



## The Effect of Pregnant Education Classes on the Birth Process of Nulliparous Pregnants

Emre Destegül<sup>1a\*</sup>, Cevdet Adıgüzel<sup>1b</sup>

<sup>1</sup>Department of Obstetrics and Gynecology, University of Health Sciences, Adana City Training and Research Hospital, Adana, Turkey.

\*Corresponding author

### Research Article

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### ABSTRACT

**Objective:** This study aimed to investigate the effects of antenatal education classes on the type of delivery, duration of labor in vaginal delivery, and birth rates with episiotomy.

**Material Method:** This retrospective study included 200 nulliparous pregnant women who were admitted to Adana City Hospital Obstetric and Gynecology Outpatients clinic between 2017-2021. Of these, 99 attended antenatal education classes, which the Turkish Ministry Of Health designed, and 101 did not participate in antenatal educational courses. In the retrospective analysis of the cases, cesarean section rates, indications for cesarean section, duration of labor, episiotomy rates, and APGAR scores were compared.

**Results:** No significant difference was found between the mode of delivery between the pregnant women who attended and did not attend antenatal education classes ( $p=0.463$ ). A significant difference was determined between the groups regarding cesarean section indications and duration of labor ( $p=0.007$  and  $p<0.001$ , respectively). Regarding cesarean indications, the cesarean section rate was higher in the group that did not participate in the antenatal classes (27.7% vs. 10.1%), especially due to non-progressive labor. There was no significant difference between the groups in terms of birth rates with episiotomy ( $p=0.088$ ).

**Conclusion:** The study results demonstrated that the pregnant women who participated in the antenatal education classes had shorter labor and a lesser need for cesarean section, indicating non-progressive labor. Although there was no significant difference between the cesarean section rates between the groups, it can be considered important to expand the scope of these antenatal classes and provide the appropriate social and legal groundwork to achieve this goal.

**Keywords:** Pregnant Class, Pregnant education program, Birth, Cesarean delivery, Vaginal delivery

## Gebe Eğitim Sınıflarının Nullipar Gebelerin Doğum Sürecine Etkisi

#### Süreç

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### ÖZET

**Amaç:** Bu çalışmamızda gebe eğitim sınıfında alınan eğitimin, doğum şekli, vajinal doğumda travay süreleri ve epizyotomili doğum oranlarına etkisini araştırmayı amaçladık.

**Yöntem:** Retrospektif olan bu çalışmamıza 2017-2021 yılları arasında Adana Şehir Hastanesi Kadın hastalıkları ve doğum kliniğine rutin kontrol için başvuran ve hastane bünyesindeki gebe okulu eğitimlerinin tamamına katılan 99 ve hiç eğitim almayan 101 nullipar gebe olmak üzere 200 gebe alınmıştır. Olguların retrospektif incelemesinde gruplar arası sezaryen oranları, sezaryen endikasyonları, travay süreleri, epizyotomi oranları ve APGAR skorları karşılaştırıldı.

**Bulgular:** Çalışmamızda antenatal gebe eğitim sınıflarına katılan ve katılmayan gebeler arasında doğum şekli arasında anlamlı fark bulunmadı ( $p=0.463$ ). Fakat sezaryen endikasyonları ve travay süreleri arasında gruplar arasında anlamlı fark saptanmıştır (Sırası ile  $p=0.007$  ve  $p<0.001$ ). Sezaryen endikasyonları açısından da özellikle ilerlemeyen travay nedeni ile sezaryene alınma oranları antenatal gebe sınıfına katılmayan grupta daha yüksek saptanmıştır (%27.7 vs %10.1). Gruplar arasında epizyotomili doğum oranları açısından da anlamlı fark saptanmadı ( $p=0.088$ ).

**Sonuç:** Çalışmamızda özellikle gebe eğitim sınıfına katılan gebelerde kısa travay süreleri ve ilerlemeyen travay endikasyonu ile daha az sezaryen sayıları dikkat çekmektedir. Gruplar arasında sezaryen oranları arasında anlamlı bir fark olmamakla beraber bu hedefe ulaşmak için bu eğitimlerin kapsamının genişletilmesi beraberinde de uygun sosyal ve hukuki zeminin de sağlanmasının önemli olduğunu düşünmekteyiz.

