% for energy on μ=0.05 level.

Research Inclusion Criteria

In this study, inclusion criteria of primiparous pregnant was considered as follows; being ≥18 age with 38 to 42 fetal gestational weeks, having a healthy single fetus, vertex position and spontaneous vaginal delivery, having no pregnancy complication (placenta previa, preeclampsia, premature rupture of membrane, oligohydramnios and polyhydramnios, presentation disorder, intrauterine growth retardation, intrauterine mort fetus, macrosomic infants, fetal distress...etc.), systemic and neurologic disease, uterin dystocia (hypo / hypertonic contraction), servical dilatation (≥4 cm-active phase), and estimated fetal weight ranging from 2500 to 3999 gr.

Intervention and control group pregnant women were matched in terms of their mean age and body mass index (BMI) besides their averages of the first stage hemoglobin level induction application status. The groups were determined to be in a homogeneous distribution. Although induction application is a condition affecting the labor process, since most pregnant women in the hospital where the study was conducted had induction, these pregnant women were also included in the study group. In order to eliminate the difference caused by the person who delivered the birth, all midwives delivering the births were informed in small groups regarding the purpose of the research. Throughout the research, the same midwives were involved in delivery processes.

Randomisation Method

Data were collected from the groups by the first researcher only for two days a week when she was in the clinic during working hours. During the study, 91 pregnant women were assigned, however, 20 of them were excluded because they were not meeting the inclusion criteria, declined to participate and other reasons. On the other hand, in the study, 71 pregnant women were randomized, but 43 of them were excluded from the study and 48 (67.6%) women completed the trial (Figure 1).

Data Collection Tools

Pregnant identification form, follow-up form, Partograph, and Visual Analogue Scale for Fatigue were used as the parts of survey application.

Personal Information Form

The personal information form consists of two sections including socio-demographic and obstetrics information. It involves 15 questions related to topics such as age, BMI and range, educational status, employment status, smoking status, first stage hemoglobin, pre-pregnancy weight and total weight gained during pregnancy, number of prenatal follow up, and participation in the birth preparation class.