**Anahtar sözcükler:** Gebe Sınıfı, Gebe eğitim programı, Doğum, Sezaryen Doğum, Vajinal Doğum

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[destegulemre@hotmail.com](mailto:destegulemre@hotmail.com)

<https://orcid.org/0000-0001-5726-0223>

[cevdetadiguzel@yahoo.com](mailto:cevdetadiguzel@yahoo.com)

<https://orcid.org/0000-0002-3003-4573>

## Introduction

Pregnancy, including the birth and postpartum periods, is a time in a woman's life when very important physical and psychological changes occur, and these experiences will never be forgotten. While the majority of these experiences and memories are positive, there can be negative experiences associated with various factors in some pregnancies. In a study conducted in Holland in 2008, when women were asked what they remembered about the birth at three years postpartum, more than 16% negatively remembered the birth process. Most of the patients in that study comprised primiparity or women who had undergone an operative birth<sup>1</sup>. Previous negative experiences of pregnancy, lack of information and support for the pregnancy and birth, and various environmental factors are sources of stress and fear for mothers-to-be<sup>2-4</sup>. The first advocate for antenatal education was the English doctor Dick-Read, who stated that the fear and stress experienced by women could increase their perception of pain, which could affect the normal progression of labor. Therefore, antenatal education is of great importance. The rate of cesarean section (CS) deliveries in 2017 was reported to be 27.9% in OECD countries<sup>5</sup> and 53% in Turkey<sup>6</sup>. Although there are other components in the increase in CS rates, such as medicolegal stress, hospital conditions, and physician-related factors, informing and supporting pregnant women to eliminate the fear of birth is crucial for healthy labor. There is an increasing demand for antenatal classes, which started at the beginning of the 20th century and has continued in various forms, such as the Dick-Read, Bradley, Leboyer, Mongan, Pam England, Gaskin, Odent, and Lamaze methods. To reduce the increasing CS rates and achieve active participation of the mother in the birth by providing the necessary information and support and to be able to reduce complications that can develop during the delivery and in the early postpartum period, the Public Health Institute of Turkey published a circular in 2014. This circular aimed for public hospitals to open antenatal classes, and education in these classes is still ongoing today. In these antenatal classes, education is given on many subjects, such as the anatomy of the female urogenital system, the pregnancy-related physiological changes that occur, nutrition during pregnancy and postpartum, signs of the onset of labor, straining and breathing exercises,

elements that can be teratogenous for the fetus and family planning<sup>7</sup>.

In the literature related to antenatal classes, it has been determined that pregnant women who receive this education have lower rates of CS, participate more actively in the birth, have a lower incidence of postpartum depression, bond with the infant more rapidly, and higher rates of feeding with breast milk only in the first six months<sup>8,9</sup>.

This study aimed to examine antenatal classes' effect on cesarean section delivery rates, the duration of labor, and rates of births with intervention.

## Material and Method

This retrospective study included 200 nulliparity pregnant women who presented at the Obstetrics and Gynaecology Clinic of Adana City Hospital for routine check-ups from 2017-2021. The study participants included those who fully participated in the antenatal classes run by the hospital and those who received no education about pregnancy. Approval for the study was granted by the Ethics Committee of Adana City Hospital (decision no: 2020/935).

The pregnant women included were nulliparity, literate, gave birth to a single live, full-term infant, and did not require CS for any maternal or fetal reason.

The duration of labor was recorded as the time from the onset of active labor (4-6cm cervical dilatation as recommended by the American College of Obstetricians and Gynecologists -ACOG) until the infant's birth. The sociodemographic and pregnancy-related data were collected and recorded on a data collection form created by the researchers.

## Statistical Analysis

Data obtained in the study were analyzed statistically using IBM SPSS vn—23 software. The conformity of the data to normal distribution was examined with the Kolmogorov-Smirnov test. Data not showing normal distribution according to education status were compared using the Mann-Whitney U-test. The Chi-square test was applied in the comparisons of categorical data. In the comparisons of APGAR scores that did not show normal distribution according to paired times, the Wilcoxon test was used. Continuous data were stated as mean  $\pm$  standard deviation (SD) and median (minimum-maximum) values, and categorical data as number (n) and percentage (%). A value of  $p < 0.05$  was accepted as statistically significant.

## Results

The evaluation was made of 200 nulliparity pregnant women, 99 attending antenatal education classes designed by the Turkish Ministry of Health, and 101 not participating in antenatal educational courses. No significant difference was determined between the groups regarding the type of birth or the rates of need for intervention in the birth (Table 1). A statistically significant difference was determined between the groups who attended or did not attend antenatal classes regarding indications for CS ( $p=0.007$ ). This difference

originated from the differences between the groups in respect of macrosomia and non-progression of labor. Macrosomia was determined in 1% of those who had not attended antenatal classes and 8.1% of those who had participated in antenatal classes. Non-progression of labor was determined in 27.7% of those who had not attended antenatal classes and 10% of those who had participated in antenatal classes. No statistically significant difference was determined between the groups in respect of the other variables ( $p>0.050$ ) (Table 1).

**Table 1.** Comparisons of the groups according to antenatal education

	No antenatal classes (n=101)	Antenatal classes (n=99)	Total (n=200)	Test statistic	<i>p</i>
Type of birth					
Vaginal	55 (54.5)	59 (59.6)	114 (57)	$\chi^2=0.539$	0.463
Cesarean	46 (45.5)	40 (40.4)	86 (43)		
Episiotomy					
Yes	57 (57)	68 (68.7)	125 (62.8)	$\chi^2=2.909$	0.088
No	43 (43)	31 (31.3)	74 (37.2)		
Cesarean indication					
Non-	55 (54.5)	59 (59.6)	114 (57)	$\chi^2=17.694$	0.007
Progression of labor	28 (27.7) <sup>a</sup>	10 (10.1) <sup>b</sup>	38 (19)		
CPD	5 (5)	3 (3)	8 (4)		
AFD	13 (12.9)	16 (16.2)	29 (14.5)		
Severe pre-eclampsia	4 (4)	1 (1)	5 (2.5)		
Macrosomia	1 (1) <sup>a</sup>	8 (8.1) <sup>b</sup>	9 (4.5)		
Presentation anomaly	2 (2)	2 (2)	4 (2)		

$\chi^2$ : Chi-square test statistic. <sup>a-b</sup>: No difference between groups with the same letter

The median TFA value was 3380 in the antenatal classes group, statistically significantly higher than the 3200 in the group that did not attend antenatal classes ( $p=0.005$ ).

The age of the mothers was statistically significantly different according to the antenatal classes groups ( $p<0.001$ ). The median age was 23 years in the group that received no education and 25 years in the group that attended antenatal classes. No statistically significant difference was

determined between the groups regarding the other parameters ( $p>0.050$ ). The groups were evaluated in relation to the 1 and 5-min APGAR scores according to whether or not they had attended antenatal classes ( $p=0.588$ ,  $p=0.347$ , respectively) (Table 3). The duration of labor was statistically significantly shorter in the group that attended antenatal classes than in the group that did not ( $p<0.001$ ).

**Table 2.** Comparisons of the groups according to antenatal education

	No antenatal classes (n=101)	Antenatal classes (n=99)	p
	median(min-max)	median(min-max)	
AFI	81 (50 - 190)	86 (50 - 190)	0.551
First dilatation finding (cm)	2 (0 - 10)	2 (0 - 10)	0.161
Duration of labor (mins)	810 (80 - 1520)	310 (10 - 970)	<0.001
Weight on ultrasound (gr)	3250 (2500 - 4300)	3335 (2550 - 4350)	0.189
EFW	3200 (2500 - 4600)	3380 (2500 - 41000)	0.005
Maternal age (years)	23 (18 - 41)	25 (18 - 42)	<0.001
Gestational age (weeks)	39 (37 - 41)	39 (37 - 41)	0.853
BMI	28 (21.3 - 43.6)	28.4 (20.9 - 38.5)	0.264

Mann Whitney U test statistic

**Table 3.** Comparisons of the groups according to antenatal education

		No antenatal classes (n=99)		Antenatal classes (n=101)		Total (n=200)		Test statistic	p
		mean ±Sd	median(min- max)	mean ±Sd	median(min- max)	mean ±Sd	median(min- max)		
1-min	APGAR	8.4 ± 0.7	8 (7 - 9)	8.4 ± 0.8	9 (6 - 9)	8.4 ± 0.7	9 (6 - 9)	U=5199.5	0.58
score									
5-min	APGAR	9.4 ± 1.1	10 (0 - 10)	9.5 ± 0.6	10 (8 - 10)	9.5 ± 0.9	10 (0 - 10)	U=5337	0.34
score									

Mann Whitney U test statistic

## Discussion

There is currently an increasing trend for cesarean section (CS) births worldwide<sup>10</sup>. Similarly, in Turkey, the CS rate in 2013 was 50.4%, which was the highest rate among OECD countries<sup>11</sup>. The birth statistics in the Obstetrics and Gynaecology Clinic of Adana City Hospital for 2021 showed 39.5% vaginal birth rates and 60.5% CS birth. The reasons for this increase in Turkey are thought to be due to physicians and midwives being exposed to high rates of court cases, problems in the healthcare system such as low wages for long working hours, and insufficient information given to pregnant women about active participation in the birth and postpartum, thereby creating a fear of giving birth.

Therefore, in this context, the pregnancies and births followed up in this study included women who attended the antenatal classes program, which was started in 2014. The study results demonstrated no difference in the CS birth rates between primigravida pregnant women who had received no education about pregnancy and those who had fully completed the Ministry of Health antenatal classes program (p=0.463). However, the conversion rates to CS with the indication of non-progression of labor were higher, and the duration of labor was longer in the group who had not attended antenatal classes.