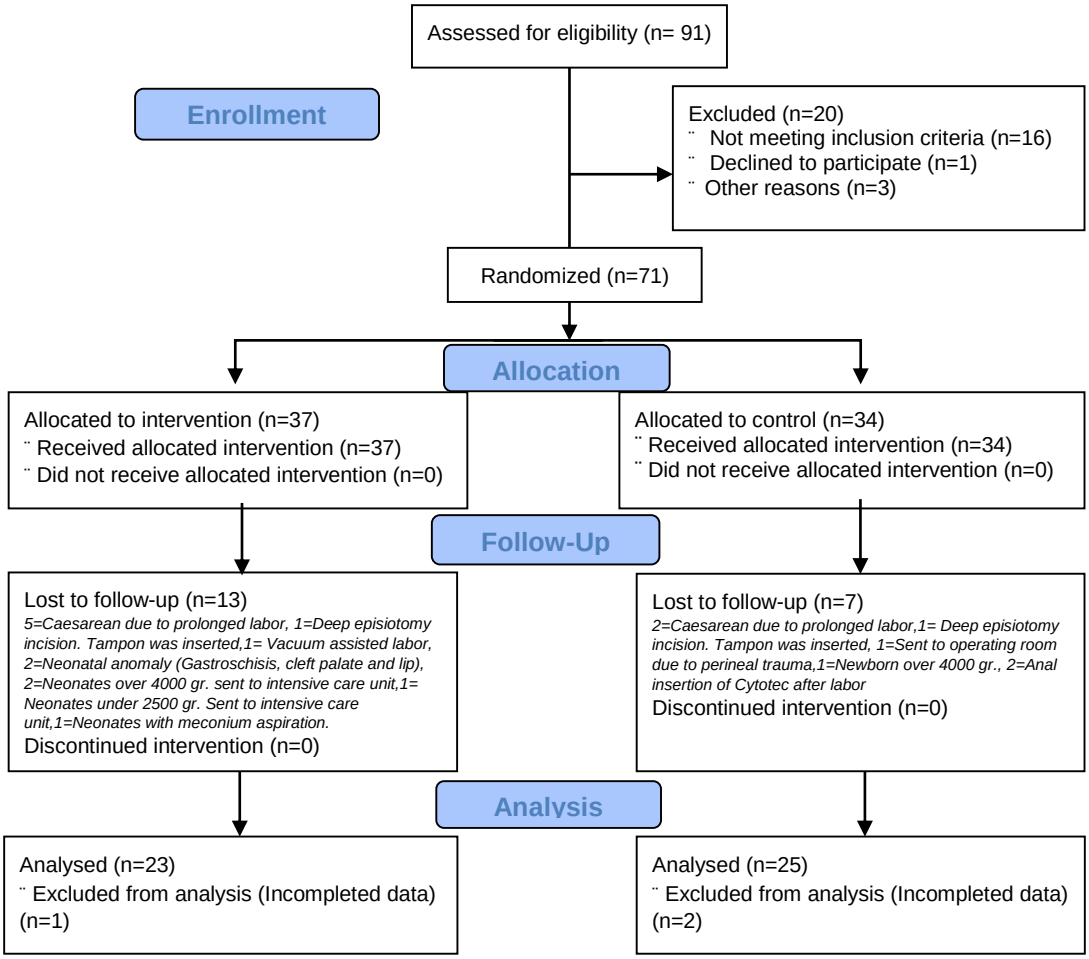

Figure 1. Flow diagram of randomization (13).

Follow-up Form

The form is made up of 8 questions including the reason for applying to the delivery room, hemoglobin level of the pregnant in the first phase of labor, attempting to initiate or accelerate labor, episiotomy incision, perineal laceration formation, cervical laceration formation, pushing duration, delaying pushing in the active phase, duration of delay for pushing in the second phase of labor.

Partograph

Partograph is a means used to evaluate and interpret the progress of the activity. There are warning and intervention lines on it (14). In the study, pregnant women were followed up with a partograph beginning from the active phase of labor.

Visual Analogue Scale for Fatigue (VAS-F)

VAS was developed by Lee and Zaffke in 1999 and the validity and reliability were made by Yurtsever in Turkey in 2000. Cronbach's alpha value of the scale was 0.96 for fatigue and 0.90 for energy. The scale has 18 items and two sub-dimentions. Accordingly, 13 items of VAS-F constitute the fatigue sub-scale and five items constitute the energy sub-scale (15,16). The high score of the fatigue subscale and low score of the energy subscale indicate that severity of fatigue is high (16). The lowest score for the fatigue subscale is 0, and the highest score is

130. While the lowest score for the energy subscale is 0, the highest score is 50 (15,16). In our study, Cronbach's alpha value was found to be 0.89-0.93 for fatigue and 0.77 for energy.

Data Collection Methods

The data of research were collected by using face to face interview and follow-up forms by the first researcher. The application flow chart of the research was given in Figure 2. Delivery outcomes were evaluated depending on the factors including fatigue and energy score averages, perineal trauma, and Apgar scores in the 1st and 5th minute.

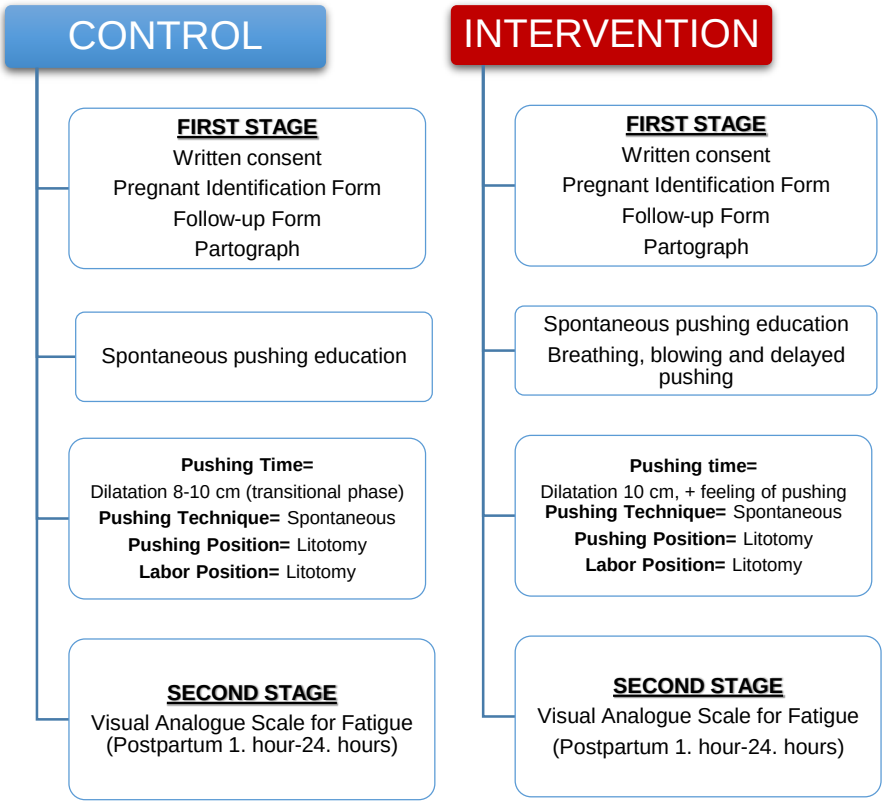

Figure 2. Data collection methods

All the groups were given (n=48) the spontaneous pushing technique training (open glottis), and the pregnants in the intervention group (n=23) were given breathing and blowing technique for the delay of pushing. Labors of the two groups were followed by partograph.

Pushing Time for Control Group

Due to the routine application of the hospital, pushing was initiated when cervical dilatation was 8-10 cm (during the transitional phase), and when strong uterine contraction appeared (at least three contractions within 10 minutes lasting 40-60 seconds) and fetal head rotation was completed (during occiput anterior position).

Pushing Time for Intervention Group

Training of breathing/blowing technique was carried out in the study group, different from the control group, to delay the pushing. The pushing was initiated when cervical dilatation was 10 cm (during the transitional phase) when strong uterine contraction appeared (at least

three contractions within 10 minutes lasting 40-60 seconds) when fetal head rotation was completed (during occiput anterior position). Different from the control group, when the fetal head was "+1" inside the pelvis, considering the desire to push, the pregnant were asked to delay the pushing until feeling of powerful and involuntary pushing reflex in the delayed pushing group. All the labors were performed on the obstetrical table in lithotomy position. According to the time of the labor, all the pregnant women were applied VAS-F two times by observing them in the 1st and 24th hour after labor.

Data Analysis

The analysis of the data was made statistically by using SPSS (license number: 10241440) 16.0 Windows package program. Shapiro-Wilk normality analysis was used to find out whether the data were normally distributed or not. Since research did not show a normal distribution, it was evaluated as nonparametric tests. In the assessment of the collected data, measurement of percentage and number, Chi-Square Test, The Mann Whitney-U Test, The Spearman Rank-Order Correlation Coefficient and The Wilcoxon Signed-Rank Test were used. The results were assessed on 95% confidence interval and a p-value $p<0.05$ indicated statistical significance. Statistical analysis was performed by Biostatistics and Medical Information Department at Ege University.

The Ethics

To fulfill the study, all the written permissions were taken from the Ege University Scientific Ethics Committee, all pregnant women, and the hospital that the intervention was conducted, and the permission of using the scale was received. Ethics Committee approval was also received (Number: 2010-86 - Date of Documents: 09.03.2010). This study was supported by Ege University Scientific Research Projects Coordination Unit (Project Number: 11/ASYO/007). Informed Patient Consent Form was read and signed by all pregnant women. This study was carried out based on the principles of Helsinki Declaration of Human Rights and the guidelines of Good Clinical Practices.

2. RESULTS

Table 1 shows the distribution of the intervention and control group mothers participating in the study by descriptive characteristics. The mean age of the pregnant women was 21.91 ± 4.32 in the intervention group and 23.60 ± 4.29 in the control group. It was seen that the intervention group was concentrated on the 18-23 age group with a rate of 74.0% and the control group with a rate of 56.0%. BMI was normal weight with 73.9% of the intervention group and 68.0% of the control group. When the graduation status was examined, it was determined that 56.5% of the intervention group and 68.0% of the control group were middle school and below graduates. It was also found out that 91.3% of the intervention group and 84.0% of the control group did not work and were housewives. It was determined that they did not smoke on a large scale, which was 87.0% in the intervention group and 84.0% in the control group. On the other hand, the rate of those who were followed up for four or more times during pregnancy was 91.3% in the intervention group and 100.0% in the control group. No statistically significant difference was found in the Chi-square analyzes performed for the comparison of the intervention and control group ($p>0.05$). It was shown that BMI, first stage

hemoglobin, pre-pregnancy weight, and weight gain during pregnancy' means in Table 1. No statistically significant difference was found in the Mann-Whitney U analyzes performed for the comparison of the intervention and control group ($p>0.05$) (Table 1). In addition, none of the pregnant women in both groups attended the birth preparation class before.