In a 2019 study by Möller et al., antenatal classes were similarly seen not to affect the type of birth<sup>12</sup>.

Waldenstorm et al. (2006) determined that increasing CS rates were not associated with the fear of childbirth<sup>13</sup>. A similar study by Bıyık et al. in 2020 reported significantly lower CS rates in pregnant women who had attended antenatal classes. However, unlike the current study, that study included both primigravida and multigravida women<sup>14</sup>. In two studies conducted in Italy in 2002 and 2008, the rates of CS were determined to be lower in patients who had attended antenatal classes<sup>15,16</sup>. Although there is no clarity in studies related to the effect on CS rates, another study by Cantone et al. (2017) showed that antenatal classes had a moderate impact on reducing CS rates, and the reduction was reported to be approximately 10%<sup>17</sup>. The reason for the lack of difference between the groups in the current study in respect of the type of birth was thought to be due to the inclusion of only primigravida pregnant women and that our hospital is a tertiary level center to which women with high-risk pregnancies are referred. It is also thought that obstetricians are more liberal in their decisions for CS, especially in the follow-up of high-risk pregnancies, to avoid court cases for high compensation.

However, when the indications for CS were examined, it was seen that the rates for CS associated with the indication of non-progression of labor were higher in the group that had not attended antenatal classes. There is thought to be a positive contribution of antenatal classes in respect

of factors such as correct breathing techniques, training techniques, and increased adaptation to the second stage of birth. Although the rates of fear of giving birth were not investigated in the current study groups, it was thought that this benefit could have increased adaptation to the birth process and made it easier for the mother. It is known from the literature that patients who have received antenatal education have less fear of childbirth. A study conducted in Warsaw University in 2019 determined that antenatal classes reduced the fear of giving birth<sup>18</sup>. Brixval et al. (2016) also reported that women who had attended antenatal classes felt more confident that they could manage the birth process<sup>19</sup>. In a systematic review and meta-analysis in 2018, Moghaddam et al. reported that antenatal classes decreased the fear of birth<sup>20</sup>.

When the duration of labor was examined in the current study, it was seen to be shorter in the group who had attended antenatal classes. In a study conducted in Spain in 2018, although the duration of labor was not directly measured, it was determined that antenatal courses positively affected the second stage of birth, consistent with the current study findings<sup>21</sup>. In the results, although statistical analysis of fetal birthweights of the groups showed a significant difference, median values were in the normal weighted fetus range; therefore, this finding would not change our clinic practice.

Another point examined in the process of vaginal route delivery was whether or not episiotomy was necessary. No significant difference was determined between the current study groups regarding the rates of episiotomy performed. As stated above, it was also reported in a study by Soriano that antenatal classes provided active participation at this stage, and a more significant number of patients who had received the classes did not want to have an episiotomy<sup>21</sup>. The results of a review by Jiang et al. in the 2017 Cochrane database showed no definitive evidence that routine episiotomy reduced perineal/vaginal trauma. It was also reported that there is a need for more advanced studies on whether selective episiotomy is beneficial in patients who require interventional birth.

Similarly, no clear data have been reached related to the long-term results of selective episiotomy on the Health of the mother and infant<sup>22</sup>. As no significant result was obtained in the current study, it is thought that old habits continue about the need for episiotomy as there is no clarity in the literature on this subject. Physicians wish to avoid medicolegal sanctions in the event of complications that could develop. In light of these data, it is thought that pregnant women attending

antenatal classes should be more informed about episiotomy, which provides active participation in this process. In addition, providing education to the resident doctors in our clinic, which is in a tertiary-level center, and increasing in-service training for midwives who actively attend births should decrease episiotomy rates.

This study had some limitations, primarily that it was retrospective in design. As it was retrospective, no clear data could be obtained about the education level of the patients. Thus, the birth processes could not be compared according to groups of education level. Previous studies have shown that a higher education level is associated with higher participation rates in education programs<sup>23-26</sup>. Nevertheless, strong aspects of the study can be said to be that only nulliparity pregnant women were included, and standardization was provided in the antenatal classes as a single healthcare professional delivered them.

## Conclusion

In conclusion, the literature related to antenatal classes is not homogenous. This may be due to social and cultural structural differences between societies, the education models are not standard, or the differences in medicolegal regulations. For a more effective study of antenatal classes, the education must be disseminated to a broader mass, that education is standardized, and that lawmakers create a robust legal basis for midwives and physicians to contribute to the scientific management of the birth process.

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