Table 1. Distribution of Intervention and Control Group Mothers by Descriptive Characteristics

Variables	Intervention Group (n=23)		Control Group (n=25)		Total	
	n	%	n	%	n	%
Age group						
18-23	17	74.0	14	56.0	31	64.6
24-29	5	21.7	9	36.0	14	29.2
30-35	1	4.3	2	8.0	3	6.2
$\chi 2_{\text{trend}}$ =1.482, SD=1, p=0.223						
BMI and range (kg/m^2)						
Slim (18.49 and less)	1	4.4	3	12.0	4	8.4
Normal weight (18.5-24.99)	17	73.9	17	68.0	34	70.8
Overweight (25.0- 29.99)	5	21.7	5	20.0	10	20.8
$\chi 2_{\text{trend}}$ =0.375, SD=1, p=0.540						
Level of Education						
Middle school and below	13	56.5	17	68.0	30	62.5
High school and above	10	43.5	8	32.0	18	37.5
$\chi 2$ =0.67, SD=1, p=0.411						
Employment Status						
Yes	2	8.7	4	16.0	6	12.5
No	21	91.3	21	84.0	42	87.5
Fisher's Exact Test p=0.668						
Smoking Status						
Yes	3	13.0	4	16.0	7	14.6
No	20	87.0	21	84.0	41	85.4
Fisher's Exact Test p=1.000						
Follow-up in Pregnancy						
3	2	8.7	-	-	2	4.2
4 +	21	91.3	25	100.0	46	95.8
Fisher's Exact Test p=0.224						
Variables	**Mean**	**Min-Max**	**Mean**	**Min-Max**	**U**	**p**
Age	21.91 ± 4.32	18-35	23.60 ± 4.29	18-35	204.50	0.085
BMI	22.27 ± 3.11	15.23-28.12	22.05 ± 2.75	17.75-22.29	286.00	0.975
First Stage Hemoglobin (g/dl)	12.28±1.08	10.60-14.20	12.43±1.16	9.40-14.40	263.00	0.613
Pre-Pregnancy Weight Average (kg)	58.69 ± 9.05	39-77	55.80 ± 8.20	41-75	234.00	0.269
Average Weight Gain During Pregnancy (kg)	12.82±4.09	3-24	14.68±5.43	4-24	232.00	0.250

In Table 2, it is seen that the second phase of women in the intervention group was significantly longer and the pushing time was shorter ($p <0.05$). The duration of second stage of labor was significantly longer and pushing time during second stage of labor was significantly shorter than the control group ($p<0.05$). Additionally, the delay duration of pushing in the active phase of the intervention group pregnant women was 69.56±39.33 min (min: 20-max: 160) and

in the second stage of delivery, the duration of delay in pushing was 28.82±18.44 min (min: 5-max: 100) (Table 2).

Table 2. Comparison of Mothers for their Labor Follow-up Features.

Labor Follow-up	**Control Group (n=25)**		**Intervention Group (n=23)**			
	Mean	**Min-Max**	**Mean**	**Min-Max**	**U**	**p**
Duration of the first stage (min.)	925±591.36	180-2960	1039.34±572.85	90-2440	252.00	0.464
Duration of the second stage (min.)	13.52±5.29	5-25	38.34±17.84	10-105	21.50	**0.000**
Duration of the third stage (min.)	13.60±2.29	10-15	13.30±2.30	10-15	262.50	0.531
Duration of the pushing (min.)	13.52±5.29	5-25	9.52 ± 3.46	5-15	164.00	**0.008**

It was concluded that the delay of pushing during the second stage of labor significantly affected the postpartum fatigue and energy mean scores in the first hour ($p<0.05$) (Table 3).

Table 3. Comparison of Pospartum Fatigue and Energy Mean Scores of Intervention and Control Group

VAS-F	**Control Group (n=25)**		**Intervention Group (n=23)**			
Fatigue	**Mean**	**Min-Max**	**Mean**	**Min-Max**	**U**	**p**
1 hour	88.75±27.39	20.70-125.30	47.12±30.00	10.20-120.30	89.00	**0.000**
24 hours	51.11±31.97	4.50-113.80	40.90±21.11	12.30-86.80	244.50	0.375
Energy						
1 hour	19.15±8.74	5.80-35.60	31.86±11.11	10.00-50.00	111.00	**0.000**
24 hours	25.83±11.21	5.80-46.60	32.64±10.97	13.70-50.00	196.00	0.059

Both groups were applied routine episiotomies at this hospital. In the control group, more lacerations were observed than in the intervention group. However there was no significant difference statistically between the perineal trauma status of mothers in both groups ($p>0.05$). In the newborns of the mothers in both groups, no significant difference was observed statistically in their Apgar mean scores in the 1st and 5th min ($p>0.05$) (Table 4).

Table 4. Comparison of Mothers for Perineal Trauma Status and Apgar Mean Scores of the Newborns

Perineal Trauma Status	**Intervention Group (n=23)**		**Control Group (n=25)**			
	n	**%**	**n**	**%**	**χ^2**	**p**
Episiotomy	16	69.6	12	48.0	2.29	0.130
Episiotomy+Laceration	7	30.4	13	52.0		
APGAR	**Median**	**Min-Max**	**Median**	**Min-Max**	**U**	**p**
1. min.	7	5- 8	7	5-7	262.50	0.507
5. min.	9	8-9	9	8-9	277.00	0.605

4. DISCUSSION

Within the scope of the study, there were totally 48 primiparous pregnant women, and 48.0% of them were included in the intervention group and 52.0% were in the control group. In the literature, it is stated that the BMI values, height, and weight of pregnant women can affect the duration of the second phase of labor, effective pushing, and neonatal outcomes (9,17). In terms of the distribution of variables related to age, BMI, mean hemoglobin level, and the induction state of the intervention and control groups, there was a similarity between the intervention and control groups, and the difference between the two groups was not found statistically significant. This result shows that both groups are in a homogeneous distribution.

The mean duration of the first stage during labor was found as 1.039.34 ± 572.85 minutes in the intervention group, 925 ± 591.36 minutes in the control group, also mean duration of the third stage during labor was found as 13.30 ± 2.30 minutes in the intervention group, and 13.60 ± 2.29 minutes in the control group and no statistically significant difference was found. It is thought that similarity of mean durations of first and third stages, which may affect postpartum fatigue, is important for a more reliable and valid assessment of results.

The mean duration of the second stage during labor was found as 38.34 ± 17.84 minutes in the intervention group and 13.52 ± 5.29 minutes in the control group. The second phase of labor in mothers in the intervention group proceeded longer than the mothers in the control group, and this difference between the two groups was found to be statistically significant. In the study, all pregnant women used both open and closed glottis methods. That the mean duration of the second stage is longer in the intervention group is caused by the intervention to delay pushing, and it is an expected result. Additionally, in this study, the mean duration of second phase in both groups lasted less than one hour. The second phase was shorter since the control group was directed to pushing after eight centimeters of dilatation in the transition phase. WHO (4) emphasized that the duration of the second phase of labor may differ in each woman. Although the duration of the second stage was reported as 25-75 minutes in the first pregnancy and 13-17 minutes in multiparous patients (18), it is stated that the normal limit value of the second stage should not be longer than two or three hours, and the risk of fetal mortality and morbidity increases when the period is prolonged (19). There is no consensus on the duration of the second phase of labor (2). While some sources have reported it as two hours in nulliparous women and one hour in multiparous women, it is approved to add one more hour to each of these periods for the cases where epidural is applied (3,19,20).

The meta-analysis study by Di Mascio et al. (11) showed that in singleton pregnancies and women with neuraxial analgesia, second stage delayed pushing did not affect the mode of delivery but reduced active pushing time while providing a longer second-stage duration. They stated that pushing delayed for more than two hours for the management of the second stage of labor could be supported routinely. The duration of the second stage of primiparous mothers in the study was less than one hour, which is similar to that of literature. Lai et al. (3) stated that the mean duration of the second stage was 70.31 ± 37.17 minutes in the delayed pushing group and 129.06 ± 75.69 minutes in the control group, and the difference between duration averages of second stage was significant. Also, in the study of Li et al. (21), mean duration of the second phase of labor was found to be 44.13 ± 26.43 minutes in the group delayed for less than two hours and 187.86 ± 34.04 minutes in the group delayed for more than two hours, and the difference between the groups was found to be significant. In these studies, after the dilatation reached at 10 cm, pushing began with full opening. The duration of the second phase was found to be longer, as compared to our study. This difference is thought to appear from cultural practices. In a randomized controlled study by Cahill et al. (10) conducted with women receiving neuraxial anesthesia, the delayed pushing group was asked to wait 60 minutes. Women, who delayed pushing, had a longer second stage of labor by more than 30 minutes compared with those who pushed immediately. Therefore, the immediate group had a significantly shorter mean duration of the second stage compared with the delayed group, despite a significantly longer mean duration of active pushing.

The mean pushing time of the mothers in the intervention and control groups was found as 9.52 ± 3.46 minutes in the intervention group and 13.52 ± 5.29 minutes in the control group. It was also found out that there was a statistically significant difference between the mean pushing duration in labor in the mothers of the intervention and control groups. Similarly, in the studies of Lai et al. (3), Simpson et al. (22), and Gillesby et al. (23), it was reported that pushing duration of the intervention group was less as compared to the control group. It may be because the mothers in the delayed pushing group had rested better before they started pushing and were more successful in pushing.

The duration of delay in pushing for the mothers in the intervention group of the study was found to be averagely 69.56 ± 39.33 minutes in the active phase of labor (dilatation 4 cm and above), and averagely 28.82 ± 18.44 minutes in the second phase of labor. The duration of second phase was extended by delaying the pushing. Kelly et al. (24) determined a 90-minute duration of delay for delayed pushing group. They stated that it was difficult for healthcare providers and patients to support a period longer than 90 minutes. On the other hand, Sandström et al. (9) reported in their study that when pushing time was over 45 minutes, the rate of admission to neonatal intensive care unit increased as well. In our study, birth results were evaluated by delaying less than one hour in the study group.

Mothers who do not manage labor well spend a lot of energy for breathing and pushing, which causes mothers to experience fatigue. Having a prolonged labor and first delivery, the fatigue experienced by the mother increased (25). The average fatigue score in the first hour after birth was found 47.12 ± 30.00 in the study group and 88.75 ± 27.39 in the control group. The average fatigue score in the first 24 hours after birth was found to be 40.90 ± 21.11 in the study group and 51.11 ± 31.97 in the control group. While a significant difference was obtained in the average fatigue scores of the mothers in the study group, no significance difference was

determined in the average fatigue scores at the 24th hour. Delayed pushing could decrease the total pushing time and decrease the fatigue score after labor without significant adverse events compared to the early pushing group (12).

There is a limited number of studies evaluating postpartum fatigue (26). In our country, no study has been found showing the relationship between fatigue in the first postpartum hour and fatigue at the 24th hour. In study of Alp and Mete (25) aiming at examining the fatigue levels in the first 24 hours and in the second and fourth weeks as well as examining the effects of sleep and nutrition on fatigue, it was reported that the mean fatigue score in the first 24 hours postpartum was defined as 5.09 ± 2.0 and the mean energy score was 2.50 ± 0.73. In a study conducted in Taiwan, it was determined that delaying the pushing reduced the time spent by women in the second stage of labor, the need for intervention births, and postpartum fatigue (3) while a study conducted in the UK showed that there was no clinically significant difference between the delayed pushing and immediate pushing groups. It was also found that fatigue, perineal trauma, and Apgar scores did not change (24). In another research, Hsieh et al. found that postpartum perineal pain and the duration of second stage of labor directly affected postpartum fatigue, and primiparous women experienced more severe perineal trauma than multiparous women. It was also stated that reducing perineal trauma together with perineal pain and not prolonging the second stage of labor reduced the risk of postpartum fatigue (27). In our study, it was observed that delaying pushing made the fatigue in the first hour to be felt less. Depending on their experiences, nurses / midwives stated that mothers left the delivery room less tired and more satisfied after labor when the time they spent for pushing decreased (23).

The mean energy score for the first hour was 31.86 ± 11.11 in the study group and 19.15 ± 8.74 in the control group. The mean energy score for the first 24 hours was determined as 32.64 ± 10.97 in the study group and 25.83 ± 11.21 in the control group. In the analysis made between the two groups, it was observed that there was a significant difference between the mean energy scores in the first hour, whereas there was no significant difference between the mean energy scores in the first 24 hours. It was also clear that delaying the pushing made the mothers feel more energetic in the first hour after labor. In literature, it is stated that starting to push before the urge to push and encouraging the woman to push can lead to constant exhausting pushing, which may, therefore, result in maternal fatigue and exhaustion (17). Considering the findings of this study, it can be said that in the delayed pushing group, the mother's use of active phase breathing and blowing technique reduced the fatigue experienced during prenatal labor and made the mother feel less fatigue during first hour after labor. That the energy score at the 24th hour after labor was similar between both groups because of same responsibility (baby care and breastfeeding). Szu et al. (12) stated that delayed pushing could decrease the total pushing time as well as the fatigue score after labor without significant adverse events compared to the early pushing group. Therefore, it is recommended that caregivers inform about the pushing time at optimal moment, which allows women to have more resting time and save energy during labor.

In the study, it was observed that episiotomy was performed on all pregnant women, and episiotomy along with laceration occurred with a rate of 30.4% in the study group and 52.0% in the control group. It was determined that there was not any statistically significant difference between the perineal trauma status of the mothers in both study and control group. Although the episiotomy procedure is not recommended as a routine intervention by WHO and

ACOG today (4,28), it was routinely used in primiparous pregnant women at the time of the study. A research conducted in our country, it was stated that interventions in first stage of labor (such as episiotomy) negatively affected the birth process and newborn health and prolonged the duration of the second stage while the increasing the need for intervention (29). No cervical laceration was observed in any of the mothers participating in the study, and no intervention was needed to prevent postpartum bleeding. In literature, it was reported that episiotomy and second- or third-degree perineal lacerations were less common in women with spontaneous pushing. It was also stated that the 'blowing technique' could be a good alternative to the 'Valsalva maneuver' to reduce perineal damage in women who give birth (3,17,27,30,31). Hassan et al. suggested that spontaneous pushing during the second stage of labor should be involved in the procedure for maternal hospitals (32).

When the 5th minute mean Apgar score of the babies was examined, it was found to be 8.95 ± 0.20 in the intervention group and 8.92 ± 0.27 in the control group. No significant difference between groups was found statistically. Similarly, there was not any significant difference in terms of Apgar score in the studies (3,17,23,33-35). Yee et al. compared two groups who delayed pushing ≥ 60 minutes and 30 minutes in their cohort study. In the group that delayed pushing ≥60 minutes, it was stated that duration of the second phase was longer, which was associated with the increased cesarean delivery probability and postpartum bleeding, but not related to neonatal morbidity (8). The studies and our findings showed that there was no significant relationship between the prolongation of the duration of the second phase less than an hour and the well-being of the fetus. The awareness of midwives and nurses should be expanded in terms of the fact that pushing can be delayed for up to one hour in second stage of labor because the Apgar score of the newborn is not affected negatively.

5. CONCLUSION

According to the results of the research, it was found out that delayed pushing prolonged the time of the second stage of labor, while it reduced the pushing time. Also, it was decreased the fatigue in the first one hour of postpartum and increased the level of energy. It was determined that delayed pushing did not affect perineal trauma and Apgar scores of the newborns negatively.

In view of these findings, it can be recommended that the comparison of the efficiency of the research should be made by measuring postpartum fatigue in different intervals, and the efficiency of delayed pushing in mothers with multipara labor should also be studied. In addition, in-service training should be provided for nurses and midwives related to the breathing and blowing techniques and to the benefits of delayed pushing.

Limitations

The research is conducted at only one center and with primiparous women.

Ethical Consideration of the Study

This study was carried out based on the principles of Helsinki Declaration of Human Rights and the guidelines of Good Clinical Practices. Written permission was taken from the institutions where research data were collected by applying an information form containing the

purpose and scope of the study. Ethics Committee approval was received (Date and Number of Documents: 09.03.2010/ 2010-86).

Conflict of interest statement

The authors do not have any interest-based relationships.

